Biological Resources Mitigation Implementation and Monitoring Plan for the Rice Solar Energy Project, Riverside County, California (09-AFC-10C)

Prepared for

Rice Solar Energy, LLC

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Prepared by

CH2MHILL
6 Hutton Centre Drive
Suite 700
Santa Ana, CA 92707

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B Resumes of Designated Biologists
C Biological Opinion
D Wildlife Observation Form
E Noncompliance Resolution Report
F Worker Environmental Awareness Program (WEAP) Handbook
G Weed Management Plan

H Desert Tortoise Translocation Plan
I Raven Management Plan
J Revegetation Plan
K Evaporation Pond Design, Monitoring, and Management Plan

Abbreviations and Acronyms

°C	degrees Celsius
°F	degrees Fahrenheit
ACC	air-cooled condenser
AFC	Application for Certification
BLM	U.S. Bureau of Land Management
BMP	best management practice
BO	Biological Opinion
BRMIMP	Biological Resources Mitigation Implementation and Monitoring Plan
Cal-IPC	California Invasive Plant Council
Caltrans	California Department of Transportation
CCR	California Code of Regulations
CDCA	California Desert Conservation Area
CDFG	California Department of Fish and Game
CEC	California Energy Commission
CEQA	California Environmental Quality Act
CESA	California Endangered Species Act
CFR	Code of Federal Regulations
CNDDB	California Natural Diversity Database
CNPS	California Native Plant Society
COC	condition of certification
CPM	Compliance Project Manager
DTC	Desert Tortoise Council
DWMA	Desert Wildlife Management Area
ESA	Endangered Species Act
ESAs	Environmentally Sensitive Areas
FLPMA	Federal Land and Policy Management Act
GIS	Geographic Information System
gpm	gallons per minute
GPS	global positioning system
kV	kilovolt
LORS	laws, ordinances, regulations, and standards
MW	megawatt(s)

MWh	megawatt-hours
NECO	Northern and Eastern Colorado Desert Coordinated Management Plan
NFWF	National Fish and Wildlife Foundation
REAT	Renewable Energy Action Team
ROW	right-of-way
RSE	Rice Solar Energy, LLC
RSEP	Rice Solar Energy Project
RWQCB	Regional Water Quality Control Board
SAA	Streambed Alteration Agreement
SA/DEIS	Staff Assessment and Draft Environmental Impact Statement
SR	state route
SWPPP	Stormwater Pollution Prevention Plan
USACE	U.S. Army Corps of Engineers
USC	U.S. Code
USFWS	U.S. Fish and Wildlife Service
USGS	U.S. Geological Survey
Western	Western Area Power Administration
WEAP	Worker Environmental Awareness Program
WMA	Wildlife Management Areas

Preface

This report presents the Biological Resources Mitigation Implementation and Monitoring Plan (BRMIMP) for the Rice Solar Energy Project (RSEP) in Riverside County, California. It is being submitted to comply with Condition of Certification (COC) BIO-7 set by the California Energy Commission (CEC) Decision for the RSEP (CEC, 2010a). It is anticipated that the Bureau of Land Management (BLM) will issue a Record of Decision (ROD) and right-of-way (ROW) grant for the construction and operation of the RSEP in July 2011.

The purpose of the BRMIMP is to identify all mitigation, monitoring, and compliance measures related to biological resources that will be implemented during facility construction and operation. This BRMIMP addresses all components of the RSEP and will be amended as necessary to account for new information or changing conditions. All applicable laws, ordinances, regulations, and standards (LORS) applicable to the RSEP are listed in Table 4-2. This document includes a summary of the various mitigation, monitoring, and compliance measures contained in the biological plans required by the condition of certifications (COCs). The full plans are also included in the appendices. As these various plans are approved (or modified), these plans will be updated in the appendices.

This plan incorporates the terms and conditions of the following license, permits, opinions, and agreements:

- Applicant-proposed mitigation, monitoring, and compliance measures from the RSEP Application for Certification (AFC) filed with the CEC on October 21, 2009
- CEC – Biological Resources Findings, Conclusions, and Conditions of Certification from the Staff Assessment and Draft Environmental Impact Statement in Docket No. 09-AFC-10 (provided as Appendix A)
- Biological Resource mitigation, monitoring, and compliance measures required in the Commission Decision dated December 15, 2010
- Draft Biological Opinion issued by U.S. Fish and Wildlife Service on June 21, 2011

SECTION 1

Purpose and Background of the BRMIMP

This BRMIMP summarizes the sensitive biological resources that will be potentially affected by the Project and the measures required to avoid, minimize, or compensate for impacts to these resources. The biological resources mitigation and monitoring procedures discussed in this BRMIMP were outlined in COC BIO-7 as set forth in the Decision (CEC, 2010a). It is anticipated that the BLM will issue a license and ROW grant for the construction and operation of the RSEP in July 2011 and that conditions from those entitlements will need to be added to the BRMIMP upon receipt.

This BRMIMP describes the measures that will be implemented by the project owner, its employees and contractors during the construction, operation, and maintenance phases of the RSEP. This BRMIMP addresses all features of the RSEP, including construction and all associated common and linear facilities. The BRMIMP is being implemented to ensure that the RSEP is completed in a manner that minimizes impacts to the natural environment by appropriate compliance with terms and conditions of various permits and approvals.

The requirements of the BRMIMP as set forth in COC BIO-7 of the Decision (CEC, 2010a) are as follows:

> The project owner shall develop a Biological Resources Mitigation Implementation and Monitoring Plan (BRMIMP), and shall submit two copies of the proposed BRMIMP to the CPM for review and approval in consultation with Western, CDFG, BLM, and USFWS. The project owner shall implement the measures identified in the approved BRMIMP. The BRMIMP shall incorporate avoidance and minimization measures described in final versions of the Hazardous Materials Plan; the Revegetation Plan, the Weed Management Plan; the Special-Status Plan Impact Avoidance and Minimization Plan; the Desert Tortoise Translocation Plan; the Raven Monitoring, Management, and Control Plan; the Burrowing Owl Relocation and Mitigation Plan; the Streambed Management Plan; the Evaporation Pond Design Monitoring, and Management Plan; and the Avian and Bat Protection Plan.
>
> The BRMIMP shall be prepared in consultation with the Designated Biologist and shall include accurate and up-to-date maps depicting the location of sensitive biological resources that require temporary or permanent protection during construction and operation. The BRMIMP shall include complete and detailed descriptions of 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 any additional Western or BLM stipulations;

4. All sensitive biological resources to be impacted, avoided, or mitigated by project construction, operation, and closure;
5. All required mitigation measures for each sensitive biological resource;
6. All measures that shall be taken to avoid or mitigate temporary disturbances from construction activities;
7. Duration for each type of monitoring and a description of monitoring methodologies and frequency;
8. Performance standards to be used to help decide if/when proposed mitigation is or is not successful;
9. All performance standards and remedial measures to be implemented if performance standards are not met;
10. Biological resources-related facility closure measures including a description of funding mechanism(s);
11. A process for proposing plan modifications to the CPM and any other appropriate agencies for review and approval; and
12. A requirement to submit any sightings of any special-status species that are observed or in proximity to the project site, or during project surveys, to the California Natural Diversity Data Base (CNDDB) per CDFG requirements.

Verification: The project owner shall submit the BRMIMP to the CPM at least 30 days prior to start of any preconstruction site mobilization and construction-related ground disturbance, grading, boring, and trenching. The BRMIMP shall contain all of the required measures included in all biological Conditions of Certification. No construction-related ground disturbance, grading, boring, or trenching may occur prior to approval of the final BRMIMP by the CPM in consultation with Western, CDFG, BLM, and USFWS.

If any permits have not yet been received when the BRMIMP is first submitted, copies of 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 conditions within 10 days of their receipt by the project owner. Under no circumstances shall ground disturbance proceed without implementation of all permit conditions.

To verify that the extent of construction disturbance does not exceed that described in this analysis, the project owner shall submit aerial photographs, at an approved scale, taken before and after construction to the CPM. The first set of aerial photographs shall reflect site conditions prior to any preconstruction site mobilization and construction-related ground disturbance, grading, boring, and trenching, and shall be submitted at least 60 days prior to initiation of such activities. The second set of aerial photographs shall be taken subsequent to completion of construction, and shall be submitted to the CPM no later than 90 days after completion of construction. The project owner shall also

provide a final accounting of the acreages of vegetation communities/cover types present before and after construction and a depiction of the approved project boundaries superimposed on the post project aerial photograph. If final acreages and/or disturbance footprints exceed those previously approved, the CPM shall coordinate with project owner, in consultation with Western, CDFG, BLM, and USFWS to determine appropriate mitigation for such impacts. Such mitigation may exceed the requirements as outlined in these Conditions of Certification (i.e., higher mitigation ratios may be imposed as a result of consultation with the wildlife agencies).

Any changes to the approved BRMIMP (including the project footprint) must be approved by the CPM in consultation with Western, BLM, CDFG, and USFWS before such action is taken.

Implementation of BRMIMP measures (for example, construction activities that were monitored, species observed) shall 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 in consultation with Western, CDFG, BLM, and USFWS, 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 preconstruction site mobilization and construction-related ground disturbance, grading, boring, and trenching, and which mitigation and monitoring items are still outstanding as well as a timeline for implementing outstanding items. (COC BIO-7).

Table 1-1 provides a list of the various conditions of certification that are a part of this BRMIMP.

TABLE 1-1
Summaries of Conditions of Certification for Biological Resources

COC #	Condition of Certification	Section
BIO-1	Designated Biologist Selection and Qualifications	4.3
BIO-2	Designated Biologist Duties	4.4
BIO-3	Biological Monitor Qualifications	4.5
BIO-4	Biological Monitor Duties	4.6
BIO-5	Designated Biologist and Biological Monitor Authority	0
BIO-6	Worker Environmental Awareness Program (WEAP)	5
BIO-7	Biological Resources Mitigation Implementation & Monitoring Plan	1
BIO-8	Impact Avoidance and Minimization Measures	7.1
BIO-9	Compliance Verification	10
BIO-10	Revegetation Plan and Compensation for Impacts to Native Vegetation Communities	7.4
BIO-11	Weed Management Plan	6.1
BIO-12	Special-Status Plant Impact Avoidance, Minimization, and Compensatory Mitigation	7.5.2
BIO-13	Pre-Construction Nest Surveys and Impact Avoidance Measures for Migratory Birds	6.2
BIO-14	Desert Tortoise Clearance Surveys and Exclusion Fencing	6.3

TABLE 1-1
Summaries of Conditions of Certification for Biological Resources

COC #	Condition of Certification	Section
BIO-15	Desert Tortoise Translocation Plan	7.5.4
BIO-16	Desert Tortoise Compensatory Mitigation	7.5.5
BIO-17	Raven Monitoring, Management, and Control Plan	7.5.6
BIO-18	Golden Eagle Pre-Construction Surveys	6.5
BIO-19	Burrowing Owl Impact Avoidance, Minimization, and Compensation Measures	6.6
BIO-20	American Badger and Desert Kit Fox Impact Avoidance and Minimization Measures	6.7
BIO-21	Fence Locations: Logistics, Lay-Down Area, and Access Road	7.6
BIO-22	Streambed Impact Minimization and Compensation Measures	7.3
BIO-23	Couch's Spadefoot Surveys and Breeding Habitat Avoidance	6.8
BIO-24	Evaporation Pond Design, Monitoring, and Management Plan	7.7
BIO-25	Avian and Bat Protection Plan / Monitoring Operational Impacts of Solar Collection Facility on Birds and Bats	7.8
BIO-26	In-Lieu Fee Mitigation Option	7.9

SECTION 2

Project Description and Schedule

2.1 Project Location

The RSEP site is a privately-owned parcel located in eastern Riverside County. The site is adjacent to State Route (SR) 62, which parallels a portion of the Arizona-California Railroad and the Colorado River Aqueduct, near the junction of SR 62 and Blythe-Midland Road, and near the sparse remains of the abandoned town of Rice, California. The nearest occupied residence is approximately 15 miles northeast at the rural crossroads community of Vidal Junction, California. The nearest town is Parker, Arizona, is approximately 32 miles east. A small permanent residential settlement is located at the Metropolitan Water District of Southern California's Iron Mountain Pumping Plant, approximately 17 miles west (Figure 2-1).

The RSEP is located within a larger, 3,324-acre, privately-owned holding (the ownership property). This holding includes portions of Section 24 and 25, Township 1 South, Range 20 East; and all of Sections 19, 20, 29 and 30, Township 1 South, Range 21 East, San Bernardino Base and Meridian. Within the ownership property, the RSEP is sited within a new square-shaped parcel (the project parcel) that is approximately 2,560-acre parcel. These are Township 1 South, Range 20 East, Sections 19, 20, 29, and 30. Within this project parcel, a 1,410-acre project area will be fenced and will contain the administration building area, heliostat field with power block, and evaporation pond areas (collectively, the project site or facility site) (Figure 2-2). Areas outside the facility site but within the project parcel will not be fenced, developed, or disturbed as part of the RSEP.

A breakdown of RSEP's long-term and permanent disturbance areas is presented in Table 2-1 (CEC, 2010a).

TABLE 2-1
Breakdown of RSE Land Holdings and RSEP Project Components (in acres) for Purposes of Determining Mitigation Requirements[1]

Project Component	Applicant-owned Land	Private Land (other)	Public (BLM) Land	Total
Total contiguous applicant holdings	3,325 acres	N/A	N/A	3,325 acres
Project site	2,560 acres	N/A	N/A	2,560 acres
Solar generation site, including permanent facilities within perimeter fencing and Administration area	1,368 acres	0	0	1,368 acres
Permanent stream channel diversions (outside perimeter fence)[2]	19 acres			19 acres
Long-term construction-phase disturbances (parking, lay-down, logistics)	26 acres	0	0	26 acres

Permanent new access and maintenance road for transmission line (24 feet wide x 4.6 miles)	3 acres	0	11 acres	14 acres
Long-term disturbance for new transmission line towers and pull sites[2]	2 acres	3 acres	21 acres	26 acres
Permanent disturbance for interconnector substation	0	0	3 acres	3 acres
Total Project disturbance area	1,418 acres	3+ acres	35+ acres	**1,456 acres**[3]

Notes:

1. CEC, 2010a.
2. Staff estimates 90 towers and 10 pull sites, each site approximately 0.5 acre; approximately 80% of tower and pull sites would be on BLM land.
3. Note that 6 acres within the disturbance area consists of a concrete apron that is not considered desert tortoise habitat for later calculations of compensation acreage. Therefore, the total acreage for the habitat compensation calculations is 1,448.

2.2 Project Components

Rice Solar Energy, LLC (RSE), a wholly owned subsidiary of Solar Reserve, LLC, proposes to construct, own, and operate the project. RSEP will produce electricity at a capacity of 150 megawatts (MW) and annual energy of 450,000 megawatt-hours (MWh) annually during periods of peak energy demands and will be located on a 1,140-acre site (CEC, 2010a).

The RSEP design incorporates the following principal elements:

- Heliostat field with up to 17,500 solar-tracking heliostats, each approximately 24-feet tall by 28-feet wide, arranged in a circular array that will reflect and concentrate the sun's energy onto a tower-mounted receiver. A 1,410-acre project area will be fenced and will contain the administration area, heliostat field, administration area, and evaporation ponds.
- A concrete central tower approximately 540 feet tall, upon which is mounted a receiver approximately 100 feet tall topped with a small maintenance crane, for an overall structure height of 653 feet
- A liquid salt storage system featuring insulated "hot" and "cold" salt storage tanks
- A steam turbine generator system rated at 150 MW (net)
- A 20-cell air-cooled condenser (ACC) to provide water-free cooling and condensing of the steam turbine exhaust
- A 10-mile, 230-kilovolt (kV) generator tie-line to connect the RSEP with the existing Western Parker-Blythe transmission line. (The new tie-line has been routed along existing dirt roads for approximately 5.4 miles and will require minimal construction of approximately 4.6 miles of single-lane dirt access road for construction and inspection. A new interconnection substation [approximately 3 acres in size] for the tie-in to Western's system will be constructed adjacent to the existing transmission line. The generator tie-line will cross land managed by the BLM.)

- Two onsite water wells to provide water for heliostat washing, steam-cycle makeup and other process uses in an amount not expected to exceed 180 acre-feet per year
- Three lined evaporation ponds of approximately 5 acres each to capture all process wastewater discharge from the project's water treatment system, process blowdown, and stormwater drainage from within equipment areas
- Stormwater drainage features to channelize offsite stormwater flows from upstream of the project site, diverting offsite stormwater around the project site, and rejoining the natural flow channels to the south of the property
- Two emergency diesel generators and associated equipment to supply emergency backup power for the safe shut-down and protection of vital equipment and facilities
- Onsite fire protection facilities, which consist of two sets of electric-motor-driven and diesel-engine-driven fire pumps and related fire detection and protection equipment
- Various buildings for plant control room, administration offices, maintenance and storage, and crew comfort facilities
- Physical security systems including fencing, closed-circuit television, and other means to protect against unwanted entry consistent with electric utility and Department of Homeland Security requirements

2.3 Project Schedule

A project milestone schedule showing construction activities, along with surveys and monitoring designed to protect biological resources, is presented in Table 2-2. A complete discussion of preconstruction surveys is included in Section 6 of this plan. A list of the key construction events is also provided in Table 2-2, along with protection measures and construction limitations identified for biological resources.

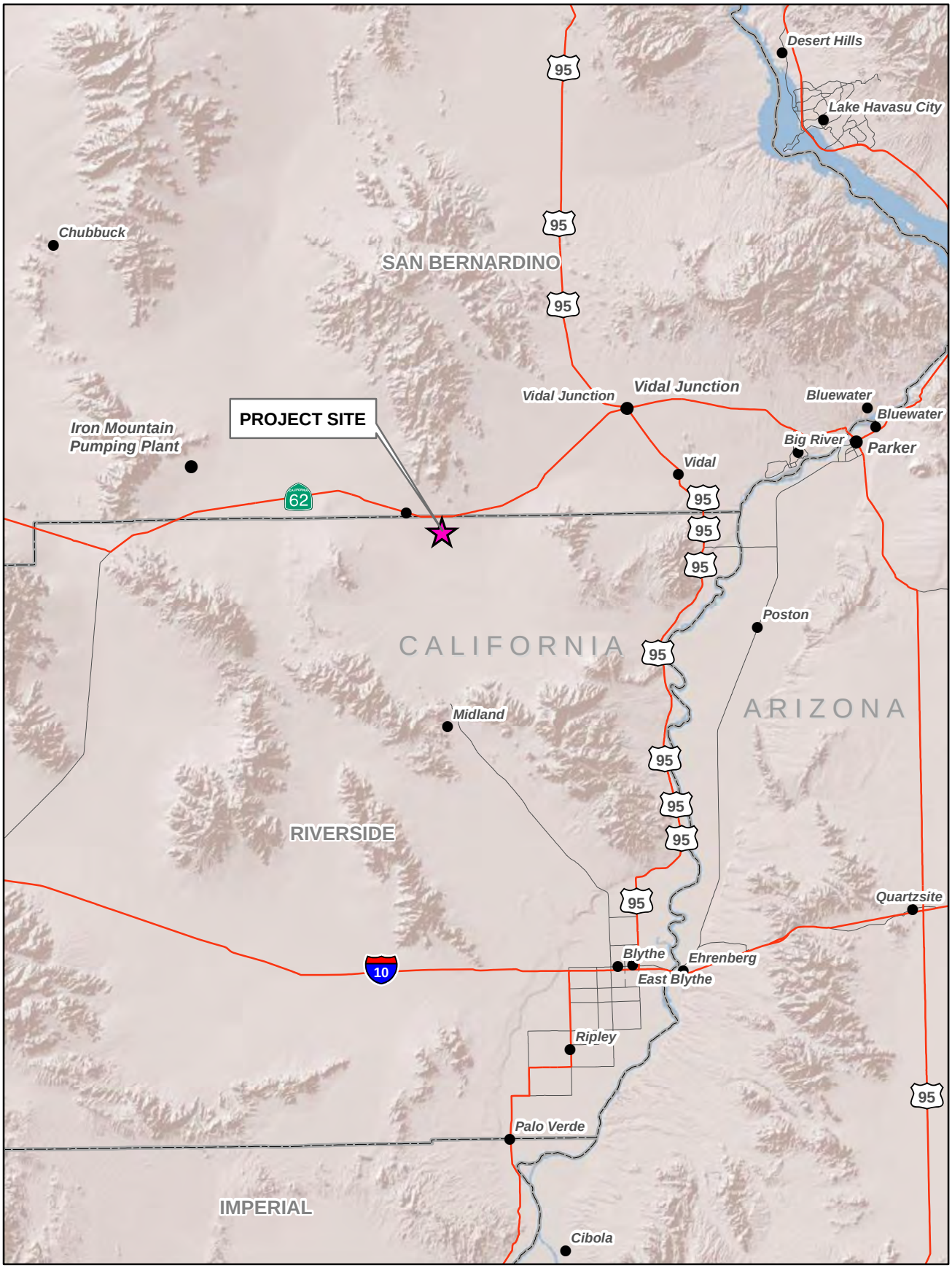
Construction of the generating facility, from site preparation and grading to commercial operation, is expected to take place from the third quarter of 2011 to the first quarter of 2014 (30 months total). Construction activities have been scheduled to avoid or minimize disturbance to special-status species in coordination with the USFWS and CDFG.

TABLE 2-2
Project Milestone Schedule

Event Description	Expected Dates	Essential Biological Resource Protection Measures
Date of certification by CEC	Fourth Quarter 2010	N/A
Start of rainy season	October 15 (Typical)	Project site and linears will have Stormwater Pollution Prevention Plan (SWPPP) protection measures implemented prior to the start of the rainy season.
End of rainy season	April 15 (Typical)	Typical start date of permitted water crossings.

TABLE 2-2
Project Milestone Schedule

Event Description	Expected Dates	Essential Biological Resource Protection Measures
Construction of the RSEP project boundaries, clearing and grubbing, and sediment fence installation.	September/October 2011	Biological Monitor required to clear survey area for wildlife prior to any ground disturbance on the project.
Construction of laydown, parking, and construction offices	Third Quarter 2011	Biological Monitor required to clear survey area for wildlife prior to any ground disturbance on the project and when areas have not had continuous disturbance for one week or more.
Power plant construction	October 2011	Biological Monitor required to clear/survey area for wildlife prior to any ground disturbance on the project.
Transmission line construction	Fall 2012	Biological Monitor required to clear/survey area for wildlife prior to any ground disturbance on the project.
Startup and test	Fourth Quarter 2013	N/A
Biological resources post-construction report	Due 30 days after construction is complete	Designated biologist to conduct a post-construction site visit to determine whether habitats are restored per restoration success criteria.
Commercial Operation	March 2014	N/A



LEGEND

PROJECT SITE

COUNTY BOUNDARIES

N

0 5 10

Miles

FIGURE 2-1
PROJECT LOCATION
RICE SOLAR ENERGY PROJECT
RIVERSIDE COUNTY, CALIFORNIA

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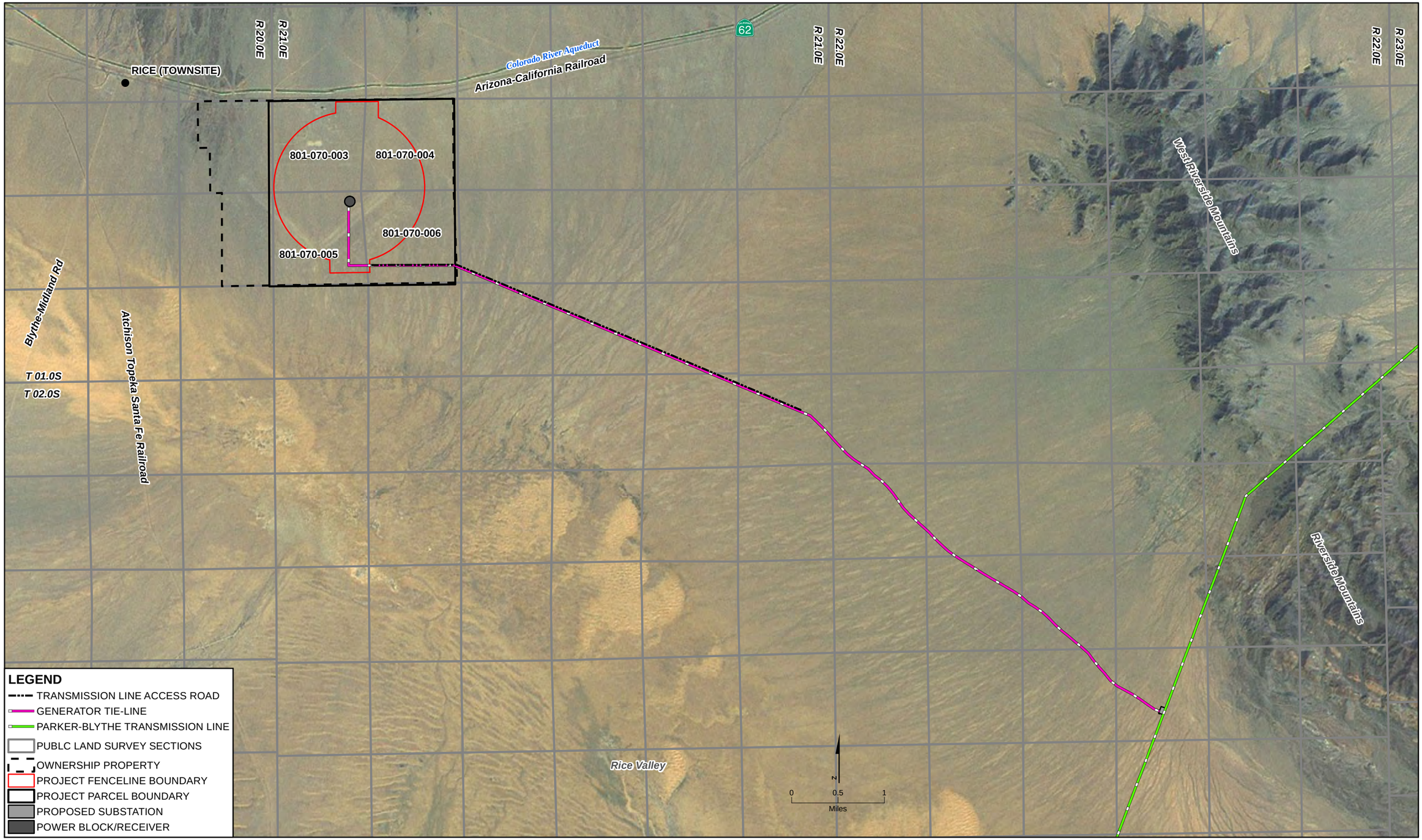

This map was compiled from various scale source data and maps and is intended for use as only an approximate representation of actual locations.

FIGURE 2-2
SITE LOCATION
RICE SOLAR ENERGY PROJECT
RIVERSIDE COUNTY, CALIFORNIA

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SECTION 3

Summary of Biological Resources

3.1 Regional Overview

The Rice Valley is a dry shallow basin with a north-south orientation, bounded by the Turtle Mountains to the north and the Big Maria Mountains to the south. The edges of the valley are more weakly defined to the west by the Arica Mountains and to the east by the West Riverside Mountains. These mountain ranges are rugged and provide habitat for Nelson's bighorn sheep (*Ovis canadensis nelsoni*) and desert dry wash woodlands. The sand dunes along the southern end of the valley are nest site opportunities for golden eagles (*Aquila chrysaetos*) and prairie falcons (*Falco mexicanus*). The valley is dominated by a creosote scrub community interrupted by part of a large sand sheet that stretches from Cadiz to Ward Valley.

The rugged mountain areas, lowland valleys, and dunes with diverse topographical features provide a habitat for a variety of plant and animal species. The lack of CNDDB records in the area, in particular for the desert tortoise (*Gopherus agassizii*), is likely because of lack of studies in this area. Dune areas are often occupied by rare and endemic plant and animal species. Because of the limited resources and limited recent development pressure in the Rice Valley, much of the local focus has likely been on the surrounding Desert Wildlife Management Areas (DWMA) and Wildlife Management Areas (WMA).

Although considered within the West Basin of the Colorado River, which drains primarily into the Salton Sea Trough, Rice Valley is a sink within no broader hydrological connectivity. Rice Valley has a small watershed and lacks any major washes. Although it is a sink, there are no perennial surface water sources and there is no evidence that a lake ever formed in the Valley during wetter climatic periods (BLM, 2007).

Current activity is primarily concentrated on the north end of the valley evident by the heavily disturbed east-west linear corridor composed of the Colorado River Aqueduct, the Arizona-California Railroad, and SR 62. These three parallel features present a major north-south barrier to wildlife passage and interrupt local hydrology.

The community of Rice, the Rice Airfield, and the Camp Rice infantry and artillery training camp were also located along this corridor. Today these long-abandoned sites are more evident from aerial photos than on the ground. At least 50 years of volunteer plant revegetation now provide relatively sparse-to-moderate vegetative cover of these areas. Most of the Rice Valley was likely used for military training exercises in the early 1940s. Also, an Army-Air Force exercise called Joint Exercise Desert Strike took place in this area in 1964.

General Patton's soldiers are credited with one of the few historical records of banded gila monster (*Heloderma suspectum cinctum*) in California from a capture in the Granite Mountains in the adjacent valley to the west (CNDDB, 2009). The Rice Valley dunes are relatively shallow and do not appear to have held much appeal to off-road enthusiasts. This

was even before the BLM closed the Rice Valley Dunes Off-Highway Recreation Area part of the Northern and Eastern Colorado Desert Coordinated Management Plan (NECO), partly because of a lack of use. As with much of the area, local mining activities date back to the late 1800s. Some of these abandoned mines in the local mountains likely provide cavity habitat for bat species.

Other than the development in the northern part of the valley and ephemeral domestic sheep grazing, today the use of Rice Valley by humans appears to be light. Much of the valley is now contained within the Rice Valley Wilderness Area but, according to the BLM, the valley presents few recreational opportunities other than spring season wildflower viewing because of the lack of water, sparse vegetation, and mostly level topography (BLM, 2007).

3.2 Habitat and Vegetation Communities

Sonoran creosote bush scrub is the most prevalent vegetation community in the Colorado Desert and was the only community type that was identified in the footprint of the proposed project site and generator tie-line alignment. The dominate shrub is creosote bush (*Larrea tridentata*). Other shrubs species present include burrobrush (*Hymenoclea salsola*), burro-weed (*Ambrosia dumosa*), brittlebush (*Encelia farinosa*), and white rhatany (*Krameria grayi*). Herbaceous species present include white tackstem (*Calycoseris wrightii*), pebble pincushion (*Chaenactis carphoclinia var. carphoclinia*), desert dandelion (*Malacothrix glabrata*), devil's lettuce (*Amsinckia tessellata*), Nevada cryptantha (*Cryptantha nevadensis*), mustard (*Brassica tournefortii*), rattlesnake weed (*Chamaesyce polycarpa var. hirtella*), Arizona lupine (*Lupinus arizonicus*), *Camissonia boothii ssp. condensata*, plantain (*Plantago ovata*), and Mediterranean grass (*Schismus barbatus*). Rice Valley is characterized by widely spaced shrubs and impressive spring wildflower displays. Other habitat community types in the Rice Valley include sand dunes and desert dry wash woodlands.

Although considered within the West Basin of the Colorado River, which drains primarily into the Salton Sea Trough, Rice Valley is a sink within no broader hydrological connectivity. Rice Valley has a small watershed and lacks any major washes. Streams, washes, and playas are dry most of the year, with surface water only present in response to storm events. Although it is a sink, there are no perennial surface water sources and there is no evidence that a lake ever formed in the Valley during wetter climatic periods (BLM, 2007). No wetlands or waters were identified in the project area. Generalized vegetation-type descriptions, including the dominant and subdominant plants observed in each community, are provided below.

3.2.1 Sonoran Creosote Bush Scrub

Sonoran creosote bush scrub was the dominant vegetation community type that was identified in the proposed project site and generator tie-line right-of-way during the 2009 botanical surveys. Examination of the area within one mile of the proposed project facilities indicates that nearly all of this area also consists of this vegetation community. As stated in the NECO, this creosote bush community is the most dominant plant community below the 3,000 foot elevation throughout the Colorado Desert (BLM, 2002). Sonoran creosote bush scrub (or Sonoran desert scrub) covers approximately 3.8 million acres or 69 percent of the NECO planning area (BLM, 2002). As evident in the Rice Valley, the shrubs in this

community are typically widely spaced and flowering annuals are expected to be observed from late February to March.

Shrub species observed in the project area during the March 2009 botanical surveys include creosote bush, burrobrush, burro-weed, brittlebush, and white rhatany. Herbaceous species present include white tackstem, pebble pincushion, desert dandelion, desert five-spot (*Eremalche rotundifolia*), desert needle (*Palafoxia arida* var. *arida*), devil's lettuce, Cryptantha nevadensis, Pectocarya platycarpa, mustard, onyx flower (*Achyronychia cooperi*), rattlesnake weed, Arizona lupine, Booth primrose (*Camissonia boothii* ssp. *condensata*), plantain, big galleta (*Pleuraphis rigida*), and Mediterranean grass.

3.2.2 White Bursage Scrub

White bursage scrub covers approximately 87 acres in the northwestern portion of the proposed solar generator site (CEC, 2010a). This vegetation community is dominated by white bursage and creosote bush is also associated with this community type. The herb layer is similar to that described above for creosote bush scrub (CEC, 2010a).

3.2.3 Smoke Tree Woodland

Although this vegetation community is not present within the project area, it may provide nesting habitat for avian species. Smoke tree (*Psorothamnus spinosus*) woodland covers approximately 5 acres, which is adjacent to the solar generator site (CEC, 2010a). This vegetation community is characterized by smoke tree, although smaller shrubs may have greater cover. This community is ranked by CDFG as a special-status vegetation type, with state rarity ranking of S3 (CDFG, 2009). However, project construction would not directly impact the smoke tree woodland.

3.2.4 Active and Stabilized Sand Dune

Portions of the Rice Valley Dunes are located within one mile of the proposed RSEP area. The Rice Valley Dunes are a system of small dunes rising 30 to 40 feet above the valley floor to form a long, narrow band running through the middle of Rice Valley. These active and stabilized dune habitats occur south and southwest of the proposed RSEP area. Active sand dune habitat is characterized by sparse vegetative cover and actively moving sand. Stabilized dune habitat consists of more dense vegetative cover that limits the movement of sand by wind.

Species typically found in desert dunes include creosote bush, fourwing saltbush (*Atriplex canescens*), burro-weed, big galleta, Indian ricegrass (*Achnatherum hymenoides*), and evening primrose (*Oenothera spp.*) (Sawyer and Keeler-Wolf, 1995). During the March 2009 botanical surveys of the project area, a reference population of the special-status Harwood's eriastrum (*Eriastrum harwoodii*) located adjacent to Blythe-Rice Road within the Rice Valley Dunes was visited. Species observed in the vicinity of the Harwood's eriastrum reference population include chaparral sand-verbena (*Abronia villosa var. aurita*, a special-status species), big galleta, creosote bush, evening primrose, cryptantha, and Mormon tea (*Ephedra sp.*).

3.2.5 Previously Disturbed Areas

The proposed RSEP site is located on the site of a former airfield (Rice Army Airfield) that was used during World War II as a training site, later transferred to private use, and then

abandoned sometime between 1955 and 1958 (Freeman, 2009). The abandoned airfield once consisted of two paved 5,000-foot-long runways and numerous dispersal pads or hardstands extending beyond the runways to the south (Freeman, 2009). Various dirt roads, concrete pads, and portions of the old runways were observed during surveys in the proposed project site. Since the time the airfield was abandoned, the project area has been colonized by predominately native annual and perennial species. Previously paved areas, such as the runways, taxiways, and aircraft hardstands, have been colonized by burrobrush and creosote bush, but have a lower density of creosote bush shrubs than surrounding areas. It is for this reason that these areas are clearly visible on aerial photographs despite recolonization by native species.

3.3 Invasive Weeds

The spread of invasive plant species is a major threat to biological resources in California deserts because non-native plants can displace native vegetation, alter wildfire regimes, modify habitat structure, and invade special-status plant habitats (Zouhaer et al., 2008; Brooks et al., 2004; Brooks and Pyke, 2001; and Lovich et al. 1997). Invasive plant species can be introduced to an area, primarly through soil disturbances, or already established weeds can spread as a result of construction and operation of RSEP.

Mediterranean grass (*Schismus arabicus* and *S. barbatus*), Sahara mustard (*Brassica tournefortii*), and filaree (*Erodium cicutarium*) were the only weed species observed in the proposed project area. Sahara mustard has a California Invasive Plant Council (Cal-IPC) rating of "high." Species rated as high have severe ecological impacts on physical processes, plant and animal communities, and vegetation structure. Their reproductive biology and other attributes are conducive to moderate to high rates of dispersal and establishment. Most are widely distributed ecologically (Cal-IPC, 2006). California Department of Food and Agriculture (2011) does not rate Sahara mustard.

Mediterranean grass and filaree are rated by Cal-IPC as "limited." Species with a rating of "limited" are invasive but their ecological impacts are minor on a statewide level or there was not enough information to justify a higher score. Their reproductive biology and other attributes result in low to moderate rates of invasiveness. Ecological amplitude and distribution are generally limited, but these species may be locally persistent and problematic (Cal-IPC, 2006).

3.4 Waters of the State and Jurisdictional Waters of the United States

3.4.1 Wetlands and Water Inventories

Desert drainages and washes were examined during field surveys for botanical and wildlife resources and were also examined using aerial photographs. Water flowing in washes from the Turtle Mountains is intercepted by large berms upslope and upstream of the RSEP site that were constructed for the Colorado River Aqueduct and Arizona-California Railroad as drainage controls. These large berms funnel runoff from Turtle Mountain toward two channels that cross the aqueduct, and then to culverts under the Arizona-California railroad, and then across SR 62 onto the RSEP site area. Water in these two channels was formerly

intercepted by berms constructed south of the aqueduct, railroad, and highway to direct flow around and away from Rice Army Airfield. These berms have breached, however, and form small, multiple branching channels running to the south that eventually merge with natural channels of stormwater flow that predate the airfield. For these reasons, stormwater drainage on the project site is relatively undeveloped. Stormwater from the project site drains into the Rice Valley dry lake basin, which does not have an outlet to the Colorado River. The washes that cross the generator tie-line corridor are also shallow, poorly defined and developed, and lacking in hydrophytic vegetation.

Since Rice Valley is a basin that drains internally and does not connect to navigable waters or cross-state boundaries, the project area's drainages are not subject to jurisdiction of the U.S. Army Corps of Engineers (USACE) under the Clean Water Act. There are no wetlands or waters of the United States within the project's area of potential effects. Appendix A contains correspondence with USACE that documents the non-jurisdictional status of the ephemeral drainage features on the RSEP site and that cross the generator tie-line.

3.4.2 Impacts to Jurisdictional Waters

There are no wetlands present within the solar generator site or along the proposed generator tie-line alignment. According the U.S. Geological Survey (USGS) maps, there are four intermittent, blue-line channels located within the project area. Two of these channels enter the project site from the north, one from the northwest corner, and one near the northwest corner. These drainages were rerouted to the west and east by levees that were established to protect the old airfield. The levees have been breached and now allow runoff to flow across the property. Two additional blue-line ephemeral channels begin within the RSEP facility boundary and flow south through Rice Valley (CEC, 2010a).

In addition to the channels described above, there are many additional ephemeral desert washes that originate onsite and drain southward across the project site. There are a total of 75.4 acres of state-jurisdictional streambeds within the 1,387-acre solar generator site that would directly or indirectly impact the project construction and operation. There are also 2.1 acres of state-jurisdictional streambeds outside the perimeter fence that would be directly affected by permanent or long-term project components, such as channel diversions, access roads, and temporary logistics/laydown areas (CEC, 2010a).

The generator tie-line corridor crosses two intermittent blue-line channels within the project boundary and seven between the boundary and where the channels intersect with Rice Valley Road. These channels flow in a south-southwest direction and lose definition near the bottom of Rice Valley. In total, there are approximately 5.3 acres of state-jurisdictional streambeds within the generator tie-line alignment that could be affected by project construction (CEC, 2010a).

None of the drainage features identified within or adjacent to the project area are tributary to a traditionally navigable water; and they do not cross state lines or Tribal lands. The drainage features described above are isolated intrastate waters with no apparent interstate or foreign commerce connection. As a result, the USACE has determined that there are no waters of the United States that are subject to jurisdiction under the Clean Water Act on the project site (CEC, 2010a).

3.5 Wildlife

Although dry relative to the general area, flat, and sparsely vegetated, the overall project area provides interesting habitat value based on the context of the surrounding topography, which includes mountains, sand dunes, and dry wash woodlands. The project area provides habitat for lowland desert species such as reptiles and small mammals that are year-round residents of Rice Valley, to migratory birds that may visit the area during their breeding season or as their winter refuge. Despite the constructed barriers at the north end of the valley, the project area may have value as forage and dispersal for species that may occupy Rice Valley on a more ephemeral basis.

The project area provides habitat for common reptile species such as the side-blotched lizard (*Uta stansburiana*), zebra-tailed lizard (*Callisaurus draconoides*), long-nosed leopard lizard (*Gambelia spp.*), rattlesnakes (*Crotalus spp.*), western whiptail (*Cnemidophorus tigris*), and desert horned lizard (*Phrynostoma platyrhinos*). More high-profile management species such as the desert tortoise and the Mojave fringe-toed lizard (*Uma scoparia*) are also expected to occur within the project area.

Common desert mammals such as Audubon's cottontail (*Sylvilagus audubonii*), black-tailed jackrabbit (*Lepus californicus*), and whitetail antelope squirrel (*Ammospermophilus leucurus*) are expected to be found in the area. Others mammals such as bobcat (*Felis rufus*), coyote (*Canis latrans*), gray fox (*Urocyon cinereiagentueus*), and kit fox (*Vulpes macrotis*) are likely frequent visitors if not residents of Rice Valley. Burro deer (*Odocoileus hemionus crooki*), a species subject to BLM management, may also move through the area for forage or dispersal.

The project area hosts a large variety of bird species common to the Eastern Colorado Desert. These include the black-throated sparrow (*Amphispiza bilineata*), Brewer's sparrow (*Spizella breweri*), white-crowned sparrow (*Zonotrichia leucophrys*), house finch (C*arpodacus mexicanus*), Anna's hummingbird (*Calypte anna*), Costa's hummingbird (*Calypte costae*), black-tailed gnatcatcher (*Polioptila melanura*), blue-gray gnatcatcher (*Polioptila caerulea*), rock wren (*Salpinctes obsoletus*), canyon wren (*Catherpes mexicanus*), phainopepla (*Phainopepla nitens*), northern mockingbird (*Mimus polyglottos*), western kingbird (*Tyrannus verticalis*), horned lark (*Ermophila alpestris*), verdin (*Auriparus flaviceps*), mourning dove (*Zenaidura macroura*), Gambel's quail (*Lophortyx gambelii*), turkey vulture (*Cathartes aura*), lesser nighthawk (*Chordeiles acutipennis*), poorwill (*Phalaenoptilus nuttallii*), common raven (*Corvus corax*), American kestrel (*Falco sparverius*), and red-tailed hawk (*Buteo jamaicensis*). The burrowing owl (cunicularia) is a particular management concern and is found in the project area.

The Southern Mojave metapopulation of the Nelson's bighorn sheep is a major management concern in the Colorado Desert with entire portions of their historic range now unoccupied. The Little Maria, Big Maria, and Riverside Mountains that surround Rice Valley were once occupied by this large ungulate and CDFG may eventually plan to repopulate these areas if reestablishment does not occur from source populations in the nearby Granite and Turtle Mountains (BLM, 2007). The aqueduct, railroad, and SR 62 are major barriers and risks to bighorn sheep that might move from the Turtle Mountains south through Rice Valley. The southwestern portion of the original Rice Valley Grazing Allotment was retired because of

its proximity to the Palen Mountain bighorn sheep herd. It is possible that the bighorn sheep herd from the west or north could move through the Rice Valley.

3.6 Special-status Species

Several databases were reviewed to identify special-status species that may be affected by the RSEP project. Special-status species that could occur in the project area were identified by regional lists provided by the USFWS (USFWS, 2011c), by CDFG's CNDDB (CDFG, 2009), and by the California Native Plant Society (CNPS) (CNPS, 2009).

The designation of special-status species includes all federal- and state-listed species, candidate species, and species proposed for listing under the federal Endangered Species Act (ESA) and the California Endangered Species Act (CESA); state species of special concern; and plant species designated as Rare, Threatened, or Endangered (List 1B or List 2) by CNPS.

The following special-status species listed in Table 3-1 have the potential to occur in the project site based on the proximity of known occurrences, the historical range of these species, agency consultation, habitat evaluations, jurisdictional delineations, and biological surveys conducted in 2009.

TABLE 3-1
Special-Status Species Occurring or Potentially Occurring in the Project Area

Species	Status	Potential for Occurrence
PLANTS		
Abronia villosa var. *aurita* Chaparral sand verbena	CNPS 1B.1 BLM S S 2.1	Present. Two individuals were observed within the solar generation site in 2009.
Astragalus insularis var. *harwoodii* Harwood's milkvetch	CNPS 2.2 S 2.2?	Present. A total of 30 to 40 individuals were observed at 5 separate locations along the transmission line corridor in 2009
Cynanchum utahense Utah cynanchum	CNPS: 4.2 S 3.2	Present. Reported at substation site in late-season botanical surveys
Ditaxis claryana Glandular ditaxis	CNPS: 2.2 S1S2	Moderate on transmission line route, low on solar generation site. Perennial herb, seasonality varies; not seen during field surveys.
Ditaxis serrata var. *californica* California ditaxis	CNPS: 3.2 S 2.2	Moderate on transmission line route, low on solar generation site. Perennial herb, seasonality varies; not seen during field surveys.
Matelea parvifolia Spearleaf	CNPS: 2.3 S 2.2	Moderate on transmission line route, low on solar generation site. Perennial herb, seasonality midspring.
Wislizenia refracta ssp. *Palmeri* Palmer's jackass clover	n/a	Low on solar generation site, moderate on transmission line route. Generally in dunes, playas, desert shrublands. Not located during early-season surveys.

TABLE 3-1
Special-Status Species Occurring or Potentially Occurring in the Project Area

Species	Status	Potential for Occurrence
INVERTEBRATES		
Oliarces clara Cheeseweed owlfly	BLM S	Present. Reported by CNDDB immediately adjacent to or within the generator tie-line corridor (CDFG, 2010) based on a 1978 record. Suitable habitat throughout project area.
AMPHIBIANS		
Scaphiopus couchi Couch's spadefoot toad	BLM S CSSC	Low. This species has a relatively small home range and it is unlikely that there are any sufficiently inundated pools or ditches in the general area to support breeding.
REPTILES		
Gopherus agassizii Desert tortoise	FT ST	Present. Recorded during protocol surveys of solar site and transmission line route in 2009: 7 tortoises, 91 shell-skeletal remains, 66 burrows, 3 egg shell fragment locations, and 56 scat events were detected (RSE and CH2M HILL, 2009).
Lichanura trivirgata Rosy boa	BLM S	Moderate. Potential marginal habitat occurs onsite, and the NECO distribution map for the rosy boa includes the entire RSEP area and only excludes the dune areas of the Rice Valley. More likely to occur in rocky areas in the surrounding mountains.
Uma scoparia Mojave fringe-toed lizard	BLM S CSSC	High. Observed during the 2009 tortoise survey in dune habitat approximately 0.75 miles south of the site boundary, but not on the site or proposed transmission line alignment. Habitat on the proposed solar generation site is marginal; more suitable sandy washes are found on the proposed transmission line alignment. Within mapped range (BLM and CDFG, 2002).
BIRDS		
Accipiter cooperii Cooper's hawk	CDFG WL (nesting)	High (winter only). No breeding habitat and well outside breeding range; wide-ranging during winter, likely to forage on-site during winter or migratory seasons.
Accipiter striatus Sharp-shinned hawk	CSSC (nesting)	High (winter only). No breeding habitat and well outside breeding range; wide-ranging during winter, likely to forage on-site during winter or migratory seasons.
Aquila chrysaetos Golden eagle	BLM S FBCC SP CDFG WL	High (foraging only). There is known nesting habitat in the nearby mountains; suitable foraging habitat occurs throughout project site and transmission line alignment. Within mapped range (BLM and CDFG 2002). Protected under Federal Bald and Golden Eagle Protection Act.
Athene cunicularia Western burrowing owl	BLM S FBCC CSSC	Present. Active burrows observed in project area during 2009 and 2010 (RSE and CH2M HILL, 2009). Within mapped range (BLM and CDFG, 2002).

TABLE 3-1
Special-Status Species Occurring or Potentially Occurring in the Project Area

Species	Status	Potential for Occurrence
Buteo regalis Ferruginous hawk	BLM S FBCC CDFG WL	High (winter only). Suitable winter foraging habitat throughout site. Expected during migratory and winter seasons. Within mapped range (BLM and CDFG 2002).
Circus cyaneus Northern harrier	CSSC (nesting)	Moderate (winter only). Outside breeding range and no suitable breeding habitat occurs in the region; there is potential for infrequent winter foraging throughout desert regions.
Falco columbarius Merlin	CDFG WL	High (winter only). Outside breeding range; potential foraging habitat throughout site during winter or migratory seasons.
Falco mexicanus Prairie falcon	FBCC CDFG WL (nesting)	Present (foraging). Observed during April/May 2009 (RSE and CH2M HILL, 2009). Nest sites are reported from the mountains surrounding Rice Valley (CDFG, 2010); suitable foraging habitat throughout the project site. Within mapped range (BLM and CDFG 2002).
Lanius ludovicianus Loggerhead shrike	FBCC CSSC (nesting)	Present. Observed in project area during 2009 tortoise surveys. Likely nests in shrubs on proposed solar site and within generator tie-line corridor. Suitable habitat throughout the project site.
Polioptila melanura Black-tailed gnatcatcher	n/a	High. Suitable habitat in shrublands, especially around washes. Former species of concern. Common and populations apparently now stable.
Toxostoma crissale Crissal thrasher	FBCC CSSC	High (transmission line only). Occurs throughout region in dense, scrubby desert wash habitats; suitable habitat occurs periodically along proposed transmission line alignment, but habitat on proposed solar facility generally poorly suitable due to open structure; only low occurrence probability on-site. Outside mapped range (BLM and CDFG, 2002).
Toxostoma lecontei LeConte's thrasher	BLM S FBCC CDFG WL	High. Reported in 1920 approx. 2 miles northwest of the solar field site (CDFG, 2010). Suitable habitat present throughout the project area. Desert populations are apparently stable; CDFG special concern ranking applies only to San Joaquin Valley population (-Prescott, 2008). Within mapped range (BLM and CDFG, 2002).
MAMMALS		
Antrozous pallidus Pallid bat	BLM S CSSC	Moderate (foraging). Roosts in rock outcrops of shrublands; potential roosting in nearby mountains (offsite) and foraging through the Rice Valley. Within mapped range (BLM and CDFG, 2002).
Corynorhinus townsendii Townsend's bigeared bat	BLM S CSSC	Moderate (foraging). Roosts primarily in caves, tunnels, mines; feeds mainly on moths; may roost in nearby mountains and forage through the Rice Valley but activity is more likely concentrated along the Colorado River Valley (RAE and CH2M HILL, 2009). Within mapped range (BLM and CDFG, 2002).

TABLE 3-1
Special-Status Species Occurring or Potentially Occurring in the Project Area

Species	Status	Potential for Occurrence
Eumops perotis californicus Western mastiff bat	BLM S CSSC	Moderate (foraging). Roosts in deep rock crevices and forages over wide area; may roost in nearby mountains and forage through the Rice Valley. RSEP site out of range but habitat is mapped immediately south of proposed generator tie-line interconnection point (BLM and CDFG, 2002).
Felis concolor browni Yuma mountain lion	CSSC	High. Uncommon; occurs in Colorado Desert, Joshua Tree National Park to Colorado River. Primarily found in dense riparian habitats of Colorado River, and dense microphyll washes in mountainous areas, where water, shaded cover and prey are available. If present, project area likely used primarily for movement. Range includes southern half of the proposed generator tie-line corridor (BLM and CDFG, 2002).
Macrotus californicus California leafnosedbat	BLM S CSSC	Moderate (foraging only). Roosts in mines or caves; expected in surrounding mountains and likely forage occasionally over the proposed project area. Within mapped range (BLM and CDFG, 2002).
Nyctinomops femorosaccus Pocketed free-tailed bat	CSSC	Moderate (foraging). Occurs in deserts and arid lowlands; eastern Riverside and San Diego Counties, through southwest U.S., Baja California, mainland Mexico. Roosts mainly in crevices of high cliffs; may roost in nearby mountains and forage through the Rice Valley. Reported habitat immediately south of generator tie-line interconnection point (BLM and CDFG, 2002).
Nyctinomops Macrotis Big free-tailed bat	CSSC	Moderate (foraging). Occurs in the tropics north to North American deserts and coastal California; many scattered locations. Roosts in crevices of rock cliffs; may roost in nearby mountains and forage through the Rice Valley.
Odocoileus hemionus eremicus Burro deer	n/a	High. Uncommon. Large home ranges, including montane and bajada habitat throughout Colorado Desert; mainly in scattered mountain ranges and near dependable water sources. If present, project area likely used primarily for movement.
Ovis canadensis nelson Nelson's bighorn sheep	BLM S	High. The Turtle Mountains to the north and the Maria Mountains to the south are likely occupied; the West Riverside and Riverside Mountains to the east and southeast may one day be repopulated. May occasionally forage on-site; movement among mountain ranges is important to regional population viability.
Taxidea taxus American badger	CSSC	High. Uncommon; occurs in mountains, deserts, interior valleys where burrowing animals are available as prey and soil permits digging. Known from Vidal, approximately 17 miles northeast. Suitable habitat throughout the project site
Vulpes macrotis arsipus Desert kit fox	n/a	Present. Detected during April/May 2009 desert tortoise surveys (RSE and CH2M HILL, 2009).

TABLE 3-1
Special-Status Species Occurring or Potentially Occurring in the Project Area

Species	Status	Potential for Occurrence

Notes:

BLM S = BLM Sensitive
CDFG WL = California Department of Fish and Game Watch List
CSSC = California Species of Special Concern (wildlife)
FBCC = Federal Bird of Conservation Concern
FC = Federal Candidate
FD = Federally Delisted
FE = Federally listed Endangered
FT = Federally listed Threatened
n/a = None of above
SE = State listed Endangered
ST = State listed Threatened (wildlife)
SR = State listed Rare (plants)
SP = State Fully Protected Species

CNPS (California Native Plant Society) Designations:
List 1A = Plants presumed extinct in California
List 1B = Plants considered by CNPS to be rare, threatened, or endangered in California, and throughout their range
List 2 = Plants rare, threatened, or endangered in California, but more common elsewhere in their range
List 3 = Plants about which we need more information – a review list.
List 4 = Plants of limited distribution – a watch list

CNPS Threat Rank:
.1 = Seriously endangered in California (over 80% of occurrences threatened/high degree and immediacy of threat)
.2 = Fairly endangered in California (20-80% occurrences threatened)
.3 = Not very endangered in California (<20% of occurrences threatened or no current threats known)

CDFG Natural Diversity Database Designations *(Applied to special-status plants and sensitive plant communities; where correct*
category is uncertain, CDFG uses two categories or question marks):
S1 = Fewer than 6 occurrences or fewer than 1000 individuals or less than 2000 acres
S1.1 = Very threatened
S1.2 = Threatened
S1.3 = No current threats known
S2 = 6-20 occurrences or 1000-3000 individuals or 2000-10,000 acres (decimal suffixes same as above)
S3 = 21-100 occurrences or 3000-10,000 individuals or 10,000-50,000 acres (decimal suffixes same as above)
S4 = Apparently secure in California; this rank is clearly lower than S3 but factors exist to cause some concern, i.e., there is some threat or somewhat narrow habitat. No threat rank.
S5 = Demonstrably secure or ineradicable in California. No threat rank.
SH = All California occurrences historical (i.e., no records in > 20 years).

SECTION 4

Authority and Lines of Communication

The first part of this section describes the responsibilities of three groups of participants: regulatory agencies, third-party biologists (Designated Biologists, Biological Monitors, Qualified Botanist(s), Botanical Monitors, and Environmental Compliance Manager); and the project owner (their employees, contractors, and construction crews). The qualifications that the Designated Biologist must satisfy are also described in this section.

The second part of this section describes the lines of communication and chain-of-command, and identifies which persons have the authority to stop or temporarily suspend surface-disturbing activities during construction, operation, and maintenance.

4.1 Definitions of Participants

The CEC has designated a staff member to serve as the RSEP's CPM. The CPM oversees compliance with the CEC conditions of certification for the RSEP. The CEC CPM is also responsible for processing post-certification changes, documenting and tracking compliance filings, and ensuring that compliance files are maintained and accessible.

The Designated Biologist(s), Biological Monitors, Qualified Botanist(s), Botanical Monitors and Environmental Compliance Manager will represent the project owner and will have compliance reporting responsibilities to the agencies. These responsibilities and relationships are further described later in this section.

The project owner's construction personnel will be referred to as contractors and include the construction project manager, construction inspector, plant manager, contractor supervisor, resident engineer, and the crew foreman and crew.

Regulatory agencies involved include BLM, USFWS, USACE, CDFG, CEC, Regional Water Quality Control Board (RWQCB), and the Western Area Power Administration (Western). Table 4-1 lists the project personnel and agency contacts for the RSEP. Permits from each of these agencies include terms and conditions imposed to mitigate impacts to biological resources. Agency agreements and/or permits will be provided when they become available and will be provided as Appendix A.

TABLE 4-1
RSEP Key Project Personnel and Agency Contacts

Agency	Key Personnel
Applicant Rice Solar Energy, LLC 2425 Olympic Blvd, Ste 500 East Santa Monica, CA 90404	Project Manager: Jeff Benoit Office: 310-315-2212 Email: Jeffrey.benoit@solarreserve.com
Environmental Compliance Manager Grenier & Associates, Inc. 1420 E. Roseville Parkway, Suite 140-377 Roseville, CA 95661	Name: Andrea Grenier Mobile: 916-847-0918 Office: 916-780-1171 Email: andrea@agrenier.com
Designated Biologist (1) CH2M HILL 6 Hutton Centre Drive Santa Ana, CA 92707	Name: Jim Marble, Ph.D. Office:714-435-6208 ext 36208 Email: james.marble@ch2m.com
Designated Biologist (2) Sundance Biology, Inc. 179 Niblick Rd., PMB 272 Paso Robles, CA 93446	Name: Mercy L. Vaughn Office: 928-380-5507 Email: manydogs10@aol.com
Designated Biologist (3) Sundance Biology, Inc. 179 Niblick Rd., PMB 272 Paso Robles, CA 93446	Name: Stephen P. Boland Office: 918-380-8850 Email: spboland@aol.com
Designated Biologist (4) 22461 Lombardi Laguna Hills, CA 92653	Name: Kelly Herbinson Office: 714-394-1563 Email: kellyherbinson@gmail.com
Designated Biologist (5) 1712 Merrill Cv. Jonesboro, AR 72401	Name: Bryan M. Reiley Office: 760-515-0272 Email: bryan.reiley@gmail.com
Designated Biologist (6) 40585 Sierra Drive Three Rivers, CA 93271	Name: Thomas G. Jackson, Jr. Home: 559-561-4340 Mobile: 251-605-3322 Email: jacksontg@hotmail.com
Qualified Botanist (1) Sycamore Environmental Consultants, Inc. 6355 Riverside Blvd, Suite C Sacramento, CA 95831	Name: John Little Office: 916-427-2175 Mobile: 916-952-1022 Email: john.little@sycamoreenv.com
Qualified Botanist (2) Sycamore Environmental Consultants, Inc. 6355 Riverside Blvd, Suite C Sacramento, CA 95831	Name: Michael J. Bower Office: 916-427-0703 Email: michael.bower@sycamoreenv.com
AGENCY PERSONNEL	
CEC Compliance Project Manager California Energy Commission 1516 Ninth Street, MS15 Sacramento, CA 95814	Name: Craig Hoffman Office: 916-654-4781 Email: choffman@energy.state.ca.us
BLM's Authorized Officer BLM Palm Springs South Coast Field Office 1201 Bird Center Drive Palm Springs, CA 92262	Name: Holly Roberts Office: 760-833-7149 Email: Holly_Roberts@blm.gov

TABLE 4-1
RSEP Key Project Personnel and Agency Contacts

Agency	Key Personnel
USFWS Carlsbad Fish and Wildlife Office 6010 Hidden Valley Rd., Ste 101 Carlsbad, CA 92011	Name: Jody Fraser Office: 760-431-9440 ext. 354 Email: jody_fraser@fws.gov
CDFG CDFG Inland Deserts Region 3602 Inland Empire Blvd, Ste C220 Ontario, CA 91764	Name: Magdalena Rodriguez Office: 909-945-3294 Email: mcrodiriguez@dfg.ca.gov

4.2 Responsibilities of the Participants

Although responsibilities are divided, ultimately the project owner's construction team and the Designated Biologist collectively have the responsibility to reach a consensus when conflicts arise among construction, environmental, and landowner concerns. Weekly project status meetings will be held and attended by the Designated Biologist, the owner's Environmental Compliance Manager, and the contractors. From time-to-time, it is possible that one or more of the regulatory agencies may be consulted as part of conflict resolution.

4.3 Designated Biologist Selection (BIO-1)

The project owner has assigned Jim Marble[1] of CH2M HILL as the Primary Designated Biologist. Mr. Marble will not go into the field, but will coordinate efforts with the field Designated Biologists and Biological Monitors. Proposed field Designated Biologists include Mercy Vaughan, Stephen Boland, Kelly Herbinson, Bryan Reilly, and Thomas Jackson from Sundance Biology. Resumes for the Proposed Designated Biologists are provided as Appendix B. As required, the proposed field Designated Biologists have the following minimum qualifications for a Designated Biologist[2]:

- Bachelor's degree in biological sciences, botany, ecology, zoology, or a closely related field
-
- A minimum of one year of field experience with biological resources found in or near the project area

[1] Jim Marble will not handle Desert Tortoise.

[2] Note: USFWS <http://www.fws.gov/ventura/species_information/protocols_guidelines/docs/dt/DT%20Auth%20Bio%20qualifications%20statement%2010_20_08.pdf> designates biologists who are approved to handle tortoises as "Authorized Biologists." Such biologists have demonstrated to USFWS that they possess sufficient desert tortoise knowledge and experience to handle and move tortoises appropriately, and have received USFWS approval. Authorized Biologists are permitted to then approve specific monitors to handle tortoises, at their discretion. The CDFG must also approve such biologists, potentially including individual approvals for monitors approved by the Authorized Biologist. Designated Biologists are the equivalent of Authorized Biologists. Only Designated Biologists and certain Biological Monitors who have been approved by the Designated Biologist would be allowed to handle desert tortoises.

- Three years of experience in field biology or current certification from a nationally recognized biological society, such as The Wildlife Society or The Ecological Society of America
- Meet the current USFWS Authorized Biologist experience criteria (http://www.fws.gov/ventura/species_information/protocols_guidelines/docs/dt/DT%20Auth%20Bio%20qualifications%20statement%2010_20_08.pdf) (USFWS, 2011b), exhibit familiarity with guidelines and protocols for the desert tortoise, and be approved by the USFWS
- Have a California ESA Memorandum of Understanding pursuant to Section 2081(a) for desert tortoise (COC BIO-1) (CEC, 2010).

If a Designated Biologist needs to be replaced, the project owner shall submit the required information of the proposed replacement to the CPM at least 10 working days before 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 until another permanent Designated Biologist is proposed to the CPM for consideration (COC BIO-1) (CEC, 2010a).

4.4 Designated Biologist Duties (BIO-2)

The project owner will ensure that the Designated Biologist performs the following activities during any site mobilization, construction-related ground disturbance, grading, boring, and trenching activities. The Designated Biologist may be assisted by the approved Biological Monitor(s). However, the Designated Biologist is the contact for the project owner, CPM, USFWS, CDFG, Western, and BLM (COC BIO-2) (CEC, 2010a).

The Primary Designated Biologist will submit a written report to the Owner's Environmental Compliance Project Manager that will be included in the Monthly Compliance Report to the CPM. The Designated Biologist's report will include copies of all written reports and summaries that document biological resources compliance activities. A Designated Biologist shall be available for monitoring and reporting if actions may affect biological resources during operation. During project operation, the Designated Biologist shall submit record summaries in the Annual Compliance Report unless his/her duties cease, as approved by the CPM in consultation with USFWS, CDFG, Western, and BLM (COC BIO-2) (CEC, 2010a).

In accordance with COC BIO-2, the Designated Biologist has the following duties:

- Advise the project owner's construction and operations staff on the implementation of the biological resources COCs.
- Assist with the preparation of the BRMIMP, to be submitted by the project owner.
- Be available onsite to supervise, conduct, and coordinate mitigation, monitoring, and other biological resource compliance efforts, particularly in areas that require avoidance or contain sensitive biological resources, such as ephemeral drainages, special-status plant species, special-status wildlife species, or their habitat.

- Clearly mark sensitive biological resource areas and inspect these areas regularly for compliance with regulatory terms and conditions.
- Inspect active construction areas for trapped animals before construction begins each day. At the end of the day, examine structures that prevent entrapment or allow escape during periods of construction inactivity. Periodically inspect areas with high vehicle activity (for example, parking lots) for animals in harm's way.
- Notify the project owner and the CPM of any non-compliance with any of the biological resources COCs.
- Respond directly to inquiries of the CPM or any other agencies regarding biological resource issues.
- Maintain written records of the tasks specified above and those included in the BRMIMP. These records shall be summarized and submitted as part of the Monthly Compliance Report and the Annual Compliance Report to the CPM.
- Train the Biological Monitors as appropriate, and make sure they are familiar with the BRMIMP, WEAP training, and USFWS guidelines on desert tortoise surveys and handling procedures (USFWS, 2011b) (http://www.fws.gov/ventura/species_information/protocols_guidelines/docs/dt/DT%20Auth%20Bio%20qualifications%20statement%2010_20_08.pdf).
- Maintain regular, direct communication with representatives of USFWS, CDFG, Western, BLM, and the CPM, including notifying these agencies of dead or injured listed species and reporting special-status species observations to the CNDDB (COC BIO-2) (CEC, 2010a).

In addition, COC- BIO-9 outlines the following responsibilities of the Designated Biologist:

- Notify the CPM, BLM, USFWS, CDFG, and Western at least 14 calendar days before initiating ground-disturbing activities. Immediately notify the CPM, BLM, USFWS, CDFG, and Western in writing if the project owner is not in compliance with any COCs, including but not limited to any actual or anticipated failure to implement mitigation measures within the time periods specified in the COCs (COC BIO-9) (CEC, 2010).
- Remain onsite daily while grading and grubbing activities are occurring in order to avoid or minimize take of special-status or listed species, to check for compliance with all impact avoidance and minimization measures, and to monitor all exclusion zones to ensure that stakes, signs, and fencing are intact and that human activities are limited in these protective zones (COC BIO-9) (CEC, 2010).
- Maintain and check desert tortoise exclusion fences daily to ensure the integrity of the fence is preserved throughout construction. The Designated Biologist will be present onsite to monitor construction and decide fence placement during fence installation. During operation of the RSEP, fence inspections shall occur at least once per month or more frequently after storms or other events that could jeopardize the function and integrity of the fence. Damaged fence must be repaired within 48 hours. All dead or entrapped animals in the fence must be reported to the CPM, BLM, USFWS, and CDFG. Carcasses should be handled by the Designated Biologist in accordance with COC BIO-8, paragraph 14, and saved in a freezer onsite. CDFG should be contacted within 1

day for special-status species or within 30 days for guidance on storage or disposal (COC BIO-9) (CEC, 2010).

- Conduct compliance inspections at least once per month after clearing, grubbing, grading, and heliostat installation activities are completed and submit a monthly compliance report to the CPM. In accordance with COC BIO-6, the monthly compliance report shall include all observations provided by WEAP trainees (COC BIO-9) (CEC, 2010).
- Provide an annual Listed Species Status Report to the CPM, CDFG, USFWS, and BLM no later than January 31 of every year the RSEP facility remains in operation. This will include the following, at a minimum: 1) a general description of the status of the RSEP 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; 3) an evaluation of the effectiveness of each completed or partially completed mitigation measure in reducing and compensating for project impacts; 4) suggestions on how to improve the effectiveness of mitigation measures; and 5) a synopsis of any agency approved adjustments to this BRMIMP (COC BIO-9) (CEC, 2010).
- No later than 45 days after the commencement of project operation, provide a Final Listed Species Mitigation Report to the CPM that will include, at a minimum: 1) a copy of the table in the BRMIMP with notes showing when each of the mitigation measures was implemented (see Table 1-1) all available information about project-related incidental take of listed species; 2) information about project-related incidental take of listed species; 3) information about other project impacts on the listed species; 4) construction dates; 5) an evaluation of the effectiveness of each completed or partially completed mitigation measure in reducing and compensating for project impacts; 6) suggestions 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 relevant information, including the level of take of the listed species related with the RSEP (COC BIO-9) (CEC, 2010).
- In the event of an injury, kill, or translocation of any listed wildlife species in an active construction area (for example, with equipment, vehicles, or workers), notify the CPM, CDFG, BLM, and USFWS immediately by phone. If the event occurs outside of normal business hours, then notification must occur no later than noon on the business day following the event so that the agencies can decide what further actions, if any, are required to protect the listed wildlife species. Prepare written follow-up notification via electronic communication or facsimile to these agencies within two calendar days of the incident and include the subsequent information as relevant:
  - If a desert tortoise is injured as a result of project-related activities during construction, the Designated Biologist will immediately take it to a CDFG-approved wildlife rehabilitation and/or veterinarian clinic. Any veterinarian bills for the injured animal will be paid by the project owner. After phone notification as required above, the CPM, CDFG, BLM, and USFWS will determine the final disposition of the injured animal, if it recovers. Written notification will include the location, time, date, circumstances of the incident, and the name of the CDFG-

approved wildlife rehabilitation and/or veterinarian clinic where the animal was taken (COC BIO-9) (CEC, 2010).

- If a desert tortoise is found dead or is killed by project-related activities during construction or operation, the Designated Biologist must submit a written report with the same information as an injury report described above. These desert tortoises will 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 will pay to have these desert tortoises transported and necropsied. The report will contain the date and time of the finding or incident (COC BIO-9) (CEC, 2010).
- 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 in order to avoid or fix a violation of one or more COCs (including but not limited to failure to comply with monitoring, reporting, or habitat acquisition obligations) or to prevent the illegal take of a threatened, endangered, or candidate species. The project owner must stop work immediately upon receipt of a stop work order (COC BIO-9) (CEC, 2010).

4.5 Biological Monitor Selection (BIO-3)

The project owner's approved Designated Biologist(s) will submit the resume, at least three references, and contact information of the proposed Biological Monitors to the CPM. The resume shall demonstrate the appropriate education and experience to complete the assigned biological resource tasks (COC BIO-3) (CEC, 2010). The Biological Monitor is the equivalent of the USFWS designated Desert Tortoise Monitor (USFWS, 2011b).

The Designated Biologist(s) will train the Biological Monitors to ensure they are familiar with the COCs, BRMIMP, WEAP, and USFWS guidelines on desert tortoise surveys and handling procedures (USFWS, 2011b) (http://www.fws.gov/ventura/species_information/protocols_guidelines/docs/dt/DT%20Auth%20Bio%20qualifications%20statement%2010_20_08.pdf) (COC BIO-3) (CEC, 2010).

The project owner shall submit the specified information to the CPM for approval at least 30 days before the commencement of any project-related site mobilization and construction grading, boring, ground disturbance, and trenching activities. The Designated Biologist shall submit a written statement to the CPM confirming that each individual Biological Monitor has been trained. This statement must include the date when each individual Biological Monitor's training was completed. If additional Biological Monitors are needed during construction, the specified information (USFWS, 2011a) shall be submitted to the CPM, in consultation with USFWS, CDFG, Western, and BLM, for approval at least 10 days before their first day of monitoring activities (COC BIO-3) (CEC, 2010).

4.6 Biological Monitor Duties (BIO-4)

The Biological Monitors shall assist the Designated Biologist in conducting surveys and in monitoring site mobilization activities, construction-related ground disturbance, boring, trenching, or grading. The Designated Biologist shall remain the contact for the project owner, CPM, USFWS, CDFG, Western, and BLM (COC BIO-4) (CEC, 2010).

The Designated Biologist shall include copies of all written reports and summaries that document biological resources compliance activities, including those conducted by the Biological Monitors, in the Monthly Compliance Report to the CPM. A Biological Monitor, under the supervision of the Designated Biologist, shall be available for monitoring and reporting if actions may affect biological resources during operation (COC BIO-4) (CEC, 2010).

4.7 Agency Responsibilities

Regulatory agency personnel are responsible for enforcing state and federal laws protecting sensitive species and natural resources. Staff from these agencies generally have broad authority to monitor and evaluate projects implemented under permits authorized by them, and can take enforcement actions at any time violations occur. The following agencies have authority associated with biological and water resources at the RSEP:

- CEC through the CPM and BLM verifies compliance with conditions of certification and approves changes in implementation methodology.
- USFWS is responsible for protecting federally listed Endangered and Threatened species, and actions taken pursuant to an ESA Section 7 Incidental Take authorization as set forth in the project BO (Appendix C). The USFWS contact will be notified immediately if a listed wildlife species is involved in an injury or fatality.
- CDFG is responsible for protecting species under the CESA, construction activities authorized under a Streambed Alteration Agreement (SAA), or incidental take authorized under a Fish and Game Code Section 2080.1 agreement. The CDFG contact will be notified immediately if a state-listed species is involved in an injury or fatality.
- BLM Authorized Office – environmental compliance and enforcement on public lands. For the RSEP, this includes land related with the transmission line route.

The agencies and the CPM will receive copies of the relevant monitoring reports that detail compliance with the permits and authorizations issued for the RSEP. These agencies may also conduct unannounced site visits to ensure compliance with the permits and authorizations for the RSEP.

4.8 Authority and Lines of Communication

The regulatory agencies and the Designated Biologist identified above have different responsibilities regarding implementing mitigation measures to protect biological resources. This section of the BRMIMP describes how they will interact on the RSEP.

4.8.1 Regulatory Agencies

If compliance problems arise during any phase of the project, agency representatives would discuss the issue with the CPM, Designated Biologist, BLM's Authorized Officer, project owner, and its contractors. If violations persist, work may be stopped on the whole project, or portions of it, by the revocation of permits. However, before work is stopped, the aforementioned parties will undertake a good-faith effort to resolve any violations.

4.8.2 Designated Biologist and Biological Monitors

4.8.2.1 Roles of the Designated Biologist and Biological Monitors

The Designated Biologist and Biological Monitor(s), although contracted to Rice Solar Energy, LLC, are responsible for independently ensuring that the requirements described in the BRMIMP are carried out completely and in a timely manner.

4.8.2.2 Authority of the Designated Biologist and Biological Monitor (BIO-5)

The project owner's construction/operation manager shall act on the guidance of the Designated Biologist and Biological Monitors to ensure conformance with the biological resources COCs (COC BIO-5) (CEC, 2010).

The Designated Biologist shall have the authority to immediately halt any activity that is not in compliance with these conditions and/or order any reasonable measure to avoid take of an individual of a listed species. If required by the Designated Biologist and Biological Monitor(s) the project owner's construction/operation manager shall stop all site mobilization, ground disturbance, grading, construction, and operation activities in areas specified by the Designated Biologist (COC BIO-5) (CEC, 2010).

The project owner shall ensure that the Designated Biologist or Biological Monitor notifies the CPM immediately of any non-compliance or a halt of any site mobilization, ground disturbance, grading, construction, maintenance, and operation activities. This notification must occur no later than the morning following the incident or Monday morning if the incident occurs on a weekend. The project owner shall notify the CPM of the circumstances and actions being taken to resolve the problem (COC BIO-5) (CEC, 2010).

Forms that the Biological Monitor and contractors will use to report observations of wildlife within the project site are provided in Appendix D. Noncompliance Resolution Report forms will be used to document noncompliance with CEC conditions of certification or agency permit terms and conditions and are included in Appendix E.

4.8.3 Construction Personnel

The project owner, by signing the various project approval documents, has committed to fully implement the mitigation measures described in this BRMIMP. Construction contractors will also commit, by signing the contract documents when the job is awarded, to comply with the relevant mitigation measures and to cooperate with the Designated Biologist. The bid package will clearly identify the need to comply with environmental protection regulations, including requirements for the WEAP and cooperation with the Designated Biologist. Any new owners of the project will agree to the commitments made by the project owner under previous ownership, and agree to abide by all permit terms and conditions.

The Resident Engineer is obligated to cooperate with the Designated Biologist by assisting with formulating solutions to problems and potential problems related to the protection of biological resources, and by requiring all crews to follow the directions of the Designated Biologist. Table 4-2 summarizes the applicable LORS.

TABLE 4-2
Laws, Ordinances, Regulations, and Standards (LORS) Applicable to the RSEP

Federal LORS	Requirements/Applicability	Administering Agency
Endangered Species Act of 1973 Title 16, United States Code (USC), section 1531 et seq. (16 USC 1531 et seq.), and Title 50, Code of Federal Regulations (CFR), part 17.1 et seq. (50 CFR 17.1 et seq.)	Designates and protects federally threatened and endangered plants and animals and their critical habitat.	USFWS
Migratory Bird Treaty Act of 1918 (16 USC §§703-711)	Prohibits the non-permitted take of migratory birds.	USFWS
Section 404 of Clean Water Act of 1977 (33 USC §1344)	Requires a permit to fill or dredge jurisdictional wetlands or waters of the United States.	USACE
Section 401 of Clean Water Act of 1977 (33 USC §1344)	Requires a water quality impact analysis for the project when using 404 permits and for discharges to waterways.	RWQCB
Bald and Golden Eagle Protection Act of 1940 (16 USC 668)	Prohibits the non-permitted take of bald and golden eagles.	USFWS
California Desert Protection Act of 1994	An Act of Congress which established 69 wilderness areas, the Mojave National Preserve, expanded Joshua Tree and Death Valley National Monuments and redefined them as National Parks. Lands transferred to the National Park Service were formerly administered by the BLM and included substantial portions of grazing allotments, wild horse and burro Herd Management Areas, and Herd Areas.	BLM
California Desert Conservation Area Plan	The California Desert Conservation Area (CDCA) comprises one of two national conservation areas established by Congress at the time of the passage of the Federal Land and Policy Management Act (FLPMA). The FLPMA outlines how the BLM will manage public lands. Congress specifically provided guidance for the management of the CDCA and directed the development of the 1980 CDCA Plan.	BLM

TABLE 4-2
Laws, Ordinances, Regulations, and Standards (LORS) Applicable to the RSEP

Northern and Eastern Colorado (NECO) Desert Coordinated Management Plan	BLM land use plan amendment that resolves issues of resource demands, use conflicts, and environmental quality in the 5.5-million acres planning area located primarily within the Sonoran Desert in southeastern California; provides reserve management for the desert tortoise, integrated ecosystem management for special status species and natural communities for all federal lands, and regional standards and guidelines for public lands (BLM, 2002).	BLM
State LORS		
California Endangered Species Act of 1984 (Fish and Game Code, §2050 - §2098)	Protects California's endangered and threatened species.	CDFG
California Code of Regulations (CCR) (California Code of Regulations Title 14, Division 1, Subdivision 3, Chapter 3, sections 670.2 and 670.5)	Lists plants and animals of California that are designated as rare, threatened, or endangered.	CDFG
Fully Protected Species (Fish and Game Code, § 3511: Fully Protected birds, § 4700: Fully Protected mammals, § 5050: Fully Protected reptiles and amphibians, and § 5515: Fully Protected fishes)	Prohibits the take of animals that are classified as Fully Protected in California.	CDFG
Nest or Eggs – Take, Possess, or Destroy (Fish and Game Code, § 3503)	Protects California's birds by making it unlawful to take, possess, or needlessly destroy the nest or eggs of any bird.	CDFG
Birds of Prey – Take, Possess, or Destroy (Fish and Game Code, § 3503.5)	Protects California's birds of prey in the orders Falconiformes and Strigiformes by making it unlawful to take, possess, or destroy the nest or eggs of any such bird of prey.	CDFG
Migratory Nongame Birds – Take or Possession (Fish and Game Code, § 3513)	Protects California's migratory nongame birds by making it unlawful to take or possess any migratory nongame bird as designated in the Migratory Bird Treaty Act or any part of such migratory nongame bird.	CDFG
Significant Natural Areas (Fish and Game Code, § 1930 et seq.)	Designates certain areas such as refuges, natural sloughs, riparian areas, and vernal pools as significant wildlife habitats.	CDFG

TABLE 4-2
Laws, Ordinances, Regulations, and Standards (LORS) Applicable to the RSEP

California Environmental Quality Act (CEQA) of 1970 (Public Resources Code §§ 21000 et seq.)	Sets goals to assist California public agencies in identifying potential significant environmental effects of their actions and either avoiding or mitigating those effects when feasible.	CEC
Streambed Alteration Agreement (Fish and Game Code, § 1600)	Reviews projects for impacts to waterways, including impacts to vegetation and wildlife from sediment, diversions, and other disturbances.	CDFG
California Native Plant Protection Act of 1977 (Fish and Game Code, § 1900 et seq.)	Designates State rare and endangered plants and provides specific protection measures for identified populations.	CDFG
California Desert Native Plants Act of 1981 (Food and Agricultural Code section 80001 et seq. and California Fish and Game Code sections 1925-1926)	Protects non-listed State desert native plants from unlawful harvesting on both public and private lands in Imperial, Inyo, Kern, Los Angeles, Mono, Riverside, San Bernardino, and San Diego counties. Unless issued a valid permit, wood receipt, tag, and seal by the commissioner or sheriff, harvesting, transporting, possessing, or selling of desert plants is prohibited.	CDFG
Warren Alquist Act of 2005 (Public Resources Code §§ 25000 et seq.)	A CEQA-equivalent process implemented by the CEC.	CEC
Designated Ecological Reserves (Fish and Game Code, §1580)	The CDFG commission designates land and water areas as significant wildlife habitats to be preserved in natural condition for the general public to observe and study.	CDFG
Public Resources Code §§ 25500 and §§ 25527	Siting of facilities in certain areas of critical concern for biological resources, such as ecological preserves, wildlife refuges, estuaries, and unique or irreplaceable wildlife habitats of scientific or educational value is prohibited or where no alternative, strict criteria is applied.	CDFG
Title 20 CCR §§ 1702 (q) and (v)	Protects “areas of critical concern” and “species of special concern” identified by local, state, or federal resource agencies in the project area, including the CNPS.	CDFG
Title 14 CCR § 15000 et seq.	Describes the type and extent of information required to evaluate the effects of a proposed project on biological resources of a project site.	CEC

TABLE 4-2
Laws, Ordinances, Regulations, and Standards (LORS) Applicable to the RSEP

Local LORS	
Riverside County General Plan: Land Use and Multipurpose Open Space Elements of the County General Plan (County of Riverside, 2003)	Includes policies to conserve the function and character of open space that benefits biological resources. In addition, it contains goals and policies to protect sensitive habitats for wildlife and plants. The RSEP area and most of eastern Riverside County is designated as Open Space Conservation in the General Plan. The RSEP is addressed in the Eastern Riverside County Desert Area (Non-Area Plan), but is not within one of the 19 area plans contained within the General Plan.

SECTION 5

Worker Environmental Awareness Program (BIO-6)

The project owner will implement the RSEP-specific WEAP and its supporting documents provided in Appendix F. The WEAP will be used during site mobilization, construction, operation, and closure phases. The WEAP will be given to all onsite personnel including employees, contractors, contractor's employees, supervisors, inspectors, surveyors, construction engineers, subcontractors, and delivery personnel in accordance with COC BIO-6 (CEC, 2010). This portion of the BRMIMP and the appendix will be updated when the WEAP is approved by the CPM in consultation with the resource agencies.

5.1 Program Overview

Consistent with COC BIO-6, the WEAP meets the following requirements:

- Developed by or in consultation with the Designated Biologist, the WEAP presentation will be onsite. All supporting written material and electronic media, including photographs of protected species, must available to all participants.
- Discusses the types and locations of sensitive biological resources within the RSEP and adjacent areas, and explain the reasons for protecting these sensitive biological resources. Provide information and explain that no snakes, bats, reptiles, or other wildlife shall be harassed or harmed.
- Places special emphasis on desert tortoises, desert kit fox, American badger, golden eagle, burrowing owl, and nesting birds, including information on physical characteristics, ecology, distribution, behavior, sensitivity to human activities, legal protection, penalties for violations, protection measures, and reporting requirements.
- Includes a discussion of fire prevention measures to be enforced during project activities. Ask workers to dispose of cigarettes and cigars appropriately. Cigarettes and cigars should not be left on the ground or buried.
- Presents the meaning of various temporary and permanent habitat protection measures.
- Identifies whom to contact if there are additional questions and/or comments about the material discussed in the WEAP.
- Includes printed training materials, such as photographs and brief descriptions of desert tortoises, desert kit fox, American badger, golden eagle, burrowing owl, nesting birds, and roosting bats including information on physical characteristics, ecology, distribution, behavior, sensitivity to human activities, legal protection, penalties for violations, protection measures, and reporting requirements.

- Displays posters and brief descriptions in areas where employees may congregate, such as break rooms, conference rooms, and offices, of desert tortoises, desert kit fox, American badger, golden eagle, burrowing owl, nesting birds, and roosting bats including information on physical characteristics, ecology, distribution, behavior, sensitivity to human activities, legal protection, penalties for violations, protection measures, and reporting requirements.
- Asks all WEAP trainees to report observations of listed species and their sign to the Designate Biologist for the monthly compliance report.
- Includes a WEAP training acknowledgment form, which must be signed by each WEAP trainee indicating that they received training and understand all protection measures (COC BIO-6) (CEC, 2010).

5.2 Documentation of Training

During the pre-construction and construction phases of the project, the WEAP will be given within one week of arrival to any new construction, operations, or maintenance personnel, foremen, contractors, subcontractors, and other personnel potentially working within the RSEP. The training will also be repeated annually for permanent employees. The project owner will have employees sign a WEAP training acknowledgment form stating that they received the WEAP training and understand all protection measures. These forms will be maintained by the project owner and shall be made available to the CPM upon request. Workers will receive a hardhat sticker or certificate showing that they have completed the WEAP training. They will be required to visibly display this hardhat sticker or certificate while working on the RSEP (COC BIO-6) (CEC, 2010). During the construction phase of the project, , the project owner shall provide the number of persons who have completed the WEAP training in the prior month and a running total of all persons who have completed the training to date as part of the Monthly Compliance Report submitted to the CEC CPM (COC BIO-6) (CEC, 2010a).

Signed WEAP training acknowledgement forms will be kept on file by the project owner for at least six months after the start of commercial operation.

During project operation, the WEAP training will be repeated annually for all permanent employees. Signed WEAP training acknowledgement forms for operational personnel shall be kept on file for six months following the termination of an individual's employment (CEC, 2010).

SECTION 6

Pre-Construction Monitoring and Reporting

6.1 Weed Management Plan (BIO-11)

COC BIO-11 requires RSEP to develop and implement a Weed Management Plan that describes weed eradication and control methods, a reporting plan for weed management during and after construction, and best management practices (BMPs) to prevent the spread and propagation of noxious weeds (CEC, 2010). RSEP's Weed Management Plan is provided as Appendix G. This portion of the BRMIMP and the appendix will be updated when the Weed Management Plan is approved by the agencies.

6.1.1 Introduction

Noxious weeds are typically characterized by non-native plants that aggressively colonize disturbed areas, such as construction sites, and can grow to dominate native plant communities if left uncontrolled. To control noxious weeds at the project site, the RSEP Weed Management Plan has the following objectives:

- **Prevention:** Avoid weed infestation before it occurs through management actions such as vehicle cleaning prior to site entry and use of weed-free products.
- **Eradication:** Eliminate all individuals of a particular species within a specified area.
- **Suppression:** Reduce current infestation density.
- **Containment:** Prevent further infestations.

Weed management will occur throughout the project area during construction and operation of the facility.

6.1.2 Purpose

The Weed Management Plan will be prepared and implemented by the project owner. In addition, the CEC CPM must approve this plan in consultation with Western, BLM, CDFG, and USFWS.

At a minimum, the Weed Management Plan will include the following (CEC, 2010):

- An invasive weed assessment of the project area before construction-related activities
- An invasive weed assessment of potential species that could be introduced into the project area
- Methodology to be used to survey the presence of introduced weeds during project construction and operation
- Monitoring and weed control methods to be used during project operation

- Specific and detailed guidelines for herbicide use to prevent overspray onto adjacent areas where wildlife and native plants can be adversely affected
- Reporting requirements, including weed control measures for target weeds with a demonstrated record of success. These control measures should be based on the best available information from sources such as: The Nature Conservancy's The Global Invasive Species Team, Cooperative Extension, and the California Invasive Plant Council.

6.1.3 Pre-Construction Surveys

The following noxious weeds were identified during field surveys: Mediterranean grass (*Schismus arabicus* and *S. barbatus*), Sahara mustard (*Brassica tournefortii*), and filaree (*Erodium cicutarium*). These species were the only weed species observed within the project area. The weed species of highest concern in the general area is Sahara mustard. The RSEP Weed Management Plan will provide detailed information about potentially occurring invasive species and species that were observed during site surveys.

6.1.4 Monitoring

Monitoring during construction and operation will ensure timely detection and prompt eradication of weed infestations, which are essential to a long-term strategy for weed management.

Nonnative and invasive weed infestations will be flagged by the Designated Biologist or Biological Monitor and controlled, using either mechanical chemical methods as approved by the CPM and, as appropriate, Western or BLM. All herbicide applicators will possess a qualified herbicide applicator license from the state; and only state and BLM-approved herbicides will be used within the project area. Herbicide applications must follow U.S. Environmental Protection Agency label instructions and be performed in accordance with federal, state, and local laws and regulations. Weed infestation surveying and monitoring will occur at least two times per year (timed to occur early and late in the growing season) and all identified weed populations will be treated at least once per year. When there are no new seedlings or resprouts at treated sites for three consecutive, normal rainfall years, the weed population can be considered eradicated and weed control efforts may cease for that impact site (CEC, 2010).

A Geographic Information System (GIS) will be used to map and store the locations of noxious weed occurrences, with data on species, detection date, growth stage, infestation extent, treatments implemented, results of treatment, and current status, will be maintained during the construction and operation phases. The priority of infestation areas will be established based on species, vulnerability of the site to invasion, growth stage, and effectiveness of treatment. Also included will be areas mapped as vulnerable to weed invasions. Vulnerability will be assessed on the following: (1) availability of weed propagule sources, such as along roadsides; (2) areas disturbed, such as through land clearing and earthwork; or (3) areas near with known prior or treated weed infestations or existing infestations that are out of the managed area.

6.1.5 Reporting

At least 30 days before the start of any project-related ground disturbance activities, the project owner is required to submit the final version of the Weed Management Plan to the CPM and BLM. Any modifications to the approved Weed Management Plan can only be made after consultation with the CPM in consultation with Western, BLM, USFWS, and CDFG. Within 30 days after project construction has been completed, 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 will be provided to the CPM for the review and approval from the project owner. In addition, a summary report on the project site weed management will be submitted in the Annual Compliance Report while the facility is being operated (CEC, 2010).

6.2 Pre-Construction Nest Surveys (BIO-13)

6.2.1 Pre-Construction Surveys

Pre-construction nest surveys for bird species, excluding burrowing owls, will be conducted if construction-related activities are expected to occur within the breeding season (February 1 through August 31). For information on the burrowing owl, see Section 6.6. These surveys may be conducted concurrently with desert tortoise clearance surveys. The Designated Biologist or Biological Monitor conducting the surveys will be experienced bird surveyors familiar with standard nest-locating techniques and will perform surveys in accordance with the following guidelines (CEC, 2010):

- Surveys will cover all potential nesting habitat in the project site or within 500 feet of the boundaries of the site and linear facilities
- At least two pre-construction surveys will be conducted, separated by a minimum 10-day interval. One of the surveys needs to be conducted within the 10 days preceding the initiation of construction activity. Additional follow-up surveys may be required if periods of construction inactivity exceed 1 week, an interval during which birds may establish a nesting territory and initiate egg laying and incubation.

6.2.2 Reporting

Before the start of any project-related ground disturbance activities (occurring from February 1 through August 31), the project owner will 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 provide the qualifications of the surveyor(s); and list the species observed. If active nests are detected during the survey, the report will include a map or aerial photo identifying the location of the nest and will depict the boundaries of the no-disturbance buffer zone around the nest (CEC, 2010).

6.3 Desert Tortoise Clearance Surveys and Exclusion Fencing (BIO-14)

6.3.1 Clearance Surveys

The Designated Biologist and Biological Monitors will perform desert tortoise clearance surveys for all temporary and permanent desert tortoise exclusion fenced areas in accordance with the USFWS' 2009 *Desert Tortoise Field Manual* (Chapter 6 – Clearance Survey Protocol for the Desert Tortoise – Mojave Population). These clearance surveys will consist of at least two surveys covering 100 percent of the fenced areas and walking transects no more than 15 feet apart. The clearance survey transect routes will be in different directions each time to ensure complete coverage and different observation angles. Clearance surveys must be repeated until two consecutive surveys are completed without discovering a desert tortoise. In addition, desert tortoise clearance surveys must be conducted between April through May or September through October when the desert tortoise is most active (COC BIO-14) (CEC, 2010).

All desert tortoise burrows or potential desert tortoise burrows, including burrows constructed by other species that could be inhabited by desert tortoises, must be searched by the Designated Biologist with aid from Biological Monitors. Each burrow will be excavated by hand to determine the presence or absence of desert tortoises. Desert tortoise handling, removal, burrow excavation, and nest excavations will be performed by the Designated Biologist in accordance with the USFWS' 2009 *Desert Tortoise Field Manual* and the Desert Tortoise Translocation Plan outlined in Section 7.5.4 and included as Appendix H. These burrows will be collapsed and blocked to stop desert tortoises from using them again (COC BIO-14) (CEC, 2010).

The Designated Biologist will record the following information for each desert tortoise handled:

- Locations (maps and narrative) and dates of observation
- Location moved from (using global positions system [GPS] technology)
- Location moved to (using GPS technology)
- Ambient temperature when handled and released
- General health and condition, including if the desert tortoise voided it's bladder, injuries, and progress of healing
- Gender
- Carapace length and diagnostic markings (i.e., identification numbers or marked lateral scutes)
- Digital photographs of the plastron, carapace, and fourth costal scute (COC BIO-14) (CEC, 2010).

Desert tortoise moved from within the RSEP will be marked for future identification as described in *Guidelines for Handling Desert Tortoise during Construction Projects* (Desert

Tortoise Council (DTC), 1994) or the most current guidance on the USFWS website. Scutes will not be notched for identification (COC BIO-14) (CEC, 2010).

The project owner will not commence clearing, grubbing, trenching, or leveling activities until after the completion of the desert tortoise clearance surveys. A Biological Monitor must supervise all such activities in order to locate any desert tortoises missed during the desert tortoise clearance surveys. Any desert tortoises observed will be translocated by the Designated Biologist in accordance with the Desert Tortoise Translocation Plan in Appendix H and outlined in Section 7.5.4 (COC BIO-14) (CEC, 2010).

Other special-status reptiles and mammals found during desert tortoise clearance surveys or monitoring will be relocated by the Designated Biologist out of harm's way. Captured wildlife must be kept in a cool (less than 85 degrees Fahrenheit [°F]), shaded, and sheltered area until relocation (COC BIO-14) (CEC, 2010a).

6.3.2 Exclusion Fencing

Permanent desert tortoise exclusion fencing will be installed at the RSEP along the permanent access road from the security gate southwards, permanent perimeter security fence, and at the interconnector substation site before construction activities. Temporary desert tortoise exclusion fencing will be installed along stormwater diversion channels, construction laydown areas, and proposed generator tie-line alignment work sites. In addition, temporary desert tortoise exclusion fencing will be installed along access roads in desert tortoise habitat unless an exception is granted by the USFWS, CDFG, CPM, Western, and BLM. Desert tortoise exclusion fencing is not required at temporary construction sites as long as a qualified desert tortoise monitor is onsite throughout all construction activities, such as at transmission line construction sites (COC BIO-14) (CEC, 2010).

Desert tortoise exclusion fencing must be installed before grubbing and clearing activities. All permanent desert tortoise exclusion fencing will be constructed and installed following the guidelines in the USFWS' 2009 *Desert Tortoise Field Manual* (Chapter 8 – Desert Tortoise Exclusion Fence). The Designated Biologist and Biological Monitors will supervise all desert tortoise exclusion fence installations (COC BIO-14) (CEC, 2010).

Security gates will have minimal ground clearance. Electronically activated gates that only open for a short period of time to allow a vehicle to pass are recommended. Alternatively, cattle grating designed to safely exclude desert tortoises may be installed if approved by the CPM in consultation with the USFWS and CDFG (COC BIO-14) (CEC, 2010).

6.3.3 Monitoring

All temporary and permanent desert tortoise exclusion fencing must be inspected regularly. Temporary fencing will be inspected weekly. Moreover, temporary fencing will be inspected during and within 24 hours of major rain events where drainages intersect the fencing. Any damaged temporary fencing must be repaired immediately and the surrounding area must be inspected by the Designated Biologist. Permanent fencing will be inspected monthly. In addition, permanent fencing will be inspected during and within 24 hours of major rain events. Any damaged permanent fencing must be temporarily repaired at once and permanently repaired within 48 hours. If desert tortoises were moved out of harm's way during fence installation, then the fencing in that area must be inspected

twice daily for at least 7 days to verify that the desert tortoise has not been trapped within the fence (COC BIO-14) (CEC, 2010a).

6.3.4 Reporting

The Designated Biologist will report the implementation of the measures required by this BRMIMP in the Monthly Compliance Reports by the Designated Biologist. Within 30 days after completion of desert tortoise clearance surveys, the Designated Biologist will submit a report to the CPM, USFWS, Western, and CDFG describing how each of the mitigation measures described above has been satisfied. The Monthly Compliance Report will include the desert tortoise survey results, capture and release locations of any translocated desert tortoises, and any additional information needed to show compliance with the measures described above (COC BIO-14) (CEC, 2010).

6.4 Raven (BIO-17)

COC BIO-17 requires the implementation of the RSEP Raven Management Plan, provided in Appendix I, that is consistent with the most current USFWS-approved raven management guidelines, and meets the approval of USFWS, CDFG, BLM, and the Energy Commission staff (CEC, 2010). This portion of the BRMIMP and the appendix will be updated when the Raven Management Plan is approved by the resource agencies.

6.4.1 Introduction

The goal of the Raven Management Plan is to implement non-lethal measures to deter ravens during the construction and operation of the RSEP in order to reduce the possibility of raven depredation on nearby desert tortoise populations. Ravens thrive on human activities and depend on human encroachment to expand into areas where they were previously absent or in low abundance (Boarman and Heinrich, 1999). Ravens are subsidized by the food, water, roosting sites, and nesting sites that are introduced or augmented by human encroachment. Consequently, the raven population in the Mojave Desert is increasing because of the amount of human development in the area (Webb et al. 2004, and Kristan and Boarman, 2007). Garbage from trashcans, dumpsters, and landfills provides the greatest anthropogenic source of food for ravens (Kristan et al., 2004). Ravens also feed on road-killed animals. In addition, a water source is crucial for ravens as they often fly several miles to acquire water and typically drink water at least once daily (Sherman, 1993). Water sources include landscape irrigation, agricultural irrigation, ponds, swimming pools, fountains, and puddles of water from leaking faucets (Sundance Biology, Inc. [Sundance], 2010b). Ravens typically nest on cliffs and in trees, but also use alternative nesting areas provided by human activities such as buildings, utility poles, communication towers, billboards, and shade structures (Sundance, 2010b). These manmade structures are also used as communal night roosts, where ravens often share information about local and distant food sources (Marzluff et al., 1996). Consequently, more ravens may venture into the desert and prey on desert tortoises (Kristan and Boarman, 2003).

6.4.2 Surveys

6.4.2.1 Abundance and Behavior

These surveys will characterize raven presence, abundance, distribution, and behavior in those areas over time. Baseline surveys will be conducted before construction activities begin. The purpose of the surveys will be to identify the local sources of anthropogenic subsidies and raven activity relative to the RSEP (Sundance, 2010b).

Initial nest surveys will be conducted in the fall or winter before the start of construction to locate and classify old nests. Unoccupied raven nests that are found throughout the site will be removed in cooperation with BLM, CDFG, USFWS, and Western. Additional nest surveys will be conducted in the spring. During the spring nest surveys, previous nest locations will be examined for sign of new nesting activity. In addition, the areas below occupied and potential nests will be analyzed for sign of juvenile desert tortoise depredation (Sundance, 2010b).

6.4.2.2 Incidental Observations

The Designated Biologist and Biological Monitors will have a year-round presence during RSEP construction, conducting clearance surveys, monitoring construction activity, monitoring environmental compliance, translocating tortoises, and monitoring translocated tortoises. While conducting these activities, the Designated Biologist will instruct the Biological Monitors to record raven observations. Relevant incidental observations will be included in the yearly monitoring reports (Sundance, 2010b).

6.4.3 Reporting

The Designated Biologist will submit quarterly monitoring reports to the CPM during the first year of reporting. Subsequently, the Designated Biologist will submit an annual monitoring report to the CPM no later than January 31st of each year for the life of the RSEP. Both the quarterly and annual monitoring reports must include the following:

- Summary of results of the raven management activities
- Discussion of whether the raven management goals were met
- Suggestions to improve raven management activities (COC BIO-11) (CEC, 2010)

6.5 Golden Eagle (BIO-18)

Condition of Certification BIO-18 imposes on the project owner, RSEP, the duty to perform an annual inventory during construction, make a determination of unoccupied territory only after completing two aerial surveys in a single breeding season, engage in monitoring, and implement an adaptive management plan if active nests are detected within the agreed search area (not less than 1 mile distance form project features). If no occupied nests are detected during the inventory and a plan is not warranted, a letter from USFWS documenting this determination will be submitted to the CPM and Western at least 10 days before the start of any pre-construction site mobilization (CEC, 2010).

Evidence of project-related disturbances to nesting golden eagles will trigger adaptive management measures. The Monitoring and Management Plan will contain a description of adaptive management actions, which will include, but not be limited to, cessation of construction activities that are deemed by the Designated Biologist to be the source of golden eagle disturbance.

6.6 Burrowing Owl (BIO-19)

Burrowing owl preconstruction surveys (BIO-19) will be conducted per CDFG guidelines (California Burrowing Owl Consortium [CBOC], 1993) no more than 30 days before the start of ground disturbing activities for areas within 500 feet of designated construction areas. If pre-construction surveys detect burrowing owls or active burrows outside the project disturbance area but within 500 feet of proposed construction activities, the Designated Biologist will provide a Burrowing Owl Monitoring and Mitigation Plan at least 10 days before the start of any project-related site disturbance activities. This portion of the BRMIMP will be updated when the Burrowing Owl Monitoring and Mitigation Plan is approved by the resource agencies. The final Burrowing Owl Relocation and Mitigation Plan will be based on the applicant's draft plan revised to incorporate pending review and recommendations by the CPM in consultation with in consultation with Western, USFWS, BLM and CDFG.

6.7 American Badger and Desert Kit Fox (BIO-20)

6.7.1 Introduction

The American badger (*Taxidea taxus*) was once fairly widespread throughout the open grassland habitats of California, but are now an uncommon, permanent resident found throughout most of the state, with the exception of the north coast area. They are most abundant in the drier open stages of most shrub, forest, and herbaceous habitats with friable soils. Badgers are generally associated with treeless regions, prairies, parklands, and cold desert areas. Rice Valley includes appropriate habitat for the badger and the CNDDB includes a badger record from the SR 62/SR 95 intersection, approximately 14.5 miles northeast of the RSEP area (CNDDB, 2009).

The desert kit fox (*Vulpes macrotis*) can be found in similar habitats as the American badger. Kit foxes are primarily nocturnal and inhabit open, level areas with patchy vegetation cover. This species also requires friable soils for construction of dens. Kit foxes have been observed within the proposed project area. In addition, suitable habitat is expected to occur along the length of Western's existing 161-kV Parker-Blythe #2 transmission line (CEC, 2010)

Since American badgers and desert kit foxes are expected to occur throughout the proposed project area, construction activities could potentially crush or entomb these burrowing species. To avoid potential impacts to these species, COC BIO-20 requires preconstruction surveys and avoidance measures to protect badgers and kit foxes (CEC, 2010). Preconstruction surveys for American badgers and desert kit foxes are required before any ground disturbance activities. The surveys can be conducted simultaneously with the desert tortoise pre-construction surveys (COC BIO-14).

6.7.2 Pre-Construction Surveys

Biological Monitors shall perform preconstruction surveys for badger and kit fox dens within the project area, including areas within 250 feet of all project facilities, utility corridors, and access roads. Each detected den will either be classified as inactive, potentially active, or definitely active.

Inactive dens that would be directly impacted by construction-related activities will be excavated by hand and backfilled to prevent reuse by badgers or kit fox. Potentially active dens that would be directly impacted by construction-related activities will be monitored by the Biological Monitor for three consecutive nights using a tracking medium (such as diatomaceous earth or fire clay) and/or infrared camera stations at the entrance. If no tracks are observed in the tracking medium or no photos of the target species are captured after three nights, the den shall be excavated and backfilled by hand (CEC, 2010).

If occupied badger or kit fox dens are discovered within the proposed project area, the Biological Monitor will flag the area and monitor the dens (see Section 7.5.8 for additional information).

6.7.3 Monitoring

Occupied badger and kit fox dens will be monitored daily to determine if the den is occupied by a female with young (such as a maternity den). All ground-disturbing activities within 100 feet of the den must be avoided as long as the den remains occupied. If possible, all maternity dens shall be avoided during the pup-rearing season (15 February through 1 July) and a minimum 200-foot disturbance-free buffer will be established. Buffers may be modified if a consensus is made with CDFG and the CPM (CEC, 2010).

6.7.4 Reporting

Once badger and kit fox surveys are completed, the project owner will submit a report to the CPM and CDFG within 30 days of completion. The report must include survey methodology, results, further mitigation measures (if any) to be implemented, and shall specify reporting and verification requirements for those measures, such as CDFG approval for forced dispersal plans. Results of any follow-up measures shall be reported to the CPM on a monthly and annual basis (BIO-20) (CEC, 2010).

In addition, any observed sightings of the American badger on or in proximity to the proposed project area, or during project-related surveys, will be reported to theCNDDB per CDFG requirements, since it is a special-status species.

6.8 Couch's Spadefoot Toad (BIO-23)

6.8.1 Introduction

Couch's spadefoot toad (*Scaphiopus couchi*) is a BLM Sensitive Species and California Species of Concern. Their range includes central Texas and southwestern Oklahoma through Baja California (Stebbins, 2003). It is found in southeastern California along the Arizona border in Imperial, Riverside, and San Bernardino Counties and in the Chemehuevi Wash, east of the Rice Valley, south to Ogilby in Imperial County (Simon, 2000).

Throughout its distribution, the toad is associated with desert washes, desert riparian, palm oasis, desert succulent shrub, and desert scrub habitats and requires friable sand for burrowing. It also takes shelter from the heat under logs and debris. Like many amphibians, the spadefoot toad needs temporary pools that hold water for at least 10 to 12 days for successful metamorphism of tadpoles (Simon, 2000). They are known to use runoff basins at the base of sand dunes for breeding and are often found breeding in artificial impoundments such as stock tanks or roadside ditches.

Couch's spadefoot toad is primarily nocturnal and active in the spring and early summer after rain events (Simon, 2000). Termites are typically a large part of their diet and they are thought to be able to survive an entire year off of one large feeding episode (Dimmit and Ruibal, 1980). They spend most of the year inactive and underground and typically complete local seasonal migrations from winter refuge to breeding ponds. Breeding occurs quickly after rains, which most likely take place between April and August.

This species has a relatively small home range and it is unlikely that there are any sufficiently inundated pools or ditches in the general RSEP vicinity to support breeding. The NECO distribution map for Couch's spadefoot toad includes the eastern half of the proposed solar site and the entire proposed generator tie-line corridor. The NECO distribution map for this species appears to be based off a buffer from the Colorado River.

The occurrence for Couch's spadefoot toad on the solar generator site is low; however, suitable habitat may be found on the Parker-Blythe #2 transmission line alignment. To avoid potential impacts to this species, COC BIO-23 requires seasonal breeding habitat surveys and, as applicable, avoidance of breeding pools during construction of any portion of the project (CEC, 2010).

6.8.2 Pre-Construction Surveys

Focused surveys will be implemented to delineate any potential Couch's spadefoot toad breeding habitat along the lengths of the generator tie-line alignment and the existing 161-kV Parker-Blythe #2 transmission line alignment and delineate these areas for avoidance in consultation with Western, CDFG, and BLM. Surveys will be conducted before the initiation of ground disturbance for transmission line construction work and shall be conducted by a qualified biologist, who is knowledgeable with Couch's spadefoot biology and habitat (CEC, 2010).

6.8.3 Reporting

The project biologist will provide a written report detailing the survey results and compliance with avoidance measures to the CPM for review in consultation with Western, CDFG, and BLM, no less that 30 days before initiating ground disturbing activities along either transmission line alignment (CEC, 2010).

In addition, any observed sightings of the Couch's spadefoot toad on or in proximity to the proposed project area, or during project-related surveys, will be reported to the CNDDB per CDFG requirements, since it is a special-status species.

SECTION 7

Avoidance and Minimization Measures

7.1 Impact Avoidance Mitigation Measures (BIO-8)

The requirements set forth in COC BIO-8 (CEC, 2010a) of the Decision are as follows:

> The project owner shall undertake the following measures to manage the construction site and related facilities in a manner to avoid or minimize impacts to biological resources. All measures shall be subject to review and approval by the CPM.
>
> 1. Limit Disturbance Areas and Perimeter Fencing. The boundaries of all areas to be disturbed (including staging areas, access roads, and sites for temporary placement of spoils) shall be delineated with stakes and flagging prior to construction activities in consultation with the Designated Biologist. Spoils and topsoil shall be stockpiled in areas already disturbed or to be disturbed by construction, so that stockpile sites do not add to total disturbance footprint. All disturbances, project vehicles, and equipment shall be confined to the flagged areas. Parking areas, staging and disposal site locations shall similarly be located in areas without native vegetation or special-status species habitat.
>
> 2. Minimize Road Impacts. New and existing roads that are planned for construction, widening, or other improvements shall not extend beyond the flagged impact area as described above. All vehicles passing or turning around would do so within the planned impact area or in previously disturbed areas. Where new access is required outside of existing roads or the construction zone, the route shall be clearly marked (i.e., flagged and/or staked) prior to the onset of construction.
>
> 3. Minimize Traffic Impacts. Vehicular traffic during project construction and operation shall be confined to existing designated 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 shall not exceed 20 miles per hour within any part of the project area, maintenance roads for linear facilities, or unpaved access roads to the project site where desert tortoise clearance surveys and translocations have not been completed.
>
> 4. Monitor During Construction. Due to the possibility that desert tortoises, especially juveniles, may persist on the site after desert tortoise clearance surveys and exclusion fencing are completed, the Designated Biologist or Biological Monitor shall be present at the construction site during all project activities that have potential to disturb soil, vegetation, and wildlife. The Designated Biologist or Biological Monitor shall walk immediately ahead of equipment during brushing and grading activities. Any time over the life of the project that a desert tortoise is found within the exclusion fencing, the Designated Biologist shall immediately contact the CPM, CDFG, and USFWS; monitor the tortoise's

location and activities; and implement translocation of the animal in accordance with and the approved Desert Tortoise Translocation Plan and in consultation with the USFWS, CDFG, and CPM.

5. Minimize Impacts of Transmission/Pipeline Alignments, Roads, Staging Areas. Staging areas for construction on the solar generator site shall be within the area that has been fenced with desert tortoise exclusion fencing and cleared. For transmission line construction or other activities outside of the solar generator site, access roads, pulling sites and storage and parking areas shall be designed, installed, and maintained with the goal of minimizing impacts to native plant communities and sensitive biological resources. The Designated Biologist or Biological Monitor shall evaluate potential for special status plants or wildlife at every potential disturbance site along the lengths of both transmission lines prior to any construction-related disturbance, include access improvements. Specifically, site selection of any area to be permanently or temporarily disturbed for transmission line construction and fiber-optic installation shall avoid any desert wash, desert microphyll woodland, or any aeolian sand habitat wherever feasible. Where these sites cannot feasibly be avoided, the Designated Biologist shall outline site-specific requirements to minimize impacts to habitat and wildlife. These requirements shall include, but would not be limited to, pre-construction clearance surveys, exclusion fencing (e.g., for desert tortoise or Mojave fringe-toed lizard), on-site monitoring, and post-construction remediation.

6. Implement APLIC Guidelines. Transmission lines, fiber optic lines, and all electrical components shall be designed, installed, and maintained in accordance with the Avian Power Line Interaction Committee's (APLIC's) Suggested Practices for Avian Protection on Power Lines (APLIC 2006) and Mitigating Bird Collisions with Power Lines (APLIC 1994) to reduce the likelihood of large bird electrocutions and collisions.

7. Avoid Use of Toxic Substances. Soil bonding and weighting agents used on unpaved surfaces shall be non-toxic to wildlife and plants.

8. Minimize Lighting Impacts. Facility lighting shall be designed, installed, and maintained to prevent side casting of light towards wildlife habitat. To minimize risk of avian collisions with project features, only flashing or strobe lights shall be installed on features requiring safety lighting per FAA requirements.

9. Minimize Noise Impacts. A continuous low-pressure technique shall be used for steam blows, to the extent possible, in order to reduce noise levels in sensitive habitat proximate to the Project area. Loud construction activities (e.g., unsilenced high pressure steam blowing and pile driving, or other) shall be avoided from February 15 to April 15 when it would result in noise levels over 65 dBA in nesting habitat. Loud construction activities may be permitted from February 15 to April 15 only if the Designated Biologist provides documentation (i.e., nesting bird data collected using methods described in BIO-13 and maps depicting location of the nest survey area in relation to noisy construction) to the CPM indicating that no active nests would be subject to 65 dBA noise.

10. Avoid Vehicle Impacts to Desert Tortoise. Parking and storage shall occur only within the area enclosed by desert tortoise exclusion fencing to the extent feasible. No vehicles or construction equipment parked outside the fenced area shall be moved prior to an inspection of the ground beneath the vehicle for the presence of desert tortoise. If a desert tortoise is observed, it shall be left to move on its own. If it does not move within 15 minutes, a Designated Biologist or Biological Monitor under the Designated Biologist's direct supervision may remove and relocate the animal to a safe location if temperatures are within the range described in the USFWS' 2009 Desert Tortoise Field Manual (http://www.fws.gov/ventura/speciesinfo/protocols_guidelines). All access roads outside of the fenced project footprint shall be delineated with temporary desert tortoise exclusion fencing on either side of the access road, unless otherwise authorized by the CPM, in consultation with Western, BLM, USFWS, and CDFG.

11. Avoid Wildlife Pitfalls:

    a. Backfill Trenches. At the end of each work day, the Designated Biologist shall ensure that all potential wildlife pitfalls (trenches, bores, temporary detention basins, and other excavations) have been backfilled. If backfilling is not feasible, all trenches, bores, temporary detention basins, and other excavations shall be sloped at a 3:1 ratio at the ends to provide wildlife escape ramps, or covered completely to prevent wildlife access, or fully enclosed with desert tortoise-exclusion fencing. All trenches, bores, temporary detention basins, and other excavations outside the areas permanently fenced with desert tortoise exclusion fencing shall be inspected periodically, but no less than three times, throughout the day and at the end of each workday by the Designated Biologist or a Biological Monitor. Should a desert tortoise or other wildlife become trapped, the Designated Biologist or Biological Monitor shall remove and, if applicable, relocate it as described in the Desert Tortoise Translocation Plan. Any wildlife encountered during the course of construction shall be allowed to leave the construction area unharmed.

    b. Avoid Entrapment of Desert Tortoise. Any construction pipe, culvert, or similar structure with a diameter greater than 3 inches, stored less than 8 inches aboveground for one or more nights, shall 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.

12. Minimize Standing Water. Water applied to dirt roads and construction areas (trenches or spoil piles) 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. A Biological Monitor shall patrol these areas to ensure water does not puddle and shall take appropriate action to reduce water application where necessary.

13. Dispose of Road-killed Animals. Road-killed animals or other carcasses detected on roads near the project area shall be picked up immediately and delivered to the Designated Biologist or Biological Monitor. For all road-killed species, the Designated Biologist shall retain the carcass in a freezer on-site and contact CDFG within 30 working days for guidance on disposal or storage. For any road-killed special-status species, the Biological Monitor shall contact CDFG and USFWS (for golden eagle or federally-listed species, including desert tortoise) within one working day of receipt of the carcass for guidance on disposal or storage of the carcass. The Biological Monitor shall report the special-status species record as described in Conditions of Certification **BIO-2**, **BIO-7**, and **BIO-22**.

14. Minimize Spills of Hazardous Materials. All vehicles and equipment shall 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 shall be informed of any hazardous spills immediately as directed in the project Hazardous Materials Plan. Hazardous spills shall be immediately cleaned up and the contaminated soil properly disposed of at a licensed facility. Servicing of construction equipment shall take place only at a designated area. Service/maintenance vehicles shall carry a bucket and pads to absorb leaks or spills.

15. Worker Guidelines. During construction all trash and food-related waste shall be placed in self-closing containers and removed regularly from the site to prevent overflow. Workers shall not feed wildlife or bring pets to the project site, including the logistics, parking, and other ancillary areas. Except for law enforcement personnel, no workers or visitors to the site shall bring firearms or weapons. 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 dirt access routes within desert tortoise habitat shall not exceed 20 miles per hour.

16. Implement Erosion Control Measures. Standard erosion control measures shall be implemented for all phases of construction and operation to prevent any sediment run-off from exposed slopes from entering state-jurisdictional streambeds within or outside the Project Disturbance Area. Sediment and other flow-restricting materials shall be moved to a location where they shall not be washed back into the stream. All disturbed soils and roads within the project site shall be stabilized to reduce erosion potential, both during and following construction, except that soil stabilizer use may be limited in portions of roads crossing washes or stream channels consistent with applicable water quality requirements.

17. Monitor Ground-Disturbing Activities Prior to Pre-Construction Site Mobilization. If pre-construction site mobilization requires ground-disturbing activities such as for geotechnical borings or hazardous waste evaluations, a Designated Biologist or Biological Monitor shall be present to monitor any actions that could disturb soil, vegetation, or wildlife.

18. Remove Unused Material and Equipment. All unused material and equipment, including soil and rock piles, will be removed upon completion of any maintenance activities located outside the permanently fenced area.

19. Control and Regulate Fugitive Dust. To reduce the potential for the transmission of fugitive dust, the project owner shall implement dust control measures as described in staff's recommended Conditions of Certification **AQ-SC4**, **AQ-SC5**, and **AQ-SC7** in the Air Quality section of this Staff Assessment.

7.2 Weed Management Plan (BIO-11)

The following BMPs and prevention measures will be used within the RSEP to prevent the spread and propagation of weeds (CEC, 2010):

- Limit the extent of vegetation removal and/or ground disturbance to the minimum amount required, and limit ingress and egress within the project area to defined routes.
- Install and maintain vehicle wash and inspection stations and monitor the types of materials that are transported onto the project site.
- Reseed and reestablish vegetation on disturbed areas with native seed mixes (measures and performance standards must be consistent with those described in the Revegetation Plan, requirement in COC BIO-10).
- Monitoring the project site and implement control measures in a timely manner to ensure early detection and eradication of invasive weeds. It is imperative that weed infestations are controlled or eradicated as soon as possible upon discovery, and before they go to seed, to prevent further invasions.
- Sediment barrier installations must be made from weed-free straw or hay bales only and all seed must be weed-free.
- All temporarily disturbed areas, including, but not limited to, temporary access roads, construction work temporary lay-down areas, and staging areas must be reclaimed and revegetated.
- Weeds found in areas where irrigation and mirror washing take place must be controlled.
- On-site storage or disposal of mulch or green waste from weed material is prohibited to prevent inadvertently introducing and spreading invasive plants beyond the immediate project vicinity area and possibly into rare plant populations off-site. Mulch or green waste will be removed from the project site in a covered vehicle to prevent seed dispersal, and transported to a licensed landfill or composting facility.
- Where herbicides can be used, which herbicides, and specific techniques to be used to avoid chemical drift or residual toxicity to special-status plants will be indicated in advance. The techniques must be consistent with guidelines provided by the Nature Conservancy's The Global Invasive Species Team (available online at: http://www.invasive.org/gist/products.html).

- Herbicide use or other control methods in or around Environmentally Sensitive Areas (ESAs, see COC BIO-12) on-site or off-site will be avoided to prevent any herbicide drift into ESAs.

7.3 Streambed Impact Minimization (BIO-22)

The following BMPs and prevention measures will be used within the RSEP to minimize impact to streambeds (CEC, 2010):

- The project owner shall not operate vehicles or equipment in flowing or standing water.
- With the exception of the drainage control system installed for the RSEP, the installation of culverts, bridges, or other structures shall be such that water flow (velocity and low flow channel width) is not impaired. Bottoms of temporary culverts shall be placed at or below stream channel grade.
- Activities that require moving of equipment across a flowing drainage will be conducted without significantly increasing stream turbidity.
- Vehicles driven across ephemeral drainages when water is present must be completely clean of petroleum residue and water levels shall be below the vehicles' axles.
- The project owner shall minimize road building, construction activities, and vegetation clearing within ephemeral drainages to the extent feasible for all RSEP components both within and outside the perimeter fence.
- All employees, contractors, and subcontractors shall also obey these laws, and it shall be the responsibility of the project owner to ensure compliance.
- Spoil sites shall be located and protected as necessary to prevent spoils from eroding into any off-site state-jurisdictional waters. No spoils shall be placed in areas that may be subjected to high storm flows, where spoils might be washed back into drainages.
- Raw cement/concrete or washings thereof, asphalt, paint or other coating material, oil or other petroleum products, or any other substances that could be hazardous to vegetation or wildlife resources, resulting from project-related activities, shall be prevented from contaminating the soil and/or entering off-site state-jurisdictional waters. These materials, if placed within or where they may enter a drainage by the project owner or any party working under contract or with the permission of the project owner, shall be removed immediately.
- No broken soil, silt, concrete, debris, sand, rubbish, cement, bark, slash, sawdust or concrete or washings thereof, oil or petroleum products or other organic or earthen material from any construction or associated activity of whatever nature shall be allowed to enter into, or placed where it may be washed by rainfall or runoff into, off-site state-jurisdictional waters .

- When operations are completed, any excess materials or debris shall be removed from the work area. No rubbish shall be deposited within 150 feet of the high water mark of any category 3, 4, or 5 streambed or any streambed greater than 10 feet wide.
- No equipment maintenance shall occur within 150 feet of any category 3, 4, or 5 streambed or any streambed greater than 10 feet wide and no petroleum products or other pollutants from the equipment shall be allowed to enter these areas or enter any off-site state-jurisdictional waters under any flow.
- Stationary equipment such as motors, pumps, generators, and welders shall be positioned over drip pans when located within or adjacent to a drainage. Stationary heavy equipment shall have suitable containment to handle a catastrophic spill/leak. Clean up equipment such as absorbent pads, booms, and skimmers shall be on site prior to the start of construction.
- The project owner shall not allow water containing mud, silt, or other pollutants from grading, aggregate washing, or other activities to enter off-site state-jurisdictional waters or be placed in locations that may be subjected to high storm flows.
- The project owner shall comply with all litter and pollution laws.
- The cleanup of all spills shall begin immediately. The CPM, Western, CDFG, and BLM shall be notified immediately by the project owner of any spills and shall be consulted regarding clean-up procedures.

7.4 Revegetation Plan and Compensation for Impacts to Native Vegetation Communities (BIO-10)

The project owner, RSEP, will provide restoration/compensation for impacts to native vegetation communities and develop and implement a Revegetation Plan for all areas subject to temporary (albeit long-term) project disturbance. All temporarily disturbed areas will be restored to pre-project grade and revegetated to minimize soil erosion and vulnerability to weed invasion after construction. This portion of the BRMIMP and the Appendix J will be updated when Revegetation Plan is approved by the resource agencies.

All habitats dominated by non-native species before project disturbance will be revegetated using appropriate native species. This plan will also contain contingency measures for any restoration efforts that do not meeting success criteria.

Topsoil will be stockpiled from the project site for use in revegetation. Topsoil salvage will segregate the upper 1 inch of topsoil from additional 6 to 8 inches of soil below the top 1 inch of soil, which will also be scraped and separately stockpiled for use in revegetation areas.

Only seed or potted nursery stock of locally occurring native species will be used for revegetation. Seeds will contain a mix of short-lived early pioneer species such as native

annuals, perennials, and sub-shrubs. In conformance with BLM policy, the project owner will include salvaged or nursery stock yucca (all species), and cacti (excluding cholla species, genus *Cylindropuntia*), in revegetation plans and implementation affecting BLM lands, as described in BIO-12.

Monitoring after seeding and planting will occur yearly and will continue for at least 2 years or until the defined success criteria are achieved. If the criteria have not been met, the project owner is responsible for remedial action as agreed to by the CPM in consultation with BLM and Western. Replacement seeding or planting will be monitored and evaluated by the same criteria as required for original revegetation plantings.

The following performance standards must be met by the end of the 2-year monitoring period:

- At least 80 percent of the species observed within the temporarily disturbed areas will be native species that naturally occur in desert scrub habitats.
- Cover and density of non-native plant species within the temporarily disturbed areas will be no greater than in comparable surrounding lands that have not been disturbed by the project.

If a fire occurs in a revegetation area within the 2-year monitoring period, then the owner will be responsible for a one-time replacement. If a second fire occurs, then no replanting is required, unless the fire is caused by the owner's activity (for example, as determined by BLM or other firefighting agency investigation).

Monitoring and reporting will continue until the performance standards are achieved or unless otherwise specified by the CPM in consultation with BLM and Western.

7.5 Species-Specific Measures

7.5.1 Weed Management Plan (BIO-11)

During construction, the Qualified Botanist will be required to regularly update the list of potential noxious weeds, and identify any new potential threats. This will include developing a management strategy and management methods appropriate to the plant species and the nature of any potential invasion. Similarly, the facility plant manager or appropriate designee during operations will be required to continually update the potential noxious weed list and provide monitoring and management appropriate to any new species.

7.5.1.1 Preventative Measures

BMPs to prevent the spread of weed propagules and inhibit their germination can be found in Section 7.2.

During construction activities, the following preventative measures will be used:

- WEAP will include training on weed abatement
- Wash stations
- Infestation containment and control

- Site soil management (minimization of soil disturbance)
- Weed-free products
- Weed-free seed
- Site reclamation

During operations, the following preventative measures will be used:

- Facility Staff Training
- Infestation containment and control

7.5.1.2 Eradication and Control Measures

Eradication and control of noxious weeds at the RSEP site will be accomplished by manual and chemical removal of weeds. Mowing and tilling will not be used at RSEP as a weed control technique.

Manual control of weeds will include well-timed removal of plants or seed heads with hand tools. After seed heads and plants are removed, they must be disposed of in accordance with guidelines from the Riverside County Agricultural Commissioner (CEC, 2010).

Chemical control of weeds will include the following application methods: wick (wiping onto leaves), inner bark injection, cut stump, frill or hack & squirt (into cuts in the trunk,) basal bark girdling, foliar spot spraying with backpack sprayers or pump sprayers at low pressure or with a shield attachment to control drift, and only on windless days, or with a squeeze bottle for small infestations (CEC, 2010). Herbicides that are known to have residual toxicity, such as pre-emergent and pellets, will not be used in natural areas or within the engineered channels.

7.5.2 Special-Status Plants (BIO-12)

7.5.2.1 Introduction

The RSEP Special-Status Plant Impact Avoidance and Minimization Plan (COC BIO-12) identifies the steps and procedures that will be implemented to avoid rare plant localities and minimize the extent of rare plant impacts to the maximum extent possible while achieving energy generation objectives (CEC, 2010). The primary compliance objectives fall into the following two sections:

- **Section A: Avoidance and Minimization Measures** describes measures to avoid and protect Harwood's milk-vetch locations on the generator tie-line alignment within 250 feet of project activities (including access roads, staging areas, laydown areas, parking and storage areas) from accidental and indirect impacts during construction, operation, and closure.
- **Section B: Conformance with BLM Plant Protection Policies** describes measures to salvage and transplant certain cacti, yucca, and other species in conformance with BLM policies.

7.5.2.2 Impact Avoidance and Minimization Measures

To protect Harwood's milk-vetch or other CNPS List 1 or List 2 plants (not including chaparral sand-verbena) located within the project area or within 250 feet of its boundaries, which includes access roads, staging areas, laydown areas, parking and storage areas, from

accidental and indirect impacts during construction, operation, and closure, the measures implemented are described in the following sections(CEC, 2010).

7.5.2.2.1 Designated Botanist

An experienced botanist will oversee compliance with all special-status plant avoidance, minimization, and compensation measures described in this condition throughout construction, operation, and closure. The Designated Botanist will oversee and train all other Biological Monitors tasked with conducting botanical survey and monitoring work. The Designated Botanist will be a qualified botanist knowledgeable in the complex biology of the local flora and consistent with CDFG (2009) and BLM (2009) protocols.

7.5.2.2.2 Special Status Plant Impact Avoidance and Minimization Plan

The project owner will prepare and implement a Special Status Plant Impact Avoidance and Minimization Plan and will incorporate the Plan into the BRMIMP (BIO-7). The Plan will be designed to prevent direct or indirect effects of project construction and operation to CNPS List 1 and List 2 plants (excluding chaparral sand-verbena) within or within 250 feet of the project disturbance area (CEC, 2010).

The Special Status Plant Impact Avoidance and Minimization Plan will include the following elements:

7.5.2.2.2.1 Site Design Modifications

Incorporate site design modifications to minimize impacts to special-status plants along the Project linears, as follows: limit the width of the work area; adjust the location of staging areas, lay downs, spur roads and poles or towers; drive and crush vegetation as an alternative to blading temporary roads to preserve soil integrity and seed banks, and adjust the alignments of roads and access points within the constraints of the ROW. These modifications will be clearly depicted on the grading and construction plans, and on report-sized maps in the BRMIMP.

7.5.2.2.2.2 Designate Environmentally Sensitive Areas

Before construction, designate environmentally sensitive areas (ESAs) to protect all known CNPS List 1 or List 2 plant locations (excluding chaparral sand-verbena) within the project disturbance area or within 250 feet of disturbance area. The locations of ESAs will be clearly depicted on construction drawings, which will also include all avoidance and minimization measures on the margins of the construction plans. The boundaries of the ESAs will provide a minimum of 250 feet buffer area between plant locations and any ground-disturbing project activities. The ESAs will be clearly delineated in the field with fencing and signs prohibiting movement of the fence under penalty of work stoppages and additional compensatory mitigation. ESAs will also be marked (with signage or other markers) to ensure that avoided plants are not inadvertently harmed during construction.

7.5.2.2.2.3 Special-Status Plant WEAP

The WEAP (BIO-6) will include training components specific to protection of special-status plants as outlined in this condition.

7.5.2.2.2.4 Herbicide and Soil Stabilizer Drift Control Measures

Special status plant occurrences within 250 feet of the Project Disturbance Area will be protected from any potential herbicide and soil stabilizer drift. The Weed Control Program (BIO-11) will include measures to avoid chemical drift or residual toxicity to special-status plants consistent with guidelines such as those provided by Hillmer and Liedtke (2003) and Kegley et al. (2010).

7.5.2.2.2.5 Erosion and Sediment Control Measures

Erosion and sediment control measures will avoid adverse impacts to ESAs and will not use invasive or non-native plants in seed mixes, introduce pest plants through contaminated seed or straw. These measures will be incorporated in the Drainage, Erosion, and Sedimentation Control Plan required under SOIL&WATER-1.

7.5.2.2.2.6 Avoid Special-Status Plant Occurrences

Areas for spoils, equipment, vehicles, and materials storage areas; parking; equipment and vehicle maintenance areas, and wash areas will be placed at least 100 feet from the boundaries of any ESAs.

7.5.2.2.2.7 Monitoring and Reporting Requirements

The Designated Botanist will conduct weekly monitoring of the ESAs that protect special-status plant occurrences during construction and decommissioning activities.

7.5.2.3 Conformance with BLM Plant Protection Policies

The project owner, RSEP, will comply with the BLM policy to salvage yucca and cactus plants (excluding cholla species, genus *Cylindropuntia*) and transplant them to undisturbed sites within project Rights of Way. RSEP will implement the following measures.

7.5.2.3.1 Yucca and Cactus Inventory

The project owner will inventory all plants subject to BLM policies on all BLM lands within the Project Disturbance Area that would be removed or damaged by proposed project construction.

7.5.2.3.2 Protected Plant Salvage Plan

The project owner will prepare a Protected Plant Salvage Plan in conformance with BLM standards for review and approval by the CPM in consultation with BLM. The plan will include detailed descriptions of proposed methods to salvage plants; transport them; store them temporarily (as needed); maintain them in temporary storage (such as, irrigation, and shade protection); proposed transplantation locations and methods for permanent relocation; proposed irrigation and maintenance methods at transplantation sites; and a monitoring plan to verify survivorship and establishment of translocated plants for a minimum of five years.

7.5.2.3.3 Protected Plant Replacement

Before initiating any ground-disturbing activities on the project site, the project owner will implement the Protected Plant Replacement measures as approved by the CPM, in consultation with BLM's State Botanist.

7.5.2.3.4 Incorporation into the BRMIMP

The Special-Status Plant Impact Avoidance and Minimization Measures will be incorporated into the BRMIMP as required under Condition of Certification BIO-7.

7.5.2.4 Reporting

The Designated Biologist will include a report on the Implementation of the special-status plant impact avoidance and minimization measures in the Monthly Compliance Reports. Within 30 days after completion of Project construction, the project owner will provide to the CPM, for review and approval in consultation with the BLM State Botanist, a written construction termination report identifying how measures have been completed. The project

owner will coordinate with the CPM and BLM's Wildlife Biologist to revise and finalize all plans and reports named in this section.

7.5.2.4.1 Reporting Special Status Plant Impact Avoidance and Minimization Measures

The project owner will submit grading plans and construction drawings depicting the location of Environmentally Sensitive Areas and the Avoidance and Minimization Measures contained in Section A of COC BIO-12within 30 days before the start of ground-disturbing activities. The project owner will coordinate with the CPM and BLM's Wildlife Biologist to revise and finalize boundaries of the ESAs.

At least 30 days before the start of ground-disturbing activities, the project owner will submit to the CPM for review and approval, in consultation with the BLM State Botanist, the name and resume of the project's Designated Botanist. If a Designated Botanist needs to be replaced, the proposed replacement must be submitted to BLM's Wildlife Biologist and the CPM as soon as possible before the termination or release of the Designated Biologist. In an emergency, the project owner will immediately notify the BLM's Wildlife Biologist and the CPM to discuss the qualifications and approval of a short-term replacement while a permanent Designated Botanist is proposed to BLM's Wildlife Biologist and the CPM and for consideration.

At least 30 days before ground-disturbing activities the Project owner will submit a Special Status Plant Impact Avoidance and Minimization Plan to the CPM for review and approval, in consultation with the BLM State Botanist.

Implementation of the impact avoidance and minimization measures will be reported in the Monthly Compliance Reports prepared by the Designated Botanist. Within 30 days after completion of project construction, the project owner will provide to the CPM for review and approval, in consultation with the BLM State Botanist, a written construction termination report identifying how measures have been completed.

The project owner will submit a monitoring report every year for the life of the project to monitor effectiveness of protection measures for all ESAs to the CPM and BLM State Botanist. The monitoring report will include: dates of worker awareness training sessions and attendees, an inventory of the special-status plant occurrences and description of the habitat conditions, an indication of population and habitat quality trends, and description of the remedial action, if warranted and planned for the upcoming year. The project owner will coordinate with the CPM and BLM to revise and finalize monitoring reports and all reports described in this section, and will specifically report any difficulties in meeting the protection goals and cooperatively develop adaptive measures as needed.

7.5.2.4.2 Reporting Conformance with BLM Plant Protection Policies

Verification and reporting will be as described in BIO-10 and will be included in reports described therein. Within 90 days after completion of each year of project construction, the project owner shall provide to the CPM verification of the numbers or acreage of plants covered in this Condition (such as, species named in BLM and County policies) which have been removed or salvaged over the course of the year. Annual revegetation reports described in BIO-10 verification shall include summaries of salvage and planting operations and monitoring results.

Compliance reports shall include summaries of written and photographic records of the plan implementation described above. Compliance reports shall be submitted annually for a

period not less than 5 years to document irrigation, maintenance, and monitoring results, including plant survival.

7.5.3 Pre-Construction Nest Surveys (BIO-13)

If active nests are detected during the survey, a 500-foot no-disturbance buffer zone will be established. For active raptor nests or bat maternity roosts are identified during a survey, a 1,200-foot no-disturbance buffer zone will be implemented (CEC, 2010).

A monitoring plan will be developed to ensure no disturbance takes places within the buffer zone. The protected area around the nest may be adjusted by the Designated Biologist in consultation with CDFG, USFWS, Western, and the CPM. All nest locations will be mapped and submitted, along with a weekly report stating the survey results, to the CPM (CEC, 2010).

The Designated Biologist will monitor the nest until he or she determines that nestlings have fledged and dispersed. Activities that might, in the opinion of the Designated Biologist and in consultation with the CPM, disturb nesting activities will be prohibited within the buffer zone until such a determination is made (CEC, 2010).

7.5.4 Desert Tortoise Translocation Plan (BIO-15)

This section outlines the requirements and implementation of COC BIO-15, the Desert Tortoise Translocation Plan (Appendix H) (CEC, 2010). This portion of the BRMIMP and the appendix will be updated when the Desert Tortoise Translocation Plan is approved by the resource agencies.

7.5.4.1 Purpose

COC BIO-15 requires the preparation and execution of a Desert Tortoise Translocation Plan in order to safely exclude desert tortoises from the RSEP area (CEC, 2010). It must meet the guidelines and standards set forth in *Translocation of Desert Tortoises (Mojave Population) From Project Sites: Plan Development Guidance* (USFWS, 2010).

The Desert Tortoise Translocation Plan provides details on how the Designated Biologist will relocate/translocate desert tortoises found within the RSEP site to suitable habitat outside of the RSEP site boundary (COC BIO-15) (CEC, 2010). Relocation refers to the movement of a desert tortoise out of harm's way to a location within the desert tortoise's home range. Translocation refers to the movement of a desert tortoise out of harm's way to a location beyond the desert tortoise's home range. The Desert Tortoise Translocation Plan outlines desert tortoise relocation/translocation during construction activities, operation, decommissioning, and restoration (Sundance, 2010a).

The Desert Tortoise Translocation Plan also provides strategies to reduce stress and the potential for disease transmission during the desert tortoise relocation/translocation process (COC BIO-15) (CEC, 2010). It outlines the procedures for data collection, temperature considerations, handling, desert tortoise transportation, and monitoring (Sundance, 2010a).

COC BIO-15 stipulates that the Desert Tortoise Translocation Plan must be consistent with all terms and conditions described in the BO (Appendix C) prepared by the USFWS and Incidental Take Permits. The section presents how the Minimization Measures and Terms of Conditions contained in the Final BO, Incidental Take Permits, and the additional

requirements of COC BIO-15 (such as those not also encompassed in the BO) will be implemented (COC BIO-15) (CEC, 2010).

7.5.4.2 Relocation/Translocation

Based on the location of desert tortoises, burrows, and sign observed during the spring 2009 surveys, it is likely that all desert tortoises encountered on the RSEP will be relocated within their home ranges (Sundance, 2010a). Desert tortoises should not be relocated/translocated when the ground surface temperature exceeds 109°F (Karl, 1992 and Zimmerman et. al., 1994). Any desert tortoise relocations/translocations when the ground surface temperature exceeds 109°F will be at the sole discretion of the Designated Biologist and alternatives will be considered. Desert tortoise relocation/translocation may occur during the construction phase, operations phase, and decommissioning phase (Sundance, 2010a).

7.5.4.2.1 Construction Phase

During initial perimeter fence installation, desert tortoises found in burrows will be avoided (Sundance, 2010a). High visibility fencing will be installed around the burrow and it will be monitored. If a tortoise in a burrow cannot be avoided, and the desert tortoise is still in hibernation, then an artificial burrow similar to the original burrow will be constructed 100 feet away. The desert tortoise will be captured at night and placed in the artificial burrow. Scat and soil from the original burrow will be place around the artificial burrow (Sundance, 2010a). The desert tortoise will be blocked into the burrow for no more than two weeks. It will be monitored to make sure that it either remains in the burrow or locates another burrow. If the temperature warms significantly, then the Designated Biologist will unblock the burrow sooner (Sundance, 2010a). If the nighttime air temperature drops below approximately 35° F and the desert tortoise attempts to find another burrow but is unsuccessful, then it will be captured for monitoring in a climate-controlled, dark, quiet, and safe location. The desert tortoise will be held in this location until the temperature warms and other active desert tortoises are observed in the vicinity. Then the desert tortoise will be released within 100 feet of its original burrow and monitored (Sundance, 2010a).

During desert tortoise clearance surveys and initial vegetation, any desert tortoise found will be relocated outside the RSEP perimeter fence in suitable habitat as close to its' original location as possible. Desert tortoises will be relocated onto adjacent private lands owned by the BLM or project owner adjoining the RSEP area. All desert tortoises must be placed in the shade of a shrub and monitored (Sundance, 2010a).

Any desert tortoises found further inside the RSEP site boundary that have established home ranges inside the RSEP area will be translocated to the closest suitable habitat outside the RSEP. The desert tortoise will be released into an artificial burrow at least 1.5 meters long (Sundance, 2010a).

A temporary transmitter will be affixed to all desert tortoises found within 1 mile of SR 62. These desert tortoises will be monitored closely by the Designated Biologist and the temporary transmitters will be removed when the animals are settled in a safe area. Desert tortoises found pacing the RSEP perimeter fence that travel towards and onto SR 62 will also have a temporary transmitter and monitored until they settle into a safe area (Sundance, 2010a).

Linear facilities' construction activities may occur in unfenced, native habitat. Such activities include the construction of the RSEP perimeter fence, access roads, transmission

lines, and revegetation of temporarily disturbed areas (Sundance, 2010a). Desert tortoises that need to be relocated from construction zones will be moved outside the construction zone but on the RSEP's linear ROW components. Typically, any desert tortoise relocated from utility ROWs or fence construction areas should be moved 100 to 200 feet away or outside a suspected or known burrow for that desert tortoise (Sundance, 2010a). This distance would be far enough from construction activity for minimal disturbance, but within the home range of any desert tortoise found on the ROW. In addition, if the desert tortoise had been placed on the wrong side of the ROW, it would not be too far for the tortoise to travel to reach its normal activity areas (Sundance, 2010a). All desert tortoises must be placed in the shade of a shrub and monitored. If a desert tortoise attempts to re-enter an unfenced construction zone, then a temporary fence will be installed to keep the desert tortoise out of the construction zone (Sundance, 2010a).

Desert tortoise nests found between November 1st and April 15th, and are unlikely to be viable and will not be relocated. Typically, hatchlings emerge by October. However, nests found between April 15th and October 1st will be relocated. The eggs must be inspected by the Designated Biologist to determine if they are viable (Sundance, 2010a). If the eggs are viable, then they will be relocated to an identical micro-area (for example, soil type, substrate, cover, aspect) on BLM land or adjacent land owned by the project owner using standard techniques outlined in the *Guidelines for handling desert tortoise during construction projects (*DTC, 1994). Relocated nests will be fenced with open-mesh fencing (for example, 2-inch wide mesh) that will allow the hatchlings to escape, but prevent depredation (Sundance, 2010a). In addition, avian netting or open-mesh fencing will be installed on the roof to prevent predator entry. Nests will be monitored from a 30-foot distance once per month through late November, when they will be excavated for examination. Observed hatchlings will be photographed, measured, weighed, and marked (Sundance, 2010a).

7.5.4.2.2 Operations Phase

Desert tortoises discovered during the operations phase will have recently entered the RSEP because of a breach in the perimeter fencing and will probably not have constructed a burrow yet. Any such desert tortoise will be relocated to the nearest suitable habitat outside the perimeter fencing on BLM land or adjacent project owner land (Sundance, 2010a). It is anticipated that these desert tortoises would seek familiar burrows when released outside the RSEP area since they are transients. All relocated/translocated desert tortoises discovered during the operations phase will be placed in the shade of a shrub and monitored (Sundance, 2010a).

If the surface temperature is greater than 109°F, then the desert tortoise will be placed in an individual, sterilized box and monitored in a climate-controlled, dark, quiet, and safe location. The desert tortoise will be released in the late afternoon or early evening on the same day when the temperature declines (Sundance, 2010a). Juvenile desert tortoises must be released in the early morning to reduce the chance of depredation. All boxed or desert tortoises with transmitters will be monitored periodically throughout the day and following their release (Sundance, 2010a).

Desert tortoises found along the main access road or along the utility corridors during inspection activities will not be disturbed or handled. These desert tortoises will be allowed to move away of their own accord. Any maintenance activities that require heavy equipment or surface disturbance will need to follow the same desert tortoise protection measures as during construction (Sundance, 2010a).

7.5.4.2.3 Decommissioning Phase

During the decommissioning phase, activities will occur both inside fenced areas and in unfenced, native habitat. The guidelines provided above for desert tortoise relocation/translocation during linear facilities' construction would apply to decommissioning activities as well. New information will be incorporated as appropriate to improve desert tortoise relocation/translocation efforts (Sundance, 2010a).

7.5.4.3 Procedures

7.5.4.3.1 Data Collection

Data will be collected for each desert tortoise before relocation/translocation. The desert tortoise will be sketched and photographed. In addition, the desert tortoises' capture area location and description, carapace length, gender, distinguishing morphology, amount of void, signs of disease, and release area location and description will be recorded (Sundance, 2010a). The Designated Biologist will be in charge of all desert tortoise handling and will use approved techniques from the *Guidelines for Handling Desert Tortoise during Construction Projects* (DTC, 1994). Each desert tortoise will be assigned an individual number and marked using techniques approved by the USFWS (Sundance, 2010a).

7.5.4.3.2 Transportation

The majority of relocated/translocated desert tortoises will be hand-carried by the Designated Biologist who will wear disposable examination gloves, to the release areas and kept upright (Sundance, 2010a). Desert tortoises discovered further from their release areas or that need to be monitored in a climate-controlled area because of temperature extremes will be transported to their release areas in individual, sterilized boxes with lids. If transportation by vehicle is required, then the tortoise box will be placed on a well-padded surface, not over a heated section of the vehicle floor, and kept in the shade (Sundance, 2010a).

7.5.4.3.3 Post-Release Monitoring

All desert tortoises relocated/translocated on RSEP will be monitored for at least two hours after their release to ensure their safety. The monitor will determine if the desert tortoise is maintaining a safe distance from the construction area. During fence construction or for utility corridors, the monitor will determine if the desert tortoise might re-enter the construction area (Sundance, 2010a). Moreover, anytime a desert tortoise is relocated outside the desert tortoise exclusion fence, that release location and surrounding area must be monitored for at least the next two days during desert tortoise activity temperatures (that is, less than 43degrees Celsius [^{o}C] ground surface temperature [Karl, 1992 and Zimmerman *et al.*, 1994]. This is to determine whether the desert tortoise is fence-walking or not. If the desert tortoise is fence-walking, then another release area should be selected (Sundance, 2010a). If moved to another release area, the monitoring of the desert tortoise would be initiated. Tortoises released in the evening due to temperature considerations will be monitored until dark and again at dawn the following morning. These desert tortoises will be monitored until they enter a burrow that provides adequate protection from heat stress and predators (Sundance, 2010a).

7.5.4.4 Reporting

The project owner will provide a final version of the Desert Tortoise Translocation Plan to the CPM within 30 days of receipt of the USFWS Biological Opinion. The Desert Tortoise

Translocation Plan will not be finalized until it has been reviewed and approved by the CPM, CDFG, and USFWS in consultation with Western and BLM. Changes to the final Desert Tortoise Translocation Plan can only be made upon written approval by the CPM, CDFG, and USFWS in consultation with Western and BLM (COC BIO-15) (CEC, 2010).

The Designated Biologist will submit a report identifying which items of the final Desert Tortoise Translocation Plan have been completed and a synopsis of modifications to measures made during implementation to the CPM for review and approval in consultation with CDFG, USFWS, BLM, and Western within 30 days of the start of translocation activities. In addition, monthly progress reports will be submitted to the CPM throughout the implementation of the Desert Tortoise Translocation Plan (COC BIO-15) (CEC, 2010).

7.5.5 Desert Tortoise Compensatory Mitigation (BIO-16)

The project owner is required to provide compensatory mitigation acreage to account for the desert tortoise habitat impacted by the RSEP footprint. The current compensatory mitigation acreage is 1,522 acres, but it will be adjusted to account for the final RSEP footprint. The impacts at the solar generator site will be compensated at a 1:1 ratio. In addition, the impacts along the interconnector substation and generator tie-line will be compensated at a 3:1 ratio. (COC BIO-16) (CEC, 2010).

Moreover, the project owner will fund initial improvement and long-term enhancement, management, and maintenance for the protection and enrichment of desert tortoise populations. Details regarding the acquisition, improvement, long-term management, and security of the compensatory mitigation land are outlined in COC BIO-16 (CEC, 2010).

Alternatively, the project owner can comply with the requirements of COC BIO-16 by depositing funds into a Renewable Energy Action Team (REAT) Account established with the National Fish and Wildlife Foundation (NFWF) for the agencies complete the required habitat compensation (COC BIO-16) (CEC, 2010).

7.5.6 Raven Monitoring, Management, and Control Plan (BIO-17)

These raven management measures were designed to discourage ravens by limiting the availability of anthropogenic food and water resources, as well as roosting, perching, and nesting opportunities in accordance with COC BIO-17 (CEC, 2010). The project owner will implement the following raven management measures and a detailed description of each measure is provided in the Raven Management Plan (Appendix I):

- **Reduce Access to Anthropogenic Food and Water Resources.** To prevent attracting ravens to the proposed RSEP, the project owner will implement the following measures:
  - Remove trash from work sites at the end of each work day
  - Remove all carrion from work sites
  - Monitor water sources closely to make sure there are no leaks or puddles of water
- **Discourage Nesting, Roosting and Perching.** To prevent nesting, roosting, and perching on structures associated with the RSEP, the project owner will implement the following:

- Install Anti-Perch Devices
  - Use on structures that may provide nesting, roosting, or perching opportunities for ravens
  - Inspect the anti-perch devices periodically
- Hazing
  - Focus on limiting raven attractants rather than hazing
  - Hazing may consist of sporadic bursts of noise and light
  - Implement hazing only under the direction of BLM, CDFG, USFWS, and Western in situations where it is considered the best course of action
- Alter Suspected Nesting, Roosting, and Perching Areas
  - Design structures such as transmission line towers, operations buildings, and fences in a manner that would reduce the likelihood of nesting, roosting, and perching
  - Alter suspected nesting, roosting, and perching areas
- Removal of Raven Nests
  - Contact BLM, CDFG, USFWS, and Western when raven nests are found in any of the structures associated with RSEP
  - Remove any unoccupied raven nests that are found on structures in cooperation with BLM, CDFG, USFWS, and Western
  - Consider applying for a permit to remove raven nests occupied with eggs or chicks in cooperation with BLM, CDFG, USFWS, and Western

- **Removal of Problem Ravens.** If raven removal becomes necessary, the project owner will work under the direction of BLM, CDFG, USFWS, and Western to implement the following:
  - Avoid lethal removal except in cases where problem ravens have been identified and other deterrent or harassment methods have not been effective
  - Conduct lethal removal only by or under the direction of the BLM, CDFG, USFWS, and Western

Adaptive management will be required if the current raven management measures are not effective in controlling raven depredation of the desert tortoise. Ravens are notoriously adaptive, resourceful, and clever, thus further necessitating the need for adaptive management.

The project owner will consult with the BLM, CDFG, USFWS, and Western before implementing adaptive management changes. The BLM also will coordinate with USFWS to determine if and when further monitoring or adaptive management is warranted.

7.5.7 Burrowing Owl (BIO-19)

Potentially disturbing activities within 500 feet of an active burrow will occur in the non-breeding season (September 1st through January 31st), where feasible. Where this is not feasible, a buffer area will be established. It will be at a 250-foot radius from the occupied burrow. The non-disturbance buffer and fence line may be reduced to 160 feet if all project-related activities that might disturb burrowing owls would be conducted during the non-breeding season (September 1st through January 31st). Where avoidance is not possible, passive relocation to artificial burrows in suitable habitat will be implemented.

The Designated Biologist will provide documentation that buffer fencing has been installed at least 10 days before the start of any construction-related ground disturbance activities.

The project owner will provide, in fee or in easement, for the management and protection in perpetuity of compensation lands in an amount that depends on the habitat quality of the compensation lands. On January 31st of each year following construction for a period of five years, the Designated Biologist will provide a report to the CPM, USFWS, BLM and CDFG that describes the results of monitoring and management of the replacement burrow area. The annual report will provide an assessment of the status of the replacement burrow area with respect to burrow function and weed infestation, and will include recommendations for actions the following year for maintaining the burrows as functional burrowing owl nesting sites and minimizing the occurrence of weeds.

7.5.8 American Badger and Desert Kit Fox (BIO-20)

All maternity dens will be flagged for avoidance, identified on construction maps, and a biological monitor will be present during any construction-related activity that occurs within 500 feet of the maternity den (CEC, 2010).

If avoidance of an occupied non-maternity den is not feasible, badgers or kit foxes shall be passively relocated by slowly excavating the burrow. This can be accomplished either by hand or mechanized equipment under the direct supervision of the biologist. No more that 4 inches of soil at a time can be removed and there must be an opportunity to allow the animal to disperse from the site, such as providing a temporary monitored opening in the tortoise exclusion fence and directing the animal toward the opening with temporary plastic construction fencing. Female kit foxes or badgers with young can only be directed offsite if their young are ready to leave the dens (CEC, 2010).

In the event that passive relocation techniques fail for badgers, the project owner will contact CDFG to explore other relocation options, which may include trapping. Forced dispersal of badgers or kit foxes can only occur after consultation with the CDFG and approval by the CPM has been received. A written report documenting the animal's removal or forced dispersal shall be provided to the CPM within 30 days of relocation (CEC, 2010).

Although project impact are expected to be minimal for these species, BIO-16 requires compensatory mitigation for desert tortoise habitat, which would also offset project-related impacts to American badger and desert kit fox since these species occupy similar habitats (CEC, 2010).

7.5.9 Couch's Spadefoot (BIO-23)

Disturbances are not permitted within suitable breeding ponds while water is present. If suitable breeding ponds, adult spadefoots, eggs, or larvae/tadpoles are found, a 200-foot buffer will be established around these areas. The buffers will remain in place until the larva/tadpoles complete metamorphosis and retreat to upland areas or until the pools are completely dry (CEC, 2010).

Impacts to all potential breeding habitat for Couch's spadefoot will be avoided as possible. If work within this habitat cannot be avoided, work will be conducted only while any potential breeding pools are completely dry (CEC, 2010).

7.6 Wildlife Passage Area(BIO-21)

7.6.1 Wildlife Passage Area

The project owner will design and construct a wildlife passage area to allow east-west wildlife passage along SR 62 near RSEP. This will reduce the amount of roadkill during RSEP construction activities. This wildlife passage area will be comprised of undisturbed or revegetated desert shrubland and will be at least 100-feet wide. The wildlife passage area will be located south of SR-62 and north of the RSEP area in accordance with COC BIO-21 (CEC, 2010).

7.7 Evaporation Pond Design, Monitoring, and Management Plan (BIO-24)

The project owner, RSEP, will prevent contact with contents of the evaporation ponds through implementation of the Evaporation Pond Design, Monitoring, and Management Plan (Evaporation Pond Plan), in accordance with COC BIO-24. This portion of the BRMIMP and Appendix K will be updated when the Evaporation Pond Plan is approved by the CEC CPM in consultation with the resource agencies (CEC, 2010).

The evaporation ponds will be covered before any discharge with 1.5-inch mesh netting designed to exclude birds and other wildlife from drinking or landing on the water of the ponds. The netted ponds will be monitored regularly to verify that the netting remains intact, is fulfilling its function in excluding birds and other wildlife from the ponds, and does not pose an entanglement threat to birds and other wildlife. The ponds will include a visual deterrent in addition to the netting, and will be designed so that the netting will never contact the water (CEC, 2010).

The Designated Biologist or Biological Monitor will regularly survey the ponds at least once per month starting with the first month of operation of the evaporation ponds. If after 12 consecutive monthly site visits no bird or wildlife deaths or entanglements are detected by or reported to the Designated Biologist, monitoring can be reduced to quarterly visits. If after 12 consecutive quarterly site visits no bird or wildlife deaths or entanglements are detected by or reported to the Designated Biologist and with approval from the CPM, USFWS and CDFG, future surveys may be reduced to two surveys per year, during spring and fall migration (CEC, 2010).

For the first year of operation the Designated Biologist will submit quarterly reports to the CPM, Western, CDFG, and USFWS describing the dates, durations and results of site visits conducted at the evaporation ponds. Thereafter the Designated Biologist will submit annual monitoring reports with this information. The quarterly and annual reports will fully describe any bird or wildlife mortality or entanglements detected during the site visits or at any other time, and will describe actions taken to remedy these problems. The annual report will be submitted to the CPM, Western, CDFG, and USFWS no later than January 31st of every year for the life of the project (CEC, 2010).

7.8 Avian and Bat Protection Plan (BIO-25)

The project owner, RSEP, will prepare and implement an Avian and Bat Protection Plan and Golden Eagle Annual Pre-Construction Surveys in coordination with the Heliostat Positioning Plan (COC TRANS-5) to minimize death and injury of birds or bats from the following: (1) strikes on facility features including the heliostat structures, central tower, and generator tie-line towers or transmission lines and (2) focused light and heat at and near the central tower or at "standby points" while the heliostats are focused away from the tower. Upon USFWS approval, it will be reviewed and approved by the CPM in consultation with Western, CDFG, and BLM. Upon review and approval, it will be incorporated into the project's BRMIMP and implemented (CEC, 2010)[3].

For 2 years following the beginning of the power plant operation, the Designated Biologist will submit quarterly avian monitoring reports to the CPM, CDFG, and USFWS; an annual report will be prepared by the Designated Biologist to detail findings for the monitoring year and suggest future monitoring and management actions (CEC, 2010). Monitoring will follow the guidelines of Nicolai et al., 2011.

Adaptive management and mitigation strategies that may be implemented in the event that the Bird and Bat Monitoring Study identifies the need for additional mitigation could include the use of visual or auditory deterrents, or the acquisition and conservation of offsite habitat of similar type and quality as was present at the RSEP site before project development (CEC, 2010).

Following the completion of the fourth quarter of monitoring each year, the Designated Biologist will prepare an Annual Report that summarizes the year's data, analyzes any project-related bird and/or bat fatalities or injuries detected, and provides recommendations for future monitoring and any adaptive management actions needed. The Annual Report will be provided to the CPM, Western, CDFG, and USFWS.

Quarterly reporting will continue until the CPM, in consultation with Western, CDFG and USFWS determine whether further monitoring is needed, and whether mitigation (for example, development and/or implementation of bird deterrent technology) and/or adaptive management measures are necessary. After the Bird and Bat Monitoring Study is determined by the CPM to be complete, the project owner or contractor will prepare a paper that describes the study design and monitoring results to be submitted to a peer-reviewed scientific journal. A copy of the manuscript and proof of submittal will be provided to the CPM within one year of concluding the monitoring study (CEC, 2010).

[3] In conversations with CDFG, USFWS, Western, and BLM, the Avian and Bat Protection Plan will be provided in Summer 2012.

7.9 In-Lieu Fee Mitigation Option (BIO-26)

COC BIO-26 provides the project owner with an option to pay an in-lieu fee to satisfy their mitigation obligations instead of acquiring compensation lands, pursuant to Fish and Game code sections 2069 and 2099 or any other applicable in-lieu fee provision, provided that the project's in-lieu fee provision is found by the CEC to be in compliance with CEQA and CESA requirements (CEC, 2010).

If the project owner elects to use this provision, they must notify the CEC and all parties requesting a proceeding to make a determination that the project's in-lieu fee proposal meets CEQA and CESA requirements. If this provision is elected before posting security required by the COCs, the project owner will provide proof of the in-lieu fee payment to the CPM before any ground disturbance. If the project owner elects to use this provision after posting such security, the project owner will provide proof of the in-lieu fee payment before the time required for habitat compensation lands to be surrendered in accordance with the COC (CEC, 2010).

SECTION 8

Construction Monitoring and Reporting Responsibilities

8.1 Scope of Monitoring

The intensity and frequency of monitoring depends on the biological resources in and near the work area and the kinds of activities underway. When trenches and holes are open, large volumes of supplies are deployed for installation, construction traffic is very heavy, and/or sensitive resources are common in the area. Full-time environmental compliance monitoring would be necessary.

8.1.1 Monitoring Activities

The monitoring responsibilities of the Designated Biologists include the following:

- Clearly mark sensitive biological resource areas and inspect these areas regularly for compliance with regulatory terms and conditions (BIO-2).
- Inspect active construction areas for trapped animals before construction begins each day. At the end of the day, examine structures that prevent entrapment or allow escape during periods of construction inactivity. Periodically inspect areas with high vehicle activity (for example, parking lots) for animals in harm's way (BIO-2).
- Monitor all exclusion zones to ensure that stakes, signs, and fencing are intact and that human activities are limited in these protective zones (BIO-9).
- Maintain and check desert tortoise exclusion fences daily to ensure the integrity of the fence is preserved throughout construction. The Designated Biologist will be present onsite to monitor construction and decide fence placement during fence installation. During operation of the RSEP, fence inspections shall occur at least once per month or more frequently after storms or other events that could jeopardize the function and integrity of the fence. Damaged fence must be repaired within 48 hours. All dead or entrapped animals in the fence must be reported to the CPM, BLM, USFWS, and CDFG. Carcasses should be handled by the Designated Biologist in accordance with COC BIO-8, paragraph 14, and saved in a freezer onsite. CDFG should be contacted within 1 day for special-status species or within 30 days for guidance on storage or disposal (BIO-9).
- Conduct compliance inspections at least once per month after clearing, grubbing, grading, and heliostat installation activities are completed and submit a monthly compliance report to the CPM. In accordance with COC BIO-6, the monthly compliance report shall include all observations provided by WEAP trainees (BIO-9).

The duties of the Biological Monitors (BIO-4) include the following:

- If actions may affect biological resources during operation, a Biological Monitor, under the supervision of the Designated Biologist, shall be available for monitoring and reporting (BIO-4).
- The Designated Biologist or Biological Monitor shall be present at the construction site during all project activities that have potential to disturb soil, vegetation, and wildlife. The Designated Biologist or Biological Monitor shall walk immediately ahead of equipment during brushing and grading activities that have potential to disturb soil, vegetation, and wildlife (BIO-8).
- At the end of each work day, the Designated Biologist shall ensure that all potential wildlife pitfalls (trenches, bores, temporary detention basins, and other excavations) have been backfilled (BIO-8).
- All trenches, bores, temporary detention basins, and other excavations outside the areas permanently fenced with desert tortoise exclusion fencing shall be inspected periodically, but no less than three times, throughout the day and at the end of each workday by the Designated Biologist or a Biological Monitor (BIO-8).
- Any construction pipe, culvert, or similar structure with a diameter greater than 3 inches, stored less than 8 inches aboveground for one or more nights, shall 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 (BIO-8).
- A Biological Monitor shall patrol areas with puddles of dust abatement water form, which could attract desert tortoises and common ravens to construction sites, to ensure water does not puddle and shall take appropriate action to reduce water application where necessary (BIO-8).
- If pre-construction site mobilization requires ground-disturbing activities such as for geotechnical borings or hazardous waste evaluations, a Designated Biologist or Biological Monitor shall be present to monitor any actions that could disturb soil, vegetation, or wildlife (BIO-8).
- During construction, 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. During operation of the project, fence inspections shall occur at least once per month throughout the life of the project, and more frequently after storms or other events that might affect the integrity and function of desert tortoise exclusion fences (BIO-9).
- 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 (BIO-9).
- Monitoring after seeding and planting will occur yearly and will continue for at least 2 years or until the defined success criteria are achieved (BIO-10).

- Replacement seeding or planting will be monitored and evaluated by the same criteria as required for original revegetation plantings (BIO-10).
- Monitoring and reporting will continue until the performance standards are achieved or unless otherwise specified by the CPM in consultation with BLM and Western (BIO-10).
- The facility plant manager or appropriate designee during operations will be required to continually update the potential noxious weed list and provide monitoring and management appropriate to any new species (BIO-11).
- Monitoring during construction and operation to ensure timely detection and prompt eradication of weed infestations, which are essential to a long-term strategy for weed management (BIO-11).
- Weed infestation surveying and monitoring will occur at least two times per year (timed to occur early and late in the growing season) and all identified weed populations will be treated at least once per year. When there are no new seedlings or resprouts at treated sites for three consecutive, normal rainfall years, the weed population can be considered eradicated and weed control efforts may cease for that impact site (BIO-11).
- The Designated Botanist will conduct weekly monitoring of the ESAs that protect special-status plant occurrences during construction and decommissioning activities (BIO-12).
- The Designated Biologist will monitor any active nests within 500 feet of construction until nestlings have fledged and dispersed (BIO-13).
- Supervise all grubbing, trenching, or leveling activities in order to locate any desert tortoises missed during the desert tortoise clearance surveys (BIO-14).
- The Designated Biologist and Biological Monitors will supervise all desert tortoise exclusion fence installations (BIO-14).
- All temporary and permanent desert tortoise exclusion fencing must be inspected regularly. Temporary fencing will be inspected weekly. Moreover, temporary fencing will be inspected during and within 24 hours of major rain events where drainages intersect the fencing. Any damaged temporary fencing must be repaired immediately and the surrounding area must be inspected by the Designated Biologist. Permanent fencing will be inspected monthly. In addition, permanent fencing will be inspected during and within 24 hours of major rain events (BIO-14).
- If desert tortoises were moved out of harm's way during fence installation, then the fencing in that area must be inspected twice daily for at least 7 days to verify that the desert tortoise has not been trapped within the fence. Thereafter, permanent fencing shall be inspected monthly and during and within 24 hours following all major rains. Major rains are defined as a storm(s) for which surface flow is detectable within the fenced drainages (BIO-14).
- Monthly and post-rainfall inspections of permanent site fencing shall continue throughout the life of the project. Temporary fencing shall be inspected weekly and, where drainages intersect the fencing, during and within 24 hours following major rains.

All temporary fencing shall be repaired immediately upon discovery and the Designated Biologist shall inspect the area to determine whether the damage may have permitted tortoise entry (BIO-14).

- During initial perimeter fence installation, desert tortoises found in burrows will be avoided. High visibility fencing will be installed around the burrow and it will be monitored (BIO-15).
- Any relocated desert tortoise will be blocked into the burrow for no more than two weeks. It will be monitored to make sure that it either remains in the burrow or locates another burrow. If the temperature warms significantly, then the Designated Biologist will unblock the burrow sooner (Sundance, 2010a). If the nighttime air temperature drops below approximately 35ºF and the desert tortoise attempts to find another burrow but is unsuccessful, then it will be captured for monitoring in a climate-controlled, dark, quiet, and safe location. The desert tortoise will be held in this location until the temperature warms and other active desert tortoises are observed in the vicinity. Then the desert tortoise will be released within 100 feet of its original burrow and monitored (Sundance, 2010a) (BIO-15).
- All desert tortoises relocated outside the RSEP perimeter fence in suitable habitat must be placed in the shade of a shrub and monitored (Sundance, 2010a) (BIO-15).
- A temporary transmitter will be affixed to all desert tortoises found within 1 mile of SR 62. These desert tortoises will be monitored closely by the Designated Biologist and the temporary transmitters will be removed when the animals are settled in a safe area (Sundance, 2010a) (BIO-15).
- Desert tortoises found pacing the RSEP perimeter fence that travel towards and onto SR 62 will also have a temporarily transmitter and monitored until they settle into a safe area (Sundance, 2010a) (BIO-15).
- Desert tortoises relocated from areas of linear facilities construction activities in unfenced, native habitat must be placed in the shade of a shrub and monitored (BIO-15).
- Desert tortoise nests found between April 15th and October 1st will be relocated and monitored from a 30- foot distance once per month through late November, when they will be excavated for examination (BIO-15).
- All relocated/translocated desert tortoises discovered during the operations phase will be placed in the shade of a shrub and monitored (Sundance, 2010a) (BIO-15).
- Juvenile desert tortoises must be released in the early morning to reduce the chance of depredation. All boxed or desert tortoises with transmitters will be monitored periodically throughout the day and following their release (Sundance, 2010a) (BIO-15).
- All desert tortoises relocated/translocated on RSEP will be monitored for at least two hours after their release to ensure their safety. The monitor will determine if the desert tortoise is maintaining a safe distance from the construction area. During fence construction or for utility corridors, the monitor will determine if the desert tortoise might re-enter the construction area (Sundance, 2010a). Moreover, anytime a desert tortoise is relocated outside the desert tortoise exclusion fence, that release location and

surrounding area must be monitored for at least the next two days during desert tortoise activity temperatures (that is, less than 43°C ground surface temperature [Karl, 1992 and Zimmerman et al., 1994]). This is to determine whether the desert tortoise is fence-walking or not. If the desert tortoise is fence-walking, then another release area should be selected (Sundance, 2010a). If moved to another release area, the monitoring of the desert tortoise would be initiated. Tortoises released in the evening due to temperature considerations will be monitored until dark and again at dawn the following morning. These desert tortoises will be monitored until they enter a burrow that provides adequate protection from heat stress and predators (Sundance, 2010a) (BIO-15).

- While conducting other activities, the Designated Biologist will instruct the Biological Monitors to record raven observations. Relevant incidental observations will be included in the yearly monitoring reports (BIO-17).
- To prevent attracting ravens to the proposed RSEP the project owner will implement monitoring of water sources closely to make sure there are no leaks or puddles of water (BIO-17).
- To prevent nesting, roosting, and perching on structures associated with the RSEP, the project owner will implement inspection of anti-perch devices periodically (BIO-17).
- If an occupied golden eagle nest is detected in the area surrounding the solar generator site or generator tie-line alignment, the Project owner shall prepare and implement a Golden Eagle Monitoring and Management Plan for the duration of construction monitoring methods shall be consistent with Pagel et al. (2010) (BIO-18).
- If construction activities would occur within 500 feet of the occupied burrow during the nesting season (February 1st through August 31st), the Designated Biologist or Biological Monitor shall monitor to determine if these activities have potential to adversely affect nesting efforts, and shall implement measures to minimize or avoid such disturbance (BIO-19).
- If burrowing owls are passively relocated to artificial burrows, then the Designated Biologist shall survey the relocation area(s) containing the artificial burrows during the nesting and wintering seasons to assess use of the artificial burrows, using methods consistent with Phase II and Phase III California Burrowing Owl Consortium Guideline protocols (CBOC, 1993). Surveys shall start upon completion of artificial burrow construction and shall continue for a period of five years.
- Potentially active dens that would be directly impacted by construction-related activities will be monitored by the Biological Monitor for three consecutive nights using a tracking medium (such as diatomaceous earth or fire clay) and/or infrared camera stations at the entrance. If no tracks are observed in the tracking medium or no photos of the target species are captured after three nights, the den shall be excavated and backfilled by hand (BIO-20).
- If occupied badger or kit fox dens are discovered within the proposed project area, the Biological Monitor will flag the area and monitor the dens (see Section 7.5.8 for additional information) (BIO-20).

- Occupied badger and kit fox dens will be monitored daily to determine if the den is occupied by a female with young (such as a maternity den) (BIO-20).
- Biological monitor will be present during any construction-related activity that occurs within 500 feet of the desert kit fox maternity den (BIO-20).
- The netted evaporation ponds will be monitored regularly to verify that the netting remains intact, is fulfilling its function in excluding birds and other wildlife from the ponds, and does not pose an entanglement threat to birds and other wildlife (BIO-24).
- The Designated Biologist or Biological Monitor will regularly survey the ponds at least once per month starting with the first month of operation of the evaporation ponds. If after 12 consecutive monthly site visits no bird or wildlife deaths or entanglements are detected by or reported to the Designated Biologist, monitoring can be reduced to quarterly visits. If after 12 consecutive quarterly site visits no bird or wildlife deaths or entanglements are detected by or reported to the Designated Biologist and with approval from the CPM, USFWS and CDFG, future surveys may be reduced to two surveys per year, during spring and fall migration (CEC, 2010) (BIO-24).
- The Designated Biologist will direct the monitoring of the death and injury of birds and bats from collisions with project activities including heliostats and solar receiver tower, and burning caused by flying through focused sunlight around the solar receiver tower or standby points. The study design shall be approved by the CPM in consultation with Western, CDFG and USFWS, and shall be incorporated into the project's BRMIMP and implemented by the Designated Biologist in coordination with the project owner, CPM, Western, CDFG, BLM, and USFWS.

8.1.2 Reporting Activities

The reporting responsibilities of the Designated Biologists include the following:

- 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 to the CPM (BIO-2).
- Notify the agencies of dead or injured listed species and reporting special-status species observations to the California Natural Diversity Data Base consistent with Condition of Certification BIO-22 (BIO-2).
- The Designated Biologist shall provide copies of all written reports and summaries that document biological resources compliance activities in the Monthly Compliance Reports submitted to the CPM. 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 his or her duties cease, as approved by the CPM in consultation with Western, CDFG, BLM, and USFWS (BIO-2).
- 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 (BIO-6).

- Implementation of BRMIMP measures (for example, construction activities that were monitored, species observed) shall 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 in consultation with Western, CDFG, BLM, and USFWS, 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 preconstruction site mobilization and construction-related ground disturbance, grading, boring, and trenching, and which mitigation and monitoring items are still outstanding as well as a timeline for implementing outstanding items (BIO-7).
- No later than January 31st of every year the project facility remains in operation, the Designated Biologist shall provide the CPM, BLM, CDFG, and USFWS 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/operation 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; 3) an assessment of the effectiveness of each completed or partially completed mitigation measure in minimizing and compensating for project impacts, 4) recommendations on how effectiveness of mitigation measures might be improved, and 5) a summary of any agency approved modifications to the BRMIMP (BIO-9).
- No later than 45 days after initiation of project operation, provide the CPM 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 (BIO-9).
- In the event of a sighting in an active construction area, injury, kill, or relocation of any listed species, the CPM, BLM, CDFG, and USFWS shall be notified immediately by phone. Notification shall occur no later than noon on the business day following the event if it occurs outside normal business hours so that the agencies can determine if further actions are required to protect listed species. Written follow-up notification via Fax or electronic communication shall be submitted to these agencies within two calendar days of the incident (BIO-9).
- Injured desert tortoise 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 (BIO-9).
- If a desert tortoise is killed by project-related activities during construction or operation, or if a desert tortoise is otherwise found dead, submit a written report with the same information as an injury report. The report shall include the date and time of the finding or incident (BIO-9).

- No later than two calendar days following the required notification of a sighting, kill, injury, 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 the sighting, injury, kill, or relocation of a listed species, identifying who was notified and explaining when the incidents occurred (B IO-9).
- Within 90 days after completion of each year of project construction, the project owner shall provide to the CPM verification of the total vegetation acreage subject to temporary and permanent disturbance and a written report identifying which items of the Revegetation 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. To monitor and evaluate the success of the revegetation, the project owner shall submit annual reports of the revegetation including the status of the site, percent cover of native and exotics, and any remedial actions conducted by the owner to the CPM and BLM (BIO-10).
- On January 31st of each year following construction until the completion of the revegetation monitoring specified in the Revegetation Plan, the Designated Biologist shall provide a report to the CPM that includes: a summary of revegetation activities for the year, a discussion of whether revegetation performance standards for the year were met, and recommendations for revegetation remedial action, if warranted, that are planned for the upcoming year (BIO-10).
- 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-11).
- A summary report on weed management on the project site shall be submitted in the Annual Compliance Report during facility operations (BIO-11).
- Implementation of the special-status plant impact avoidance and minimization measures shall be reported in the Monthly Compliance Reports prepared by the Designated Botanist. Within 30 days after completion of Project construction, the Project owner shall provide to the CPM, for review and approval Resources in consultation with the BLM State Botanist, a written construction termination report identifying how measures have been completed (BIO-12).
- The Project owner shall submit a monitoring report every year for the life of the project to monitor effectiveness of protection measures for all avoided special-status plants to the CPM and BLM State Botanist. The monitoring report shall include: dates of worker awareness training sessions and attendees, an inventory of the special-status plant occurrences and description of the habitat conditions, an indication of population and habitat quality trends, and description of the remedial action, if warranted and planned for the upcoming year (BIO-12).
- Implementation of the impact avoidance and minimization measures shall be reported in the Monthly Compliance Reports prepared by the Designated Botanist (BIO-12).

- Within 30 days after completion of project construction, the project owner shall provide to the CPM, for review and approval in consultation with the BLM State Botanist, a written construction termination report identifying how measures have been completed (BIO-12).
- The project owner shall submit a monitoring report every year for the life of the project to monitor effectiveness of protection measures for all ESAs to the CPM and BLM State Botanist. The monitoring report shall include: dates of worker awareness training sessions and attendees, an inventory of the special-status plant occurrences and description of the habitat conditions, an indication of population and habitat quality trends, and description of the remedial action, if warranted and planned for the upcoming year. The project owner shall coordinate with the CPM and BLM to revise and finalize monitoring reports and all reports described in this section, and shall specifically report any difficulties in meeting the protection goals and cooperatively develop adaptive measures as needed (BIO-12).
- Within 90 days after completion of each year of project construction, the project owner shall provide to the CPM verification of the numbers or acreage of plants covered in this Condition (that is, species named in BLM and County policies) which have been removed or salvaged over the course of the year (BIO-12).
- Annual revegetation reports described in BIO-10 verification shall include summaries of salvage and planting operations and monitoring results. Compliance reports shall include summaries of written and photographic records of the plan implementation described above. Compliance reports shall be submitted annually for a period not less than 5 years to document irrigation, maintenance, and monitoring results, including plant survival (BIO-12).
- Nest locations shall be mapped using GPS technology and submitted, along with a weekly report stating the survey results, to the CPM (BIO-13).
- Before 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(s) and shall depict the boundaries of the no-disturbance buffer zone around the nest(s) (BIO-13).
- A written report documenting any special-status animals relocated shall be provided to the CPM within 30 days of relocation (BIO-14).
- The Designated Biologist shall record the following information for any desert tortoises handled: a) the locations (narrative and maps) and dates of observation; b) general condition and health, including injuries, state of healing and whether desert tortoise voided their bladders; c) location moved from and location moved to (using GPS technology); d) gender, carapace length, and diagnostic markings (that is, identification numbers or marked lateral scutes); e) ambient temperature when handled and released; and f) digital photograph of each handled desert tortoise. Desert tortoises moved from

within project areas shall be monitored in accordance with the Desert Tortoise Translocation Plan (BIO-14).

- All mitigation measures and their implementation methods shall be included in the BRMIMP and implemented by the project owner. Implementation of the measures shall be reported in the Monthly Compliance Reports by the Designated Biologist. Within 30 days after completion of desert tortoise clearance surveys the Designated Biologist shall submit a report to the CPM, Western, BLM, USFWS, and CDFG describing implementation of each of the mitigation measures listed in BIO-14). The report shall include the desert tortoise survey results, capture and release locations of any relocated desert tortoises or other animals, and any other information needed to demonstrate compliance with the measures described above (BIO-14).
- Within 30 days after initiation of translocation activities, the Designated Biologist shall provide to the CPM for review and approval in consultation with Western, USFWS, BLM, and CDFG, a written report identifying which items of the final Desert Tortoise Translocation Plan have been completed, and a summary of any modifications to measures made during implementation of the Plan. Written monthly progress reports shall be provided to the CPM for the duration of the Plan implementation. Progress reports shall be made available to Western, BLM, CDFG, and USFWS upon request (BIO-15).
- For the first year of reporting the project owner shall provide quarterly r,eports describing implementation of The Raven Monitoring, Management, and Control Plan. Thereafter the reports shall be submitted annually for the life of the project (BIO-17).
- 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-17).
- On January 31st of each year following construction the Designated Biologist shall provide a report to the CPM that includes: a summary of the results of raven management and control activities for the year; a discussion of whether raven control and management goals for the year were met; and recommendations for raven management activities for the upcoming year (B IO-17).
- No fewer than 30 days from completion of the golden eagle inventory the project owner shall submit a report to the CPM, Western, CDFG, BLM, and USFWS documenting the results of the inventory. If no occupied nests are detected during the inventory and a plan is not warranted, a letter from USFWS documenting this determination shall be submitted to the CPM and Western at least 10 days before the start of any pre-construction site mobilization. (BIO-18).
- A report describing survey results of monitoring of any relocated burrowing owls and artificial burrows and remedial actions taken shall be submitted to the CPM, Western, BLM, CDFG, and USFWS no later than January 31st of each year for five years (BIO-19).

- The project owner shall report monthly to the CPM, CDFG, USFWS, BLM, and Western for the duration of construction on the implementation of burrowing owl avoidance and minimization measures described in the Burrowing Owl Monitoring and Mitigation Plan. Within 30 days after completion of construction the project owner shall provide to the CPM, CDFG, USFWS, BLM, and Western a written construction termination report identifying how mitigation measures described in the plan have been completed (BIO-19).
- On January 31st of each year following construction for a period of five years, the Designated Biologist shall provide a report to the CPM, USFWS, BLM and CDFG that describes the results of monitoring and management of the replacement burrowing owl burrow area. The annual report shall provide an assessment of the status of the replacement burrow area with respect to burrow function and weed infestation, and shall include recommendations for actions the following year for maintaining the burrows as functional burrowing owl nesting sites and minimizing the occurrence of weeds (BIO-19).
- If an American Badger or Desert Kit Fox is relocated, a written report documenting the animal's removal or forced dispersal shall be provided to the CPM within 30 days of relocation. In the event that passive relocation techniques fail for badgers, the Applicant will contact CDFG to explore other relocation options, which may include trapping (BIO-20).
- The project owner shall submit a report to the CPM and CDFG within 30 days of completion of badger and kit fox surveys. The report shall describe survey methods, results, further mitigation measures (if any) to be implemented, and shall specify reporting and verification requirements (for example, CDFG approval for forced dispersal plans) for those measures. Results of any follow-up measures shall be reported to the CPM in monthly and annual compliance reports and on any reporting schedule required or recommended by CDFG (BIO-20).The project owner shall notify the CPM, Western, BLM, and CDFG, in writing, at least five days before initiation of project activities in jurisdictional areas and at least five days prior to completion of project activities in jurisdictional areas. The project owner shall notify the CPM, Western, BLM, and CDFG of any change of conditions to the project, the jurisdictional impacts, or the mitigation efforts, if the conditions at the site of the proposed project change in a manner which changes risk to biological resources that may be substantially adversely affected by the proposed project. A copy of the notifying change of conditions report shall be included in the annual reports. The notifying report shall be provided to the CPM, Western, BLM, and CDFG no later than 7 days after the change of conditions is identified. (BIO-22).
- Verification of non-native vegetation removal from drainages onsite, and reporting of special-status species shall be included in monthly and annual compliance reports (Condition of Certification BIO-2). Verification of implementation and completion of the compensation land Habitat Management Plan shall be as specified in that Plan (BIO-22).
- No less than 30 days before initiating ground disturbing activities along either transmission line alignment, the project biologist shall provide a written report detailing the survey results and compliance with avoidance measures relating to Couch's

Spadefoot Surveys and Breeding Habitat Avoidance to the CPM for review in consultation with Western, CDFG, and BLM (BIO-23).

- The Designated Biologists shall report any bird or other wildlife deaths or entanglements associated with the evaporation ponds within two days of the discovery to the CPM, Western, CDFG, and USFWS (BIO-24).
- If dead or entangled birds are detected at the evaporation ponds, the Designated Biologist shall take immediate action to correct the source of mortality or entanglement. The Designated Biologist shall make immediate efforts to contact and consult the CPM, Western, CDFG, and USFWS by phone and electronic communications prior to taking remedial action upon detection of the problem, but the inability to reach these parties shall not delay taking action that would, in the judgment of the Designated Biologist, prevent further mortality of birds or other wildlife at the evaporation ponds (BIO-24).
- The project owner shall notify the CPM no less than 5 working days before implementing any CPM-approved modifications to the Evaporation Pond Plan (bio-24).
- Within 30 days after completion of project construction, the project owner shall provide to the CPM for review and approval a report identifying which items of the Evaporation Pond Plan have been completed, a summary of all modifications to mitigation measures made during the project's construction phase, and as-built drawings of the evaporation ponds (BIO-24).
- For the first year of operation the Designated Biologist shall submit quarterly reports to the CPM, Western, CDFG, and USFWS describing the dates, durations and results of site visits conducted at the evaporation ponds (BIO-24).
- The Designated Biologist shall submit annual monitoring reports with this information. The quarterly and annual reports shall fully describe any bird or wildlife mortality or entanglements detected during the site visits or at any other time, and shall describe actions taken to remedy these problems. The annual report shall be submitted to the CPM, Western, CDFG, and USFWS no later than January 31st of every year for the life of the project (BIO-24).
- Implementation and results of the Avian and Bat Protection Plan shall be described in periodic reports, scheduled according to the reporting schedule set forth in the approved Plan. The project owner shall submit reports to the CPM for review and approval, in consultation with Western, CDFG, BLM, and USFWS (BIO-25).
- For at least two years following the beginning of operation the project owner shall submit quarterly reports to the CPM, Western, CDFG, and USFWS describing the dates, durations, and results of monitoring. The quarterly reports shall provide detailed descriptions of any project-related bird or wildlife deaths or injuries detected during the monitoring study or at any other time (BIO-25).
- Following the completion of the fourth quarter of monitoring each year, the Designated Biologist shall prepare an Annual Report that summarizes the year's data, analyzes any project-related bird and/or bat fatalities or injuries detected, and provides recommendations for future monitoring and any adaptive management actions needed.

The Annual Report shall be provided to the CPM, Western, CDFG, and USFWS (BIO-25).

- Quarterly reporting shall continue until the CPM, in consultation with Western, CDFG and USFWS determine whether further bird and/or bat fatalities or injuries monitoring is needed, and whether mitigation (for example, development and/or implementation of bird deterrent technology, etc.) and/or adaptive management measures are necessary. After the Bird and Bat Monitoring Study is determined by the CPM to be complete, the project owner or contractor shall prepare a paper that describes the study design and monitoring results to be submitted to a peer-reviewed scientific journal. A copy of the manuscript and proof of submittal shall be provided to the CPM within one year of concluding the monitoring study (BIO-25).

The reporting responsibilities of the Biological Monitor include the following:

- If actions may affect biological resources during operation, a Biological Monitor, under the supervision of the Designated Biologist, shall be available for monitoring and reporting (BIO-4).
- Include all WEAP trainees reports of observations of listed species and their sign in the monthly compliance report (BIO-4).
- For any road-killed special-status species, the Biological Monitor shall contact CDFG and USFWS (for golden eagle or federally-listed species, including desert tortoise) within one working day of receipt of the carcass for guidance on disposal or storage of the carcass. The Biological Monitor shall report the special-status species record as described in Conditions of Certification BIO-2, BIO-7, and BIO-22 (BIO-8).
- All wildlife found entrapped or dead in the fence shall be reported to the CPM, BLM, CDFG, and USFWS (BIO-9).
- The monthly compliance report shall include all reported observations of listed species made by WEAP trainees on the site pursuant to Condition of Certification BIO-6 (BIO-9).

8.2 Conflict Resolution

Remediation of noncompliance issues will require the cooperation of the Designated Biologist, CPM, Resident Engineer, Construction Inspector, Contractor Supervisor, and Crew Foreman. Through this cooperative effort, all involved parties would become aware of the issues, remediation measures, and reasons for future avoidance of similar and related noncompliance issues. However, to ensure that these issues are given the priority that they deserve, all incidences of noncompliance as well as other problems that may become noncompliance issues will be discussed at the weekly project status meeting. Furthermore, the Designated Biologist will take every opportunity to discuss sensitive species biology and protection with contracting personnel.

8.3 Summary of Reporting Responsibilities of Construction Monitoring

Monthly monitoring reports will be prepared by the Designated Biologist and will be submitted to the RSEP Environmental Compliance Manager for transmittal to the CEC CPM. In addition, the CPM will be notified immediately, in writing, if monitoring reveals that any of the protective measures were not implemented during the period indicated in this program, or if it appears that measures will not be implemented within the time period specified. The CPM will also be notified if any of the protective measures are not providing a level of protection that is appropriate for the impact that is occurring. The CPM will be notified of recommendations, if any, for alternative protective measures.

The first monthly report will be prepared within one month of the beginning of surface-disturbing activities. Subsequent reports will be prepared for any month during which the Designated Biologist determines that monitoring is necessary for the protection of sensitive biological resources. Each monthly compliance report will include the following information:

- Areas and activities monitored during the reporting month
- Summary of the BRMIMP measures that were implemented
- Incident Reports and resolution of each reported situation
- Species relocated, killed, or injured during project construction; the dates, times, and locations of capture, mortality, or injury; and descriptions of relocation sites
- Construction and monitoring activities planned for the following month, along with anticipated problems
- Methods used to resolve noncompliance issues, including agency and RSEP personnel contacted

8.4 Reporting of Injured Wildlife

Any employee who inadvertently kills or injures a wildlife species, or who finds any animal either dead, injured, or entrapped, is required to report the incident immediately to the Designated Biologist. Injured special-status animals will be reported to CDFG , USFWS, Western, and BLM. Injured desert tortoises have specific requirements as identified in Section 4.4. RSEP will follow instructions that are provided by CDFG, USFWS, BLM, and Western for special-status species.

In the case of entrapped listed animals, escape ramps or structures would be installed immediately, if possible, to allow the subject animal(s) to escape unimpeded.

In the event that an animal is found dead on the project site and the species of animal is classified as threatened or endangered, the Designated Biologist would immediately (within 24 hours) notify USFWS and CDFG by phone or in person and would document initial notification in writing within two working days of the finding of any such animal(s). Notification would include the date, time, location, species, and circumstances of the incident.

Any listed species (other than Desert Tortoise) found dead or injured would be delivered to the USFWS, CDFG, or designated veterinarian immediately for care, analysis, or disposition. Information regarding dead or injured desert tortoise is provided in Section 4.4.

SECTION 9

Post-construction Monitoring and Reporting Responsibilities

According to Condition of Certification BIO-7 and BIO-19, within 30 days after completion of project construction, the project owner will provide to the CEC CPM for review and approval, a written construction termination report. This report, prepared by the Designated Biologist, will identify how conditions of certification and protection measures for biological resources have been completed. The Designated Biologist will conduct a post-construction site visit once all restoration activities are complete to determine whether all implemented protection measures related to biological resources were successful. The results of the inspection will be included in the construction termination report (BIO-7 and BIO-19).

Upon completion of construction, all areas subject to temporary disturbances will be subject to post-construction cleanup and restoration by the contractors. Cleanup will consist of removal of gravel, stakes, lathes, temporary erosion control devices, flagging, barrels, cans, drums, accidental spills, and any other refuse generated by construction. Reclamation will consist of re-contouring soil surfaces to natural lines and grades. All areas subject to temporary ground disturbances will be re-contoured to natural lines and original grade without disruption to adjacent undisturbed habitat.

Although the construction area will be kept cleared of trash, food-related items, construction debris, and other litter during the entire construction period, a post-construction inspection and cleanup will be conducted. The Designated Biologist will accomplish the inspection within 15 days of completion of construction in each construction area. All construction debris, unneeded signs, and other trash and litter will be removed within 15 days of the inspection. The Designated Biologist will be responsible for removing all stakes, lathes, flagging, and signs associated with protected areas; the construction contractor will be responsible for remove all other debris. Disposal of all debris will be at an approved waste facility.

SECTION 10

Compliance Verification (BIO-9)

In compliance with COC BIO-9, the project owner will provide the CPM, Western, BLM, CDFG, and USFWS with reasonable access to the project site and mitigation lands under the control of the project owner and will otherwise fully cooperate with the Energy Commission's, Western's, BLM's, CDFG's, and USFWS'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 will hold harmless the Designated Biologist, Biological Monitor, CEC, Western, BLM, CDFG, USFWS, and any other agencies with regulatory requirements addressed by the CEC's sole permitting authority for any costs the project owner incurs in complying with the management measures, including stop work orders issued by the CPM, the Designated Biologist, or Biological Monitor. In addition to the duties described in BIO-2, the Designated Biologist will perform all of the tasks summarized below.

Notification

RESP will notify the CPM, Western, BLM, CDFG, and USFWS (Agencies) at least 14 calendar days before initiating ground-disturbing activities and immediately notify the Agencies in writing if the project owner is not in compliance with any conditions of certification and any actual or anticipated failure to implement mitigation measures within the time periods specified in the conditions of certification.

Monitoring During Grading

The Designated Biologist will remain onsite daily while grubbing and grading are taking place to avoid or minimize take of listed or special-status 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 protected zones.

Fence Monitoring

During construction, maintain and check desert tortoise exclusion fences on a daily basis to ensure the integrity of the fence is maintained. During operation of the project, fence inspections will occur at least once per month throughout the life of the project, and more frequently after storms or other events that might affect the integrity and function of desert tortoise exclusion fences. Fence repairs will occur within two days (48 hours) of detecting. All wildlife found entrapped or dead in the fence will be reported to the Agencies. Carcasses of animals entrapped in the fence will be handled as described above in BIO-8 paragraph 14; the Designated Biologist will retain the carcass in a freezer onsite and contact CDFG within 30 working days for guidance on disposal or storage. For special-status species, the Biological Monitor will contact CDFG or USFWS (for federally-listed species, including desert tortoise) within one working day.

Monthly Compliance Inspections

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.

Annual Listed Species Status Report

No later than January 31st of every year the project facility remains in operation, the Designated Biologist will provide the Agencies an annual Listed Species Status Report with the items described in BIO-9.

Final Listed Species Mitigation Report

No later than 45 days after initiation of project operation, provide the CPM a Final Listed Species Mitigation Report that will include the information listed in BIO-9.

Notification of Injured, Dead, or Relocated Listed Species

The Designated Biologist will immediately notify the Agencies by phone in the event of a sighting in an active construction area injury, kill, or relocation event of any listed species. Notification will occur no later than noon on the business day following the event if it occurs outside normal business hours. Written follow-up notification via FAX or electronic communication will be submitted to these agencies within two calendar days of the incident and include the relevant information listed in COC-9.

Stop Work Order

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 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 will comply with the stop work order immediately upon receipt thereof.

Verification

No later than two calendar days following the above-required notification of a sighting, kill, injury, or relocation of a listed species, the project owner will deliver to the Agencies via fax or electronic communication the written report from the Designated Biologist describing all reported incidents of the sighting, 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 will, at the same time, submit a map (for example, using GIS) depicting both the limits of construction and sighting location to the Agencies.

SECTION 11

Closure

This section describes the biological resources-related facility closure measures that will be taken at the end of the expected 30-year lifecycle of the facility or in the event of earlier closure, including a description of the respective funding mechanisms.

Following the operational life of 30 years, the project owner would perform site closure activities to meet federal and state requirements for the rehabilitation and revegetation of the project site after decommissioning. The procedures to be used for project decommissioning and restoration would be in accordance with a Facility Closure Plan. Under this plan, it would be expected that all aboveground structures and facilities would be removed to a depth below grade, and removed off-site for recycling or disposal. Some concrete, piping, and other materials existing below grade may be left in place. Areas that had been graded would be restored to original contours. Shrubs and other plant species would be revegetated (CEC, 2010).

The detailed Planned Closure Plan will be prepared in compliance with COC COMPLIANCE-12. The goal of temporary closure is to preserve the capacity to reinitiate energy production. The goal of permanent closure is to remove facility features and to restore some of the ecological functions of the site and to mitigate any and all potential adverse project impacts associated with construction, operation and closure below a level of significance.

11.1 Closure Activities

Site rehabilitation after facility closure will include the following general activities (not necessarily in the order listed below):

- Rehabilitation of access roads that are no longer required by the land management agencies will be rehabilitated. Asphalt will be removed, soils will be decompacted, and the roadway areas will be revegetated.
- Removal of physical components of the generation facilities and appurtenant utilities using practicable methods that are least disruptive to soils and surrounding habitat to a depth that will not impede growth of vegetative cover.
- Removal of transmission wiring and spooling of wiring for transport to a recycler.
- Removal of transmission pole foundations to a depth of approximately 6 feet.
- Removal of heliostat command and control wiring and recycling.
- Abandonment of water supply wells in place and sealing of pipelines.
- Stabilization of channel crossings in place.
- Recontouring of surfaces, rehabilitation of soils and revegetation.

- Monitoring of the rehabilitated site for noxious weeds and the continuation of weed control measures.
- Monitoring and remedial actions, if needed, for reasonable vegetation recovery.

SECTION 12

Modifications to the BRMIMP

The project owner will notify the CEC 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 will also be approved by the CPM and will be submitted to the USFWS, CDFG, BLM, and Western to ensure that no conflicts exist. The following list of items is required when modifications to the BRMIMP and CPM approval are necessary:

1. Identify changes considered necessary:

    a. Describe the proposed change.
    b. Describe the reasons for the change.
    c. Describe how the change will be implemented.

2. Determine whether CEC COC/project amendment (requires approval of full Commission) is required:

    a. Contact CPM.
    b. Notify other permitting agencies and interested parties.

SECTION 13

References

Baeten, L.A., and F. J. Dein. 1996. Salt Toxicosis in Wild Birds. Proceedings American Association of Zoo Veterinarians. Available online at: http://www.nwhc.usgs.gov/publications/field_manual/chapter_47.pdf. Accessed June 9, 2011.

Berry, K. H. 2001. Protocol -- June 2001. Salvaging injured, recently dead, ill, and dying wild, free-roaming desert tortoises (*Gopherus agassizii*). Prepared at the request of the U. S. Fish and Wildlife Service and the California Department of Fish and Game.

Boarman, W. I. and B. Heinrich. 1999. Common Raven. In A. Poole and F. Gill, (eds.), The Birds of North America, No. 476. The Birds of North America, Inc., Philadelphia, PA.

Brooks, M.L., and D.A. Pyke. 2001. Invasive plants and fire in the deserts of North America. Pages 1–14 *in* K.E.M. Galley and T.P. Wilson (eds.). Proceedings of the Invasive Species Workshop: the Role of Fire in the Control and Spread of Invasive Species. Fire Conference 2000: the First National Congress on Fire Ecology, Prevention, and Management. Miscellaneous Publication No. 11, Tall Timbers Research Station, Tallahassee, FL.

Brooks, M.L., C.M. D'Antonio, D.M. Richardson, J.B. Grace, J.E. Keeley, J.M. DiTomaso, R.J. Hobbs, M. Pellant, and D. Pyke. 2004. Effects of invasive alien plants on fire regimes. *BioScience* 54(7): 677-688.Bureau of Land Management (BLM). 2002. Proposed Northern & Eastern Colorado (NECO) Desert Coordinated Management Plan, and Final Environmental Impact Statement. California Desert District Office. Riverside, CA. Available at http://www.blm.gov/ca/news/pdfs/neco2002/neco_rod_final.pdf

Bureau of Land Management (BLM). 2009. Survey Protocols Required for NEPA/ESA Compliance for BLM Special-Status Plants. Unpublished Report.

Bureau of Land Management (BLM). 2007. Environmental Assessment, Issuance of 10-Year Grazing Lease for the Rice Valley Allotment. CA-660-EA06-55. Palm Springs South Coast Field Office. Palm Springs, CA.

Bureau of Land Management and California Department of Fish and Game (BLM and CDFG). 2002. Proposed Northern & Eastern Colorado Desert Coordinated Management Plan, an Amendment to the California Desert Conservation Area Plan 1980 and Sikes Act Plan with the California Department of Fish and Game, and Final Environmental Impact Statement. July 2002. BLM California Desert District and CDFG Inland, Deserts, and Eastern Sierra Region. [online]:

http://www.blm.gov/ca/news/pdfs/neco2002/

California Burrowing Owl Consortium (CBOC). 1993. Burrowing owl survey protocols and mitigation guidelines. Available at: http://www.dfg.ca.gov/wildlife/nongame/docs/boconsortium.pdf. 13 pp.

California Department of Food and Agriculture. 2011. List of noxious weeds. Available at: http://plants.usda.gov/java/noxious?rptType=State&statefips=06

California Department of Fish and Game (CDFG). California Natural Diversity Database (CNDDB). 2009. Biogeographic Data Branch, Department of Fish and Game. (Version 3.1.1). Sacramento, CA.

California Department of Fish and Game (CDFG). 2010. California Natural Diversity Database (CNDDB), Rarefind, Version 3.1.1.

California Energy Commission (CEC). 2010a. Commission Decision. Rice Solar Energy Project. Application for Certification (09-AFC-10), Riverside County. December. Available at: http://www.energy.ca.gov/2010publications/CEC-800-2010-019/CEC-800-2010-019-CMF.PDF

California Invasive Plant Council (Cal-IPC). 2006. California Invasive Plant Inventory. Cal-

IPC Publication 2006-02. California Invasive Plant Council: Berkeley, CA. Available at:

http://www.cal-ipc.org/ip/inventory/pdf/Inventory2006.pdf

California Native Plant Society (CNPS). 2009. Inventory of rare and endangered plants (Version 7-09b 4-10-09). California Native Plant Society, Sacramento, CA. http://cnps.web.aplus.net/cgi-bin/inv/inventory.cgi

CH2M HILL. 2010. Draft Biological Assessment for the Rice Solar Energy Project. March 2010. Available at: http://www.energy.ca.gov/sitingcases/ricesolar/documents/applicant/2010-06-25_Draft_Biological_Assessment_Response_to_CEC_Data_Request_45_47_48_TN-56090.pdf

County of Riverside. 2003. Riverside County General Plan: Land Use and Multipurpose Open Space Elements of the County General Plan. October 7, 2003. Available online at: http://www.tlma.co.riverside.ca.us/genplan/content/gp.aspx

Desert Tortoise Council (DTC). 1994. *Guidelines for Handling Desert Tortoise during Construction Projects*. Edward L. LaRue, Jr., editor. San Bernardino, California. Revised 1999. Dimmitt, M. A., and R. Ruibal. 1980. Environmental correlates of emergence in spadefoot toads (*Scaphiopus*). *Journal of Herpetology* 14:21-29.

ENSR AECOM. 2008. Beacon Solar Energy Project, Supplemental Response to CEC Data Request 14 and Responses to CEC Data Requests 71 through 127, Docket No. 08-AFC-2. October 13, 2008. Available online at http://www.energy.ca.gov/sitingcases/beacon/documents/applicant/data_response_set_02/3.%20Biological%20Resources%20Data%20Response%20Set%202.pdf and at http://www.energy.ca.gov/sitingcases/beacon/documents/applicant/data_response_set_02/4.%20Biological%20Resources%20Supplemental%20Response%20to%20Data%20Reques.pdf Accessed June 14, 2011.

Freeman, Paul. Accessed June 2009. Abandoned and Little-known Airfields.

http://www.airfields-freeman.com/CA/Airfields_CA_SanBernardino_SE.htm#rice

Gordus, A.G., H.L. Shivaprasad, and P.K. Swift, 2002. Salt Toxicosis in Ruddy Ducks that Winter on an Agricultural Evaporation Basin in California. *Journal of Wildlife Diseases* 38(1): 124-131.

Hillmer, J. & D. Liedtke. 2003. Safe herbicide handling: a guide for land stewards and volunteer stewards. Ohio

Chapter, The Nature Conservancy, Dublin, OH. 20 pp.

Karl, A.E. 1992. Annual report to the U.S. Fish and Wildlife Service for Permit No. PRT-746058.12 pp.

Kegley SE, Hill BR, Orme S, Choi AH. 210.) PAN Pesticide Database. Pesticide Action Network, North America. http:www.pesticideinfo.org

Kristan, W. B., III, and William I. Boarman. 2007. Effects of anthropogenic developments on common raven nesting biology in the west Mojave Desert. Ecological Applications 17(6): 1703–1713.

Kristan, W. B., III, and William I. Boarman. 2003. Spatial pattern of risk of common raven predation on desert tortoises. Ecology 84:2432-2443.

Kristan, W. B., III., W. I. Boarman, and J. J. Crayon. 2004. Diet composition of common ravens across the urban-wildland interface of the West Mojave Desert. Wildlife Society Bulletin 32: 244-253.

Lovich, J. E., J. Randall, and M. Kelly 1997 – Proceedings California Exotic Pest Plant Council Symposium '96. California Exotic Pest Plant Council, 110 pp.

Marzluff, J. M., B. Heinrich, and C. S. Marzluff. 1996. Raven roosts are mobile information centres. Animal Behaviour 51: 89-103.

Newton, Gail A., and V.P. Claassen. 2003. Rehabilitation of Disturbed Lands in California: A Manual for Decision-Making. Special Publication 123. California Department of Conservation, California Geological Survey. 228 pages.

Nicolai, C., S. Abele, H. Beeler, R. Doster, E. Kershner and T. McCabe. 2011. Monitoring Migratory Bird Take at Solar Power Facilities: An Experimental Approach. US Fish and Wildlife Service. April 26, 2011.

Pagel, J.E., D.E. Whittington, and G.T. Allen. 2010. *Interim golden eagle inventory and monitoring protocols; and other recommendations.* Arlington, VA: Division of Migratory Birds, U.S. Fish and Wildlife Service.

Prescott, Brian, G.,. 2008. Le Conte's Thrasher *Toxostoma lecontei*. In: Shuford, W. D., and Gardali, T., editors. 2008. California Bird Species of Special Concern: A ranked assessment of species, subspecies, and distinct populations of birds of immediate conservation concern in California. Studies of Western Birds 1. Western Field Ornithologists, Camarillo, California, and California Department of Fish and Game, Sacramento.

Sawyer, J. O. and T. Keeler-Wolf. 1995. A manual of California vegetation. California Native Plant Society, Sacramento, CA.

Sherman, M. W. 1993. Activity patterns and foraging ecology of nesting Common Ravens in the Mojave Desert, California. M. S. thesis, Colorado State Univ., Fort Collins.

Simon, M. 2000. California Department of Fish and Game, California Wildlife Habitat Relationships System, Couch's Spadefoot.

SolarReserve, LLC (RSE) and CH2M HILL. 2009. *Application of Certification: Rice Energy Solar Project.*

SolarReserve, LLC (RSE) and WorleyParsons Group, Inc. 2009. *Application of Certification: Rice Energy Solar Project, Appendix A: Report of Waste Discharge/Joint Technical Document.*

Stebbins, R.C. 2003. *Western reptiles and amphibians*. Houghton Mifflin Company. New York, NY.

Sundance Biology, Inc. (Sundance). 2010a. Draft Desert Tortoise Relocation/Translocation Plan for the Rice Solar Energy Project. Prepared for CH2M HILL: Draft Biological Assessment for the Rice Solar Energy Project – Appendix A. March 6, 2010.

Sundance Biology, Inc. (Sundance). 2010b. Draft Raven Management Plan for the Rice Solar Energy Project – Riverside, California. Prepared for CH2M HILL: Draft Biological Assessment for the Rice Solar Energy Project – Appendix B. March 6, 2010.

U.S. Fish and Wildlife Service (USFWS). 2010. *Translocation of Desert Tortoises (Mojave Population) From Project Sites: Plan Development Guidance*. August 2010. Available at: http://www.fws.gov/ventura/species_information/protocols_guidelines/docs/dt/USFWS%20DT%20Transocation%20Guidance.docx

U.S. Fish and Wildlife Service (USFWS). 2011a. Desert Tortoise Authorized Biologist Request Form. Available at: http://www.fws.gov/ventura/species_information/protocols_guidelines/docs/dt/DT%20authorized%20biologist%20request%20form.pdf

U.S. Fish and Wildlife Service (USFWS). 2011b. Desert Tortoise – Authorized Biologist and Monitor Responsibilities and Qualifications. Available at: http://www.fws.gov/ventura/species_information/protocols_guidelines/docs/dt/DT%20Auth%20Bio%20qualifications%20statement%2010_20_08.pdf

U.S. Fish and Wildlife Service (USFWS). 2011c. List of federally listed threatened & endangered species by County (including Riverside County). USFWS, Carlsbad Fish and Wildlife Office, Ventura, CA. http://www.fws.gov/carlsbad/TEspecies/CFWO_Species_List.htm

Webb, W. C., W. I. Boarman, and J. T. Rotenberry. 2004. Common raven juvenile survival in a human augmented landscape. Condor 106:517-528.

Windingstad, Ronald M., Frank X. Kartch, Richard K. Stroud and Milton R. Smith. 1987. Salt toxicosis in waterfowl in North Dakota. *Journal of Wildlife Diseases,* Vol. 23(3). pp. 443-446.

Wobeser, G. and J. Howard, 1987. Mortality of Waterfowl on a Hypersaline Wetland as a Result of Salt Encrustation. *Journal of Wildlife Diseases* 23(1): 127-134.

Zimmerman, L.C., M.P. O'Connor, S.J. Bulova, J.R. Spotila, S. J. Kemp, and C.J. Salice. 1994. Thermal ecology of desert tortoises in the eastern Mojave Desert: seasonal patterns of operative and body temperatures, and microhabitat utilization. Herp.Monogr. 8:45-59.

Zouhar, K., J.K. Smith, S. Sutherland, and M.L. Brooks. 2008. Wildland fire in ecosystems: Fire and nonnative invasive plants. Gen. Tech. Rep. RMRS-GTR-42-vol. 6. Ogden, UT: U.S. Department of Agriculture, Forest Service, Rocky Mountain Research Station. 355 p.

Appendix A
CEC Biological Conditions of Certification, Agency Agreements/Permits

those in other portions of this Decision, the project will not result in significant direct, indirect, or cumulative impacts to biological resources.

3. With implementation of the mitigation measures described in the evidentiary record and incorporated into the Conditions of Certification, the RSEP will conform to all applicable laws, ordinances, regulations, and standards related to biological resources as identified above.

CONDITIONS OF CERTIFICATION

BIO-1 The project owner shall assign at least one 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 Western, BLM, CDFG, and USFWS. USFWS <www.fws.gov/ventura/speciesinfo/protocols_guidelines/docs/dt> designates biologists who are approved to handle tortoises as "Authorized Biologists." Such biologists have demonstrated to USFWS that they possess sufficient desert tortoise knowledge and experience to handle and move tortoises appropriately, evaluate their health, and draw blood, and have received USFWS approval. Authorized Biologists are responsible for the implementation of all desert tortoise measures and are permitted, in turn, to approve specific monitors to handle tortoises, at their discretion. CDFG must also approve such biologists, potentially including individual approvals for monitors approved by the Authorized Biologist. Designated Biologists for the Project are the equivalent of USFWS Authorized Biologists. Only Designated Biologists and certain Biological Monitors who have been approved by the Designated Biologist shall be allowed to handle desert tortoises.

The Designated Biologist must meet the following minimum qualifications:

1. Bachelor's degree in biological sciences, zoology, botany, ecology, or a closely related field;

2. 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;

3. Have at least one year of field experience with biological resources found in or near the project area;

4. Meet the current USFWS Authorized Biologist qualifications criteria (www.fws.gov/ventura/speciesinfo/protocols_guidelines),

demonstrate familiarity with protocols and guidelines for the desert tortoise, and be approved by the USFWS (note that biologists who meet previous criteria may not meet current criteria due to requirements to assess health and draw blood; biologists must obtain training such as that offered through the Desert Tortoise Conservation Center in Las Vegas); and

5. Possess a California ESA Memorandum of Understanding pursuant to Section 2081(a) for desert tortoise.

In lieu of the above requirements, the resume shall demonstrate to the satisfaction of the CPM in consultation with Western, BLM, CDFG and USFWS, that the proposed Designated Biologist or alternate has the appropriate training and background to effectively implement the conditions of certification.

Verification: No fewer than 30 days prior to construction-related ground disturbance, the Project owner shall submit the name(s) and resume(s)of the Designated Biologists(s) along with copies of the completed USFWS Desert Tortoise Authorized Biologist Request Form(s) (www.fws.gov/ventura/speciesinfo/protocols_guidelines) to the USFWS and CPM for review and final approval in consultation with Western, BLM, and CDFG. No construction-related ground disturbance, grading, boring, or trenching 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 10 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.

DESIGNATED BIOLOGIST DUTIES

BIO-2 The project owner shall ensure that the Designated Biologist performs the activities described below during any site mobilization activities, construction-related ground disturbance, grading, boring, or trenching activities. The Designated Biologist may be assisted by the approved Biological Monitor(s) but remains the contact for the project owner, the CPM, Western, CDFG, BLM, and USFWS. The Designated Biologist Duties shall include, but shall not be limited to those listed below. Additional responsibilities of the Biological Monitor are set forth in Condition of Certification **BIO-9**.

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

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

3. 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;

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

5. Inspect active construction areas where animals may have become trapped prior to construction commencing each day. At the end of each work 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;

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

7. Respond directly to inquiries of the CPM, Western, or any other agencies regarding biological resource issues;

8. 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 to the CPM;

9. Consistent with **BIO-3**, train the Biological Monitors as appropriate, and ensure their familiarity with the BRMIMP, Worker Environmental Awareness Program (WEAP) training, and USFWS guidelines on desert tortoise surveys and handling procedures <www.fws.gov/ventura/speciesinfo/protocols_guidelines>; and

10. Maintain the ability to be in regular, direct communication with representatives of CDFG, USFWS, BLM, Western, and the CPM, including notifying these agencies of dead or injured listed species and reporting special-status species observations to the California Natural Diversity Data Base consistent with Condition of Certification **BIO-22**.

Verification: The Designated Biologist shall provide copies of all written reports and summaries that document biological resources compliance activities in the Monthly Compliance Reports submitted to the CPM. 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 his or her

duties cease, as approved by the CPM in consultation with Western, CDFG, BLM, and USFWS.

BIOLOGICAL MONITOR QUALIFICATIONS

BIO-3 The Designated Biologist shall submit the resume, at least three references, and contact information of each of the proposed Biological Monitors to the CPM. The resume shall demonstrate, to the satisfaction of the CPM, the appropriate education and experience to accomplish the assigned biological resource tasks. The Biological Monitor is the equivalent of the USFWS designated Desert Tortoise Monitor (USFWS 2008c).

The Designated Biologist will be responsible for training the Biological Monitor(s); training shall include familiarity with the conditions of certification, BRMIMP, WEAP, and USFWS guidelines on desert tortoise surveys and handling procedures <www.fws.gov/ventura/speciesinfo/protocols_guidelines>.

Verification: The project owner shall submit the specified information to the CPM for approval, in consultation with Western, CDFG, BLM, and USFWS at least 30 days prior to the start of any site mobilization or construction-related ground disturbance, grading, boring, and trenching. The Designated Biologist shall submit a written statement to the CPM confirming that individual Biological Monitor(s) has 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 in consultation with Western, CDFG, BLM, and USFWS at least 10 days prior to their first day of monitoring activities.

BIOLOGICAL MONITOR DUTIES

BIO-4 The Biological Monitors shall assist the Designated Biologist in conducting surveys and in monitoring of site mobilization activities, construction-related ground disturbance, grading, boring, or trenching. The Designated Biologist shall remain the contact for the project owner the CPM, Western, CDFG, BLM, and USFWS.

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 compliance activities, including those conducted by Biological Monitors. If actions may affect biological resources during operation, a Biological Monitor, under the supervision of the Designated Biologist, shall be available for monitoring and reporting.

DESIGNATED BIOLOGIST AND BIOLOGICAL MONITOR AUTHORITY

BIO-5 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. The Designated Biologist shall have the authority to immediately stop any activity that is not in compliance with these conditions and/or order

any reasonable measure to avoid take of an individual of a listed species. 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, boring, trenching, 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;
3. Notify the CPM if there is a halt of any activities and advise them of any corrective actions that have been taken or would be instituted as a result of the work stoppage; and
4. 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 in consultation with Western, CDFG, BLM, and USFWS as appropriate, within five working days after receipt of notice that corrective action is completed, or the project owner would be notified by the CPM that coordination with other agencies would require additional time before a determination can be made.

WORKER ENVIRONMENTAL AWARENESS PROGRAM (WEAP)

BIO-6 The project owner shall prepare and implement a Project-specific Worker Environmental Awareness Program (WEAP) and shall secure approval for the WEAP from the CPM in consultation with Western, CDFG, BLM, and USFWS. The WEAP shall be administered to all onsite personnel at the solar generator site, interconnector substation site, and on the transmission line alignment~~s~~. The WEAP shall be administered to all surveyors, construction engineers, employees, contractors, contractor’s employees, supervisors, inspectors, subcontractors, and delivery personnel. The WEAP shall be implemented during site preconstruction, construction, operation, and closure. The WEAP shall:

1. 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, including

photographs of protected species, is made available to all participants;

2. Discuss the locations and types of sensitive biological resources on the project site and adjacent areas, and explain the reasons for protecting these resources; provide information to participants that no snakes other reptiles, bats, or any other wildlife shall be harmed or harassed;
3. Place special emphasis on desert tortoise, burrowing owl, golden eagle, nesting birds, desert kit fox, and American badger, including information on physical characteristics, distribution, behavior, ecology, sensitivity to human activities, legal protection, penalties for violations, reporting requirements, and protection measures;
4. Include a discussion of fire prevention measures to be implemented by workers during project activities; request workers dispose of cigarettes and cigars appropriately and not leave them on the ground or buried;
5. Describe the temporary and permanent habitat protection measures to be implemented at the project site;
6. Identify whom to contact if there are further comments and questions about the material discussed in the program;
7. Include printed training materials, including photographs and brief descriptions of desert tortoises, burrowing owls, golden eagles, nesting birds, desert kit fox, roosting bats, and American badger, including behavior, ecology, sensitivity to human activities, legal protection, penalties for violations, reporting requirements, and protection measures;
8. Prominently display posters and descriptions in offices, conference rooms, employee break rooms, and other areas where employees may congregate, of desert tortoises, burrowing owls, golden eagles, nesting birds, desert kit fox, roosting bats, and American badger, including behavior, ecology, sensitivity to human activities, legal protection, penalties for violations, reporting requirements, and protection measures;
9. Direct all WEAP trainees to report all observations of listed species and their sign to the Designated Biologist for inclusion in the monthly compliance report; and
10. 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 30 days prior to start of construction-related ground disturbance the Project owner shall provide to the CPM a copy of the WEAP for review and approval in consultation with Western, CDFG, BLM, and the USFWS. The Project owner also shall submit copies of 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 10 days prior to construction-related ground disturbance activities the project owner shall submit two copies of the approved final WEAP.

Throughout the life of the project, the WEAP shall be repeated annually for permanent employees, and shall be routinely administered within one week of arrival to any new construction, maintenance, or operations personnel, foremen, contractors, subcontractors, and other personnel potentially working within the project area. Upon completion of the orientation, employees shall sign a form stating that they attended the program and understand all protection measures. These forms shall be maintained by the project owner and shall be made available to the CPM upon request. Workers shall receive and be required to visibly display a hardhat sticker or certificate that they have completed the training. Training acknowledgement forms signed during construction shall be kept on file by the project owner for at least 6 months after the start of commercial operation.

During project operation, signed statements for operational personnel shall be kept on file for 6 months following the termination of an individual's employment.

BIOLOGICAL RESOURCES MITIGATION IMPLEMENTATION AND MONITORING PLAN

BIO-7 The project owner shall develop a Biological Resources Mitigation Implementation and Monitoring Plan (BRMIMP), and shall submit two copies of the proposed BRMIMP to the CPM for review and approval in consultation with Western, CDFG, BLM, and USFWS. The project owner shall implement the measures identified in the approved BRMIMP. The BRMIMP shall incorporate avoidance and minimization measures described in final versions of the Hazardous Materials Plan; the Revegetation Plan; the Weed Management Plan; the Special-Status Plant Impact Avoidance and Minimization Plan; the Desert Tortoise Translocation Plan; the Raven Monitoring, Management, and Control Plan; the Burrowing Owl Relocation and Mitigation Plan; the Streambed Management Plan; the Evaporation Pond Design, Monitoring, and Management Plan; and the Avian and Bat Protection Plan.

The BRMIMP shall be prepared in consultation with the Designated Biologist and shall include accurate and up-to-date maps depicting the location of sensitive biological resources that require temporary or

permanent protection during construction and operation. The BRMIMP shall include complete and detailed descriptions of 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 any additional Western or BLM stipulations;
4. All sensitive biological resources to be impacted, avoided, or mitigated by project construction, operation, and closure;
5. All required mitigation measures for each sensitive biological resource;
6. All measures that shall be taken to avoid or mitigate temporary disturbances from construction activities;
7. Duration for each type of monitoring and a description of monitoring methodologies and frequency;
8. Performance standards to be used to help decide if/when proposed mitigation is or is not successful;
9. All performance standards and remedial measures to be implemented if performance standards are not met;
10. Biological resources-related facility closure measures including a description of funding mechanism(s);
11. A process for proposing plan modifications to the CPM and any other appropriate agencies for review and approval; and
12. A requirement to submit any sightings of any special-status species that are observed on or in proximity to the project site, or during project surveys, to the California Natural Diversity Data Base (CNDDB) per CDFG requirements.

Verification: The project owner shall submit the final BRMIMP to the CPM at least 30 days prior to start of any preconstruction site mobilization and construction-related ground disturbance, grading, boring, and trenching. The BRMIMP shall contain all of the required measures included in all biological Conditions of Certification. No construction-related ground disturbance, grading, boring, or trenching may occur prior to approval of the final BRMIMP by the CPM in consultation with Western, CDFG, BLM, and USFWS.

If any permits have not yet been received when the BRMIMP is first submitted, copies of 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

conditions within 10 days of their receipt by the project owner. Under no circumstances shall ground disturbance proceed without implementation of all permit conditions.

To verify that the extent of construction disturbance does not exceed that described in this analysis, the project owner shall submit aerial photographs, at an approved scale, taken before and after construction to the CPM. The first set of aerial photographs shall reflect site conditions prior to any preconstruction site mobilization and construction-related ground disturbance, grading, boring, and trenching, and shall be submitted at least 60 days prior to initiation of such activities. The second set of aerial photographs shall be taken subsequent to completion of construction, and shall be submitted to the CPM no later than 90 days after completion of construction. The project owner shall also provide a final accounting of the acreages of vegetation communities/cover types present before and after construction and a depiction of the approved project boundaries superimposed on the post project aerial photograph. If final acreages and/or disturbance footprints exceed those previously approved, the CPM shall coordinate with project owner, in consultation with Western, CDFG, BLM, and USFWS to determine appropriate mitigation for such impacts. Such mitigation may exceed the requirements as outlined in these Conditions of Certification (i.e., higher mitigation ratios may be imposed as a result of consultation with the wildlife agencies).

Any changes to the approved BRMIMP (including the project footprint) must be approved by the CPM in consultation with Western, BLM, CDFG, and USFWS before such action is taken.

Implementation of BRMIMP measures (for example, construction activities that were monitored, species observed) shall 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 in consultation with Western, CDFG, BLM, and USFWS, 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 preconstruction site mobilization and construction-related ground disturbance, grading, boring, and trenching, and which mitigation and monitoring items are still outstanding as well as a timeline for implementing outstanding items.

IMPACT AVOIDANCE AND MINIMIZATION MEASURES

BIO-8 The project owner shall undertake the following measures to manage the construction site and related facilities in a manner to avoid or minimize impacts to biological resources. All measures shall be subject to review and approval by the CPM.

1. Limit Disturbance Areas and Perimeter Fencing. The boundaries of all areas to be disturbed (including staging areas, access roads, and sites for temporary placement of spoils) shall be delineated with stakes and flagging prior to construction activities in consultation with the Designated Biologist. Spoils and topsoil shall be stockpiled

in areas already disturbed or to be disturbed by construction, so that stockpile sites do not add to total disturbance footprint. All disturbances, project vehicles, and equipment shall be confined to the flagged areas. Parking areas, staging and disposal site locations shall similarly be located in areas without native vegetation or special-status species habitat.

2. Minimize Road Impacts. New and existing roads that are planned for construction, widening, or other improvements shall not extend beyond the flagged impact area as described above. All vehicles passing or turning around would do so within the planned impact area or in previously disturbed areas. Where new access is required outside of existing roads or the construction zone, the route shall be clearly marked (i.e., flagged and/or staked) prior to the onset of construction.

3. Minimize Traffic Impacts. Vehicular traffic during project construction and operation shall be confined to existing designated 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 shall not exceed 20 miles per hour within any part of the project area, maintenance roads for linear facilities, or unpaved access roads to the project site where desert tortoise clearance surveys and translocations have not been completed.

4. Monitor During Construction. Due to the possibility that desert tortoises, especially juveniles, may persist on the site after desert tortoise clearance surveys and exclusion fencing are completed, the Designated Biologist or Biological Monitor shall be present at the construction site during all project activities that have potential to disturb soil, vegetation, and wildlife. The Designated Biologist or Biological Monitor shall walk immediately ahead of equipment during brushing and grading activities. Any time over the life of the project that a desert tortoise is found within the exclusion fencing, the Designated Biologist shall immediately contact the CPM, CDFG, and USFWS; monitor the tortoise's location and activities; and implement translocation of the animal in accordance with and the approved Desert Tortoise Translocation Plan and in consultation with the USFWS, CDFG, and CPM.

5. Minimize Impacts of Transmission/Pipeline Alignments, Roads, Staging Areas. Staging areas for construction on the solar generator site shall be within the area that has been fenced with desert tortoise exclusion fencing and cleared. For transmission line construction or other activities outside of the solar generator site, access roads, pulling sites and storage and parking areas shall be designed, installed, and maintained with the goal of minimizing impacts to native plant communities and sensitive biological

resources. The Designated Biologist or Biological Monitor shall evaluate potential for special status plants or wildlife at every potential disturbance site along the lengths of both transmission lines prior to any construction-related disturbance, include access improvements. Specifically, site selection of any area to be permanently or temporarily disturbed for transmission line construction and fiber-optic installation shall avoid any desert wash, desert microphyll woodland, or any aeolian sand habitat wherever feasible. Where these sites cannot feasibly be avoided, the Designated Biologist shall outline site-specific requirements to minimize impacts to habitat and wildlife. These requirements shall include, but would not be limited to, pre-construction clearance surveys, exclusion fencing (e.g., for desert tortoise or Mojave fringe-toed lizard), on-site monitoring, and post-construction remediation.

6. Implement APLIC Guidelines.Transmission lines, fiber optic lines, and all electrical components shall be designed, installed, and maintained in accordance with the Avian Power Line Interaction Committee's (APLIC's) S*uggested Practices for Avian Protection on Power Lines* (APLIC 2006) and *Mitigating Bird Collisions with Power Lines* (APLIC 1994) to reduce the likelihood of large bird electrocutions and collisions.

7. Avoid Use of Toxic Substances. Soil bonding and weighting agents used on unpaved surfaces shall be non-toxic to wildlife and plants.

8. Minimize Lighting Impacts. Facility lighting shall be designed, installed, and maintained to prevent side casting of light towards wildlife habitat. To minimize risk of avian collisions with project features, only flashing or strobe lights shall be installed on features requiring safety lighting per FAA requirements.

9. Minimize Noise Impacts. A continuous low-pressure technique shall be used for steam blows, to the extent possible, in order to reduce noise levels in sensitive habitat proximate to the Project area. Loud construction activities (e.g., unsilenced high pressure steam blowing and pile driving, or other) shall be avoided from February 15 to April 15 when it would result in noise levels over 65 dBA in nesting habitat. Loud construction activities may be permitted from February 15 to April 15 only if the Designated Biologist provides documentation (i.e., nesting bird data collected using methods described in **BIO-13** and maps depicting location of the nest survey area in relation to noisy construction) to the CPM indicating that no active nests would be subject to 65 dBA noise.

10. Avoid Vehicle Impacts to Desert Tortoise. Parking and storage shall occur only within the area enclosed by desert tortoise exclusion fencing to the extent feasible. No vehicles or construction

equipment parked outside the fenced area shall be moved prior to an inspection of the ground beneath the vehicle for the presence of desert tortoise. If a desert tortoise is observed, it shall be left to move on its own. If it does not move within 15 minutes, a Designated Biologist or Biological Monitor under the Designated Biologist's direct supervision may remove and relocate the animal to a safe location if temperatures are within the range described in the USFWS' 2009 *Desert Tortoise Field Manual* (http://www.fws.gov/ventura/speciesinfo/protocols_guidelines). All access roads outside of the fenced project footprint shall be delineated with temporary desert tortoise exclusion fencing on either side of the access road, unless otherwise authorized by the CPM, in consultation with Western, BLM, USFWS, and CDFG.

11. Avoid Wildlife Pitfalls:

    a. Backfill Trenches. At the end of each work day, the Designated Biologist shall ensure that all potential wildlife pitfalls (trenches, bores, temporary detention basins, and other excavations) have been backfilled. If backfilling is not feasible, all trenches, bores, temporary detention basins, and other excavations shall be sloped at a 3:1 ratio at the ends to provide wildlife escape ramps, or covered completely to prevent wildlife access, or fully enclosed with desert tortoise-exclusion fencing. All trenches, bores, temporary detention basins, and other excavations outside the areas permanently fenced with desert tortoise exclusion fencing shall be inspected periodically, but no less than three times, throughout the day and at the end of each workday by the Designated Biologist or a Biological Monitor. Should a desert tortoise or other wildlife become trapped, the Designated Biologist or Biological Monitor shall remove and, if applicable, relocate it as described in the Desert Tortoise Translocation Plan. Any wildlife encountered during the course of construction shall be allowed to leave the construction area unharmed.

    b. Avoid Entrapment of Desert Tortoise. Any construction pipe, culvert, or similar structure with a diameter greater than 3 inches, stored less than 8 inches aboveground for one or more nights, shall 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.

12. Minimize Standing Water. Water applied to dirt roads and construction areas (trenches or spoil piles) 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. A Biological Monitor shall patrol these areas to ensure water does not puddle and shall take appropriate action to reduce water application where necessary.

13. Dispose of Road-killed Animals. Road-killed animals or other carcasses detected on roads near the project area shall be picked up immediately and delivered to the Designated Biologist or Biological Monitor. For all road-killed species, the Designated Biologist shall retain the carcass in a freezer on-site and contact CDFG within 30 working days for guidance on disposal or storage. For any road-killed special-status species, the Biological Monitor shall contact CDFG and USFWS (for golden eagle or federally-listed species, including desert tortoise) within one working day of receipt of the carcass for guidance on disposal or storage of the carcass. The Biological Monitor shall report the special-status species record as described in Conditions of Certification **BIO-2, BIO-7,** and **BIO-22**.

14. Minimize Spills of Hazardous Materials. All vehicles and equipment shall 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 shall be informed of any hazardous spills immediately as directed in the project Hazardous Materials Plan. Hazardous spills shall be immediately cleaned up and the contaminated soil properly disposed of at a licensed facility. Servicing of construction equipment shall take place only at a designated area. Service/maintenance vehicles shall carry a bucket and pads to absorb leaks or spills.

15. Worker Guidelines. During construction all trash and food-related waste shall be placed in self-closing containers and removed regularly from the site to prevent overflow. Workers shall not feed wildlife or bring pets to the project site, including the logistics, parking, and other ancillary areas. Except for law enforcement personnel, no workers or visitors to the site shall bring firearms or weapons. 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 dirt access routes within desert tortoise habitat shall not exceed 20 miles per hour.

16. Implement Erosion Control Measures. Standard erosion control measures shall be implemented for all phases of construction and operation to prevent any sediment run-off from exposed slopes from entering state-jurisdictional streambeds within or outside the Project Disturbance Area. Sediment and other flow-restricting materials shall be moved to a location where they shall not be washed back into the stream. All disturbed soils and roads within

the project site shall be stabilized to reduce erosion potential, both during and following construction, except that soil stabilizer use may be limited in portions of roads crossing washes or stream channels consistent with applicable water quality requirements.

17. Monitor Ground-Disturbing Activities Prior to Pre-Construction Site Mobilization. If pre-construction site mobilization requires ground-disturbing activities such as for geotechnical borings or hazardous waste evaluations, a Designated Biologist or Biological Monitor shall be present to monitor any actions that could disturb soil, vegetation, or wildlife.

18. Remove Unused Material and Equipment. All unused material and equipment, including soil and rock piles, will be removed upon completion of any maintenance activities located outside the permanently fenced area.

19. Control and Regulate Fugitive Dust. To reduce the potential for the transmission of fugitive dust, the project owner shall implement dust control measures as described in staff's recommended Conditions of Certification **AQ-SC4, AQ-SC5**, and **AQ-SC7** in the Air Quality section of this Staff Assessment.

Verification: All mitigation measures and their implementation methods shall be included in the BRMIMP and implemented. Implementation of the measures shall 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. If loud construction activities are planned between February 15 to April 15, no more than 10 days before initiation of such construction the Project owner shall provide documentation to the CPM indicating that no active nests occur in areas that would be subject to noise 65 dBA or greater.

COMPLIANCE VERIFICATION

BIO-9 The project owner shall provide the CPM, Western, BLM, CDFG, and USFWS 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, Western's, BLM's, CDFG's, and USFWS'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 harmless the Designated Biologist, Biological Monitor, the Energy Commission and staff, Western, BLM, CDFG, USFWS, and any other agencies with regulatory requirements addressed by the Energy Commission's sole permitting authority for any costs the project owner incurs in complying with the management measures, including stop work orders issued by the CPM, the Designated Biologist, or Biological Monitor. In addition to the

duties described in **BIO-2**, the Designated Biologist shall do all of the following:

1. Notification. Notify the CPM, Western, BLM, CDFG, and USFWS at least 14 calendar days before initiating ground-disturbing activities. Immediately notify the CPM, Western, BLM, CDFG, and USFWS 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. CDFG shall be notified at their Southern Region Headquarters Office, 4949 Viewridge Avenue, San Diego, CA 92123; (858) 467-4201. USFWS shall be notified at the Carlsbad Fish and Wildlife Office, 6010 Hidden Valley Rd., 101, Carlsbad, CA 92011; (760) 431-9440.

2. Monitoring During Grading. Remain on site daily while grubbing and grading are taking place to avoid or minimize take of listed or special-status 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 protected zones.

3. Fence Monitoring. During construction, 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 on site to monitor construction and determine fence placement during fence installation. During operation of the project, fence inspections shall occur at least once per month throughout the life of the project, and more frequently after storms or other events that might affect the integrity and function of desert tortoise exclusion fences. Fence repairs shall occur within two days (48 hours) of detecting problems that affect the functioning of the desert tortoise exclusion fencing. All wildlife found entrapped or dead in the fence shall be reported to the CPM, BLM, CDFG, and USFWS. Carcasses of animals entrapped in the fence shall be handled as described above in **BIO-8** paragraph 14; the Designated Biologist shall retain the carcass in a freezer on-site and contact CDFG within 30 working days for guidance on disposal or storage. For special-status species, the Biological Monitor shall contact CDFG or (for federally-listed species, including desert tortoise) within one working day.

4. Monthly Compliance Inspections. 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. The monthly compliance report shall include all reported observations of listed species made by WEAP trainees on the site pursuant to Condition of Certification **BIO-6**.

5. Annual Listed Species Status Report. No later than January 31 of every year the project facility remains in operation, the Designated Biologist shall provide the CPM, BLM, CDFG, and USFWS 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/operation 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; 3) an assessment of the effectiveness of each completed or partially completed mitigation measure in minimizing and compensating for project impacts, 4) recommendations on how effectiveness of mitigation measures might be improved, and 5) a summary of any agency approved modifications to the BRMIMP.

6. Final Listed Species Mitigation Report. No later than 45 days after initiation of project operation, provide the CPM 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.

7. Notification of Injured, Dead, or Relocated Listed Species. 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, the CPM, BLM, CDFG, and USFWS shall be notified immediately by phone. Notification shall occur no later than noon on the business day following the event if it occurs outside normal business hours so that the agencies can determine if further actions are required to protect listed species. Written follow-up notification via FAX or electronic communication shall be submitted to these agencies within two calendar days of the incident and include the following information as relevant:

   a. Injured Desert Tortoise. If a desert tortoise is injured as a result of project-related activities during construction, the Designated Biologist shall immediately take it to a CDFG-approved wildlife rehabilitation and/or veterinarian clinic. Any veterinarian bills for such injured animals shall be paid by the project owner. Following phone notification as required above, the CPM, BLM, CDFG, and USFWS shall 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. Desert Tortoise Fatality. If a desert tortoise is killed by project-related activities during construction or operation, 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 (Berry 2001). The project owner shall pay to have the desert tortoises transported and necropsied. The report shall include the date and time of the finding or incident.

8. Stop Work Order. 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 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 two calendar days following the above-required notification of a sighting, kill, injury, 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 the sighting, 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, CDFG, and USFWS.

No later than January 31st of every year the RSEP facility remains in operation, provide the CPM, BLM, CDFG, and USFWS an annual Listed Species Status Report as described above, and a summary of desert tortoise exclusion fence inspections and repairs conducted in the course of the year. No later than 45 days after initiation of project operation, provide the CPM a Final Listed Species Mitigation Report as described above.

REVEGETATION PLAN AND COMPENSATION FOR IMPACTS TO NATIVE VEGETATION COMMUNITIES

BIO-10 The project owner shall provide restoration/compensation for impacts to native vegetation communities and develop and implement a Revegetation Plan for all areas subject to temporary (albeit long-term) project disturbance, including but not limited to linear features and berms of detention or debris basins, to the extent permitted by

stormwater control requirements (see above, **Construction Impacts to Vegetation**). Upon completion of construction, all temporarily disturbed areas, including the logistics/lay down areas; all generator tie-line tower sites, pull sites, and similar areas shall be restored to pre-project grade and revegetated to minimize soil erosion and vulnerability to weed invasion. Other temporarily disturbed areas within the project area shall include, but shall not be limited to: all areas where underground infrastructure was installed, temporary access roads, construction work temporary lay-down areas, and construction equipment staging areas. The following measures shall be implemented for the revegetation effort areas not subject to the facility Landscape Plan. These measures will include:

1. Plan Details. The revegetation plan shall include at minimum: (a) locations and details for top soil storage; (b) methods to salvage and replant cacti, yucca, or other species described in **BIO-12**, or to plant out nursery stock of these species onto revegetation sites; (c) seed collection guidelines; (d) a schematic depicting the mitigation area; (e) time of year that the planting will occur and the methodology of the planting; (f) a description of the irrigation methodology if used; (g) measures to control exotic vegetation on site; (h) success criteria relating to soil condtions and weed abundance; and (i) a detailed monitoring program. All habitats dominated by non-native species prior to project disturbance shall be revegetated using appropriate native species. This plan shall also contain contingency measures for failed restoration efforts (efforts not meeting success criteria).

2. Topsoil Salvage. Topsoil shall be stockpiled from the project site for use in revegetation of the disturbed soils. The topsoil excavated shall be segregated, kept intact, and protected, under conditions shown to sustain seed bank viability. The upper 1 inch of topsoil which contains the seed bank shall be scraped and stockpiled for use as the top-dressing for the revegetation area. An additional 6 to 8 inches of soil below the top 1 inch of soil shall also be scraped and separately stockpiled for use in revegetation areas. Topsoil shall be replaced in its original vertical orientation following ground disturbance, ensuring the integrity of the top one inch in particular. All other elements of soil stockpiling shall be conducted as described on pages 39-40 of *Rehabilitation of Disturbed Lands in California* (Newton and Claassen 2003).

3. Seed and Nursery Stock. Only seed or potted nursery stock of locally occurring native species shall be used for revegetation. Seeds shall contain a mix of short-lived early pioneer species such as native annuals and perennials and subshrubs. Seeding and planting shall be conducted as described in Chapter 5 of *Rehabilitation of Disturbed Lands in California* (Newton and

Claassen 2003). A list of plant species suitable for Colorado Desert region revegetation projects, including recommended seed treatments, are included in Appendix A-9 of the same report. The list of plants observed during the special-status plant surveys of the project area can also be used as a guide to site-specific plant selection for revegetation. In conformance with BLM policy, the project owner shall include salvaged or nursery stock yucca (all species), and cacti (excluding cholla species, genus *Cylindropuntia*), in revegetation plans and implementation affecting BLM lands, as described in **BIO-12**.

4. Monitoring Requirement and Success Criteria. Post-seeding and planting monitoring will be yearly and shall continue for a period of no less than two years or until the defined success criteria are achieved. If the criteria have not been met, the project owner is responsible for replacement planting to achieve these requirements or other remedial action as agreed to by the CPM in consultation with BLM and Western. Replacement seeding or planting shall be monitored and evaluated by the same criteria as required for original revegetation plantings. Remediation activities (e.g., additional planting, removal of non-native invasive species, or erosion control) shall be taken during the two year period if necessary to ensure the success of the restoration effort. If the mitigation fails to meet the established performance criteria after the the two year maintenance and monitoring period, monitoring and remedial activities shall extend beyond the the two year period until the criteria are met or unless otherwise specified by the CPM in consultation with BLM and Western. The following performance standards must be met by the end of monitoring year two:

   - At least 80% of the species observed within the temporarily disturbed areas shall be native species that naturally occur in desert scrub habitats; and
   - Cover and density of non-native plant species within the temporarily disturbed areas shall be no greater than in comparable surrounding lands that have not been disturbed by the project.

5. Replacement. If a fire occurs in a revegetation area within the the two year monitoring period, the owner shall be responsible for a one-time replacement. If a second fire occurs, no replanting is required, unless the fire is caused by the owner's activity (e.g., as determined by BLM or other firefighting agency investigation).

Verification: All mitigation measures and their implementation methods shall be included in the BRMIMP and implemented.

Within 90 days after completion of each year of project construction, the project owner shall provide to the CPM verification of the total vegetation acreage

subject to temporary and permanent disturbance and a written report identifying which items of the Revegetation 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. To monitor and evaluate the success of the revegetation, the project owner shall submit annual reports of the revegetation including the status of the site, percent cover of native and exotics, and any remedial actions conducted by the owner to the CPM and BLM.

On January 31st of each year following construction until the completion of the revegetation monitoring specified in the Revegetation Plan, the Designated Biologist shall provide a report to the CPM that includes: a summary of revegetation activities for the year, a discussion of whether revegetation performance standards for the year were met, and recommendations for revegetation remedial action, if warranted, that are planned for the upcoming year.

WEED MANAGEMENT PLAN

BIO-11 The project owner shall prepare and implement a Weed Management Plan that meets the approval of the CPM, in consultation with Western, BLM, CDFG, and USFWS. At minimum, the Weed Management Plan shall include the following:

1. An assessment of nonnative and invasive weeds occurring onsite prior to construction activities;
2. An assessment of nonnative and invasive weeds that could be introduced into the project area;
3. A description of methods to be used to survey for the presence of introduced weeds during construction and operation;
4. Monitoring and weed control methods to be employed during operation;
5. Specific and detailed guidelines for herbicide use to prevent overspray onto surrounding areas where it would adversely affect wildlife or native plants; and
6. Reporting requirements.

The final plan shall only include weed control measures for target weeds with a demonstrated record of success, based on the best available information from sources such as: The Nature Conservancy's The Global Invasive Species Team, Cooperative Extension, California Invasive Plant Council:

<http://www.cal-ipc.org/ip/management/plant_profiles/index.php>,

and the California Department of Food & Agriculture Encycloweedia: <http://www.cdfa.ca.gov/phpps/ipc/encycloweedia/encycloweedia_hp.htm>. The methods shall meet the following criteria:

Manual: well-timed removal of plants or seed heads with hand tools; seed heads and plants must be disposed of in accordance with guidelines from the Riverside County Agricultural Commissioner.

Chemical: Herbicides known to have residual toxicity, such as pre-emergents and pelts, shall not be used in natural areas or within the engineered channels. Only the following application methods may be used: wick (wiping onto leaves); inner bark injection; cut stump; frill or hack & squirt (into cuts in the trunk); basal bark girdling; foliar spot spraying with backpack sprayers or pump sprayers at low pressure or with a shield attachment to control drift, and only on windless days, or with a squeeze bottle for small infestations

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 minimum the following Best Management Practices to prevent the spread and propagation of weeds:

- Limit the extent of any vegetation and/or ground disturbance to the absolute minimum needed, and limit ingress and egress to defined routes.
- Install and maintain vehicle wash and inspection stations and closely monitor the types of materials brought onto the site.
- Reestablish vegetation on disturbed sites with native seed mixes (measures and performance standards to be consistent with Revegetation Plan, described in Condition of Certification **BIO-10**).
- Monitoring and timely implementation of control measures to ensure early detection and eradication for weed invasions. Weed infestations must be controlled or eradicated as soon as possible upon discovery, and before they go to seed, to prevent further expansion.
- Use only weed-free straw or hay bales used for sediment barrier installations, and weed-free seed.
- Reclamation and revegetation shall occur on all temporarily disturbed areas, including, but not limited to, temporary access roads, construction work temporary lay-down areas, and staging areas.
- Control weeds in areas where irrigation and mirror washing take place.
- Prohibit on-site storage or disposal of mulch or green waste from weed material to prevent inadvertent introduction and spread of invasive plants beyond the immediate vicinity of the project area and possibly into rare plant populations off-site. Mulch or green waste shall be removed from the site in a covered vehicle to

prevent seed dispersal, and transported to a licensed landfill or composting facility.

- Indicate where herbicides may be used, which herbicides, and specify techniques to be used to avoid chemical drift or residual toxicity to special-status plants, consistent with guidelines provided by the Nature Conservancy's The Global Invasive Species Team <http://www.invasive.org/gist/products.html>
- Avoid herbicide use or other control methods in or around Environmentally Sensitive Areas (ESAs, see Condition of Certification **BIO-12**) on-site or off-site; prevent any herbicide drift into ESAs.

Nonnative and invasive weed infestations will be flagged by the Designated Biologist or Biological Monitor and controlled, using either mechanical (hand pulling, mowing) or chemical methods as approved by the CPM and, as appropriate, Western or BLM. Only state and BLM-approved herbicides will be used, and all herbicide applicators will possess a qualified herbicide applicator license from the state. All herbicide applications will follow U.S. Environmental Protection Agency label instructions and be performed in accordance with federal, state, and local laws and regulations.

From the time construction begins and throughout the life of the project, surveying for new invasive weed populations and the monitoring of identified and treated populations shall be required within the project area. Surveying and monitoring for weed infestations shall occur at least two times per year (timed to occur early and late in the growing season). Treatment of all identified weed populations shall occur at a minimum of once annually. When no new seedlings or resprouts are observed at treated sites for three consecutive, normal rainfall years, the weed population can be considered eradicated and weed control efforts may cease for that impact site.

Verification: At least 30 days prior to the start of any project-related ground disturbance activities, the project owner shall provide the CPM and BLM with the final version of the Weed Management Plan. All modifications to the approved Weed Management Plan shall be made only after consultation with the CPM in consultation with Western, BLM, USFWS, and CDFG. 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. A summary report on weed management on the project site shall be submitted in the Annual Compliance Report during facility operations

SPECIAL-STATUS PLANT IMPACT AVOIDANCE, MINIMIZATION AND COMPENSATORY MITIGATION

BIO-12 This Condition contains the following five sections:

- **Section A: Avoidance and Minimization Measures** describes measures to avoid and protect Harwood's milk-vetch locations on the generator tie-line alignment within 250 feet of project activities (including access roads, staging areas, laydown areas, parking and storage areas) from accidental and indirect impacts during construction, operation, and closure.
- **Section B: Conformance with BLM Plant Protection Policies** describes measures to salvage and transplant certain cacti, yucca, and other species in conformance with BLM policies.

"Project Disturbance Area" encompasses all areas to be temporarily and permanently disturbed by the Project, including the solar generator site, linear facilities, and areas disturbed by temporary access roads, fence installation, construction work lay-down and staging areas, parking, storage, or by any other activities resulting in disturbance to soil or vegetation. Nothing in this condition requires the project owner to conduct botanical surveys on private lands adjacent to the project site when the project owner has made reasonable attempts to obtain permission to enter the property for survey work but was unable to obtain such permission

The Project owner shall implement the following measures in Section A and B to avoid, minimize, and compensate for impacts to special-status plant species:

Section A: Special Status Plant Impact Avoidance and Minimization Measures

To protect Harwood's milk-vetch or other CNPS List 1 or List 2 plants (excluding chaparral sand-verbena) located within the project area or within 250 feet of its boundaries (including access roads, staging areas, laydown areas, parking and storage areas) from accidental and indirect impacts during construction, operation, and closure, the Project owner shall implement the following measures:

1. Designated Botanist. An experienced botanist shall oversee compliance with all special-status plant avoidance, minimization, and compensation measures described in this condition throughout construction, operation, and closure. The Designated Botanist shall oversee and train all other Biological Monitors tasked with conducting botanical survey and monitoring work. The Designated Botanist shall be a qualified botanist knowledgeable in the complex biology of the local flora and consistent with CDFG (2009) and BLM (2009b) protocols.

2. Special Status Plant Impact Avoidance and Minimization Plan. The Project owner shall prepare and implement a Special Status Plant Impact Avoidance and Minimization Plan and shall incorporate the Plan into the BRMIMP (**BIO-7**). The Plan shall be designed to prevent direct or indirect effects of project construction and operation to CNPS List 1 and List 2 plants (excluding chaparral sand-verbena) within or within 250 feet of the project disturbance area. The Plan shall include the following elements:

   a. Site Design Modifications: Incorporate site design modifications to minimize impacts to special-status plants along the Project linears, as follows: limit the width of the work area; adjust the location of staging areas, lay downs, spur roads and poles or towers; drive and crush vegetation as an alternative to blading temporary roads to preserve soil integrity and seed banks, and adjust the alignments of roads and access points within the constraints of the ROW. These modifications shall be clearly depicted on the grading and construction plans, and on report-sized maps in the BRMIMP.

   b. Designate Environmentally Sensitive Areas (ESAs). Before construction, designate ESAs to protect all known CNPS List 1 or List 2 plant locations (excluding chaparral sand-verbena) within the project disturbance area or within 250 feet of disturbance area. The locations of ESAs shall be clearly depicted on construction drawings, which shall also include all avoidance and minimization measures on the margins of the construction plans. The boundaries of the ESAs shall provide a minimum of 250 feet buffer area between plant locations and any ground-disturbing project activity. The ESAs shall be clearly delineated in the field with fencing and signs prohibiting movement of the fence under penalty of work stoppages and additional compensatory mitigation. ESAs shall also be marked (with signage or other markers) to ensure that avoided plants are not inadvertently harmed during construction.

   c. Special-Status Plant Worker Environmental Awareness Program (WEAP). The WEAP **(BIO-6)** shall include training components specific to protection of special-status plants as outlined in this condition.

   d. Herbicide and Soil Stabilizer Drift Control Measures. **S**pecial-status plant occurrences within 250 feet of the Project Disturbance Area shall be protected from any potential herbicide and soil stabilizer drift. The Weed Control Program (**BIO-11**) shall include measures to avoid chemical drift or residual toxicity to special-status plants consistent with guidelines such as those provided by Hillmer and Liedtke (2003) and Kegley et al. (2010).

e. Erosion and Sediment Control Measures. Erosion and sediment control measures shall avoid adverse impacts to ESAs and shall not use invasive or non-native plants in seed mixes, introduce pest plants through contaminated seed or straw, etc. These measures shall be incorporated in the Drainage, Erosion, and Sedimentation Control Plan required under **SOIL&WATER-1**.

f. Avoid Special-Status Plant Occurrences. Areas for spoils, equipment, vehicles, and materials storage areas; parking; equipment and vehicle maintenance areas, and wash areas shall be placed at least 100 feet from the boundaries of any ESAs.

g. Monitoring and Reporting Requirements. The Designated Botanist shall conduct weekly monitoring of the ESAs that protect special-status plant occurrences during construction and decommissioning activities.

Section B: Conformance with BLM Plant Protection Policies

It is BLM policy to salvage yucca and cactus plants (excluding cholla species, genus *Cylindropuntia*) and transplant them to undisturbed sites within project Rights of Way. Staff recommends conformance with policy, as follows:

a. The project owner shall inventory all plants subject to BLM policies on all NLM lands within the Project Disturbance Area that would be removed or damaged by proposed project construction.

b. The project owner shall prepare a Protected Plant Salvage Plan in conformance with BLM standards for review and approval by the CPM in consultation with BLM. The plan shall include detailed descriptions of proposed methods to salvage plants; transport them; store them temporarily (as needed); maintain them in temporary storage (i.e., irrigation, shade protection, etc.); proposed transplantation locations and methods for permanent relocation; proposed irrigation and maintenance methods at transplantation sites; and a monitoring plan to verify survivorship and establishment of translocated plants for a minimum of five years.

c. Prior to initiating any ground-disturbing activities on the project site, the project owner shall implement the Protected Plant Replacement measures as approved by the CPM, in consultation with BLM's State Botanist.

The Special-Status Plant Impact Avoidance and Minimization Measures shall be incorporated into the BRMIMP as required under Condition of Certification **BIO-7**.

Verification: Implementation of the special-status plant impact avoidance and minimization measures shall be reported in the Monthly Compliance Reports prepared by the Designated Botanist. Within 30 days after completion of Project construction, the Project owner shall provide to the CPM, for review and approval

in consultation with the BLM State Botanist, a written construction termination report identifying how measures have been completed.

The Project owner shall submit a monitoring report every year for the life of the project to monitor effectiveness of protection measures for all avoided special-status plants to the CPM and BLM State Botanist. The monitoring report shall include: dates of worker awareness training sessions and attendees, an inventory of the special-status plant occurrences and description of the habitat conditions, an indication of population and habitat quality trends, and description of the remedial action, if warranted and planned for the upcoming year.

Section A. No less than 30 days prior to the start of ground-disturbing activities the Project owner shall submit grading plans and construction drawings depicting the location of Environmentally Sensitive Areas and the Avoidance and Minimization Measures contained in Section A of this Condition. The project owner shall coordinate with the CPM and BLM's Wildlife Biologist to revise and finalize boundaries of the ESAs.

No less than 30 days prior to the start of ground-disturbing activities the Project owner shall submit to the CPM for review and approval, in consultation with the BLM State Botanist, the name and resume of the project's Designated Botanist. If a Designated Botanist needs to be replaced, the specified information of the proposed replacement must be submitted to BLM's Wildlife Biologist and the CPM as soon as possible prior to the termination or release of the Designated Biologist. In an emergency, the project owner shall immediately notify the BLM's Wildlife Biologist and the CPM to discuss the qualifications and approval of a short-term replacement while a permanent Designated Botanist is proposed to BLM's Wildlife Biologist and the CPM and for consideration.

No less than 30 days prior to ground-disturbing activities the Project owner shall submit a Special Status Plant Impact Avoidance and Minimization Plan to the CPM for review and approval, in consultation with the BLM State Botanist. Implementation of the impact avoidance and minimization measures shall be reported in the Monthly Compliance Reports prepared by the Designated Botanist. Within 30 days after completion of Project construction, the Project owner shall provide to the CPM, for review and approval in consultation with the BLM State Botanist, a written construction termination report identifying how measures have been completed.

The Project owner shall submit a monitoring report every year for the life of the project to monitor effectiveness of protection measures for all ESAs to the CPM and BLM State Botanist. The monitoring report shall include: dates of worker awareness training sessions and attendees, an inventory of the special-status plant occurrences and description of the habitat conditions, an indication of population and habitat quality trends, and description of the remedial action, if warranted and planned for the upcoming year. The project owner shall coordinate with the CPM and BLM to revise and finalize monitoring reports and all reports described in this section, and shall specifically report any difficulties in

meeting the protection goals and cooperatively develop adaptive measures as needed.

Section B. The project owner shall coordinate with the CPM and BLM's Wildlife Biologist to revise and finalize all plans and reports named in this section. Verification and reporting shall be as described in **BIO-10** and shall be included in reports described therein. Within 90 days after completion of each year of project construction, the project owner shall provide to the CPM verification of the numbers or acreage of plants covered in this Condition (i.e., species named in BLM and County policies) which have been removed or salvaged over the course of the year. Annual revegetation reports described in **BIO-10** verification shall include summaries of salvage and planting operations and monitoring results. Compliance reports shall include summaries of written and photographic records of the plan implementation described above. Compliance reports shall be submitted annually for a period not less than 5 years to document irrigation, maintenance, and monitoring results, including plant survival.

PRE-CONSTRUCTION NEST SURVEYS AND IMPACT AVOIDANCE MEASURES FOR MIGRATORY BIRDS

BIO-13 Pre-construction nest surveys for bird species other than burrowing owls shall be conducted if construction activities will occur during the breeding period (from February 1 through August 31). Burrowing owl surveys are addressed in **BIO-19**. The Designated Biologist or Biological Monitor conducting the surveys shall be experienced bird surveyors and familiar with standard nest-locating techniques such as those described in Martin and Guepel (1993). Surveys shall be conducted in accordance with the following guidelines. Nothing in this condition requires the project owner to conduct nesting bird surveys by entering private lands adjacent to the project site when the project owner has made reasonable attempts to obtain permission to enter the property for survey work but was unable to obtain such permission. In this situation only, the project owner may substitute binocular surveys for protocol field surveys.

1. Surveys shall cover all potential nesting habitat in the project site and within 500 feet of the boundaries of the plant 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 shall be conducted within the 10 days preceding initiation of construction activity. Additional follow-up surveys may be required if periods of construction inactivity exceed one week in any given area, 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 500-foot no-disturbance buffer zone shall be implemented. If active raptor nests or bat maternity roosts are detected during the survey, a 1200-foot

no-disturbance buffer zone shall be implemented. A monitoring plan shall be prepared and implemented to ensure no disturbance takes place within the buffer areas. This protected area surrounding the nest may be adjusted by the Designated Biologist in consultation with CDFG, USFWS, Western, and the CPM. Nest locations shall be mapped using GPS technology and submitted, along with a weekly 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 and in consultation with the CPM, disturb nesting activities shall be prohibited within the buffer zone until such a determination is made.

Verification: 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(s) and shall depict the boundaries of the no-disturbance buffer zone around the nest(s).

DESERT TORTOISE CLEARANCE SURVEYS AND EXCLUSION FENCING

BIO-14 The project owner shall undertake appropriate measures to manage the construction site(s) and related facilities in a manner to avoid or minimize impacts to desert tortoise. Methods for clearance surveys, fence specification and installation, tortoise handling, artificial burrow construction, egg handling and other procedures shall be consistent with those described in the USFWS' 2009 *Desert Tortoise Field Manual* <http://www.fws.gov/ventura/speciesinfo/protocols_guidelines> or more current guidance provided by CDFG and USFWS. The project owner shall also implement all terms and conditions described in the Biological Opinion for the project to be prepared by USFWS. These measures include, but are not limited to, the following:

1. Desert Tortoise Exclusion Fence Installation. To avoid impacts to desert tortoises, permanent desert tortoise exclusion fencing shall be installed at the solar generator site along the permanent perimeter security fence and permanent access road from the security gate southward. Temporary exclusion fencing shall be installed along any additional construction site associated with the project, including the 26-acre construction laydown areas, stormwater diversion channels, and proposed generator tie-line alignment work sites. Permanent desert tortoise exclusion fencing shall also be installed at the interconnector substation site prior to construction activities at that site. The only exception to the requirement for exclusion fencing shall be for temporary construction sites where a qualified desert tortoise monitor is on-

site throughout all construction activities (e.g., transmission line construction sites). The proposed alignments for all desert tortoise exclusion fencing shall be flagged and surveyed for desert tortoise within 24 hours prior to the initiation of fence construction. Clearance surveys of the perimeter fence and utility rights-of-way alignments shall be conducted by the Designated Biologist(s) using techniques approved by the USFWS and CDFG and may be conducted in any season with USFWS and CDFG approval. Biological Monitors may assist the Designated Biologist under his or her supervision with the approval of the CPM, USFWS, and CDFG. These fence clearance surveys shall provide 100 percent coverage of all areas to be disturbed and an additional buffer approximately 90 feet wide centered on the fence alignment (i.e., 45 feet along each side of the fence line). Survey transects shall be no greater than 15 feet apart. All desert tortoise burrows, and burrows constructed by other species that might be used by desert tortoises, shall be examined to assess occupancy of each burrow by desert tortoises and handled in accordance with the USFWS' 2009 *Desert Tortoise Field Manual*. Any desert tortoise located during fence clearance surveys shall be handled only by the Designated Biologist(s) in accordance with the USFWS' 2009 *Desert Tortoise Field Manual*.

a. Timing, Supervision of Fence Installation. The exclusion fencing shall be installed prior to the onset of site clearing and grubbing. During construction, temporary tortoise exclusion fencing shall also be placed on access roads in tortoise habitat unless otherwise approved by the CPM, Western, BLM, USFWS, and CDFG. The fence installation shall be supervised by the Designated Biologist and monitored by the Biological Monitors to ensure the safety of any tortoise present.

b. Fence Material and Installation. The permanent tortoise exclusionary fencing shall be constructed in accordance with the USFWS' 2009 *Desert Tortoise Field Manual* (Chapter 8 – Desert Tortoise Exclusion Fence).

c. Security Gates. Security gates shall be designed with 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 to prevent the gates from being kept open for long periods of time. Cattle grating designed to safely exclude desert tortoise may be installed at the gated entries to discourage tortoises from gaining entry, to be determined by the CPM in consultation with CDFG and USFWS.

d. Fence Inspections. Following installation of all desert tortoise exclusion fencing (i.e., both permanent and temporary fencing), the fencing shall be regularly inspected. If tortoises were moved

out of harm's way during fence construction, permanent and temporary fencing in that area shall be inspected at least two times a day for a minimum of 7 days after moving the animal to ensure a recently moved tortoise has not been trapped within the fence. Thereafter, permanent fencing shall be inspected monthly and during and within 24 hours following all major rains. Major rains are defined as a storm(s) for which surface flow is detectable within the fenced drainages. Any damage to the fencing shall be temporarily repaired immediately to keep tortoises from entering the site, and permanently repaired within 48 hours of observing damage. Monthly and post-rainfall inspections of permanent site fencing shall continue throughout the life of the project. Temporary fencing shall be inspected weekly and, where drainages intersect the fencing, during and within 24 hours following major rains. All temporary fencing shall be repaired immediately upon discovery and the Designated Biologist shall inspect the area to determine whether the damage may have permitted tortoise entry.

2. Desert Tortoise Clearance Surveys within the Plant Site. Following construction of the tortoise exclusion fencing, the solar field and adjacent fenced areas (including permanent and temporarily fenced areas) shall be cleared of tortoises by the Designated Biologist, who may be assisted by the Biological Monitors. Clearance surveys shall be conducted in accordance with the USFWS 2009 *Desert Tortoise Field Manual* (Chapter 6 – Clearance Survey Protocol for the Desert Tortoise – Mojave Population) and shall consist of at least two surveys covering 100 percent of the project area by walking transects no more than 15 feet apart. Surveys shall be repeated until two consecutive 100%-coverage surveys are completed without finding live tortoises. Transect routes on each separate survey shall be walked in different directions to allow opposing angles of observation. Clearance surveys of the power plant site may only be conducted when tortoises are most active (April through May or September through October). Surveys outside of these time periods require approval by USFWS and CDFG. Any tortoise located during clearance surveys of the solar field site or construction areas along the transmission line route shall be relocated and monitored in accordance with the Desert Tortoise Translocation Plan (Condition of Certification **BIO-15**).

   a. Burrow Searches. During clearance surveys all desert tortoise burrows, and any burrows constructed by other species that might be used by desert tortoises, shall be examined by the Designated Biologist, who may be assisted by the Biological Monitors, to assess occupancy of each burrow by desert tortoises and handled in accordance with the USFWS' 2009 *Desert Tortoise Field Manual*. To prevent reentry by a tortoise or

other wildlife, all burrows shall be collapsed once absence has been determined. Tortoises taken from burrows and from elsewhere on the solar field site or construction areas along the transmission line route shall be translocated as described in the Desert Tortoise Translocation Plan.

b. Burrow Excavation/Handling. All potential desert tortoise burrows located during clearance surveys shall be excavated by hand, tortoises removed, and burrows collapsed or blocked to prevent occupation by desert tortoises. All desert tortoise handling and removal, and burrow excavations, including nests, shall be conducted by the Designated Biologist, who may be assisted by a Biological Monitor in accordance with the USFWS' 2009 *Desert Tortoise Field Manual.*

3. Monitoring Following Clearing. Following the desert tortoise clearance and removal from the power plant site and utility corridor, workers and heavy equipment shall be allowed to enter the project site to perform clearing, grubbing, leveling, and trenching. A Designated Biologist shall monitor clearing and grading activities to find and move any tortoises which may have been missed during the initial tortoise clearance survey. Should a tortoise be discovered, it shall be translocated as described in the Desert Tortoise Translocation Plan to an area approved by the Designated Biologist.

4. Relocation of Other Special-Status Species. Any special-status mammal or reptile species incidentally encountered during desert tortoise clearance surveys or monitoring (2 and 3, above), excluding American badger or desert kit fox, shall be captured and relocated to a safe, suitable area beyond the construction impact zone. If American badger or desert kit fox are encountered during the clearance surveys, they will be avoided and allowed to escape from the site as described below (Condition of Certification **BIO-20**). Any captured animal shall be maintained in a shaded, sheltered, cool (<85 degrees F) environment until relocation. If capture is not safe or feasible (e.g., for a badger) appropriate measures will be taken to encourage the animal to leave the site (including temporary exclusion fence removal, if monitored closely, per incident-specific direction from the CPM and cooperating agencies). The Designated Biologist shall coordinate with staff and CDFG biologists in the transport and relocation of any special-status animals encountered during project surveys, construction, or operation. A written report documenting any animals relocated shall be provided to the CPM within 30 days of relocation.

5. Reporting. The Designated Biologist shall record the following information for any desert tortoises handled: a) the locations (narrative and maps) and dates of observation; b) general condition

and health, including injuries, state of healing and whether desert tortoise voided their bladders; c) location moved from and location moved to (using GPS technology); d) gender, carapace length, and diagnostic markings (i.e., identification numbers or marked lateral scutes); e) ambient temperature when handled and released; and f) digital photograph of each handled desert tortoise. Desert tortoises moved from within project areas shall be monitored in accordance with the Desert Tortoise Translocation Plan.

Verification: All mitigation measures and their implementation methods shall be included in the BRMIMP and implemented by the project owner. Implementation of the measures shall be reported in the Monthly Compliance Reports by the Designated Biologist. Within 30 days after completion of desert tortoise clearance surveys the Designated Biologist shall submit a report to the CPM, Western, BLM, USFWS, and CDFG describing implementation of each of the mitigation measures listed above. The report shall include the desert tortoise survey results, capture and release locations of any relocated desert tortoises or other animals, and any other information needed to demonstrate compliance with the measures described above.

DESERT TORTOISE TRANSLOCATION PLAN

BIO-15 The project owner shall prepare and implement a final Desert Tortoise Translocation Plan (Plan) in conformance with standards and guidelines described in *Translocation of Desert Tortoises (Mojave Population) From Project Sites: Plan Development Guidance* (USFWS August 2010), any more current guidance or recommendations as available from CDFG or USFWS, and meets the approval of the CPM in consultation with Western, BLM, USFWS, and CDFG. The goal of the Plan shall be to safely exclude desert tortoises from within the fenced project area and translocate them to suitable habitat capable of supporting them, while minimizing stress and potential for disease transmission. The final Plan shall be based on the draft Desert Tortoise Relocation/Translocation Plan prepared by the applicant and shall include all revisions deemed necessary by USFWS, CDFG, and the CPM, in consultation with Western and BLM. The Plan shall include but not be limited to, a list of the authorized handlers, protocols for disease testing and assessing tortoise health, proposed translocation locations and procedures, schedule of translocations, a habitat assessment of translocation lands, monitoring of translocated tortoise(s), reporting, and contingency planning (e.g., handling an injured or diseased tortoise).

Verification: Within 30 days of publication of the Energy Commission License Decision the project owner shall provide the CPM with the final version of a Desert Tortoise Translocation Plan that is consistent with all terms and conditions of the Biological Opinion and Incidental Take Permits, both yet to be issued. The Plan shall not be accepted as “final” until it has been reviewed and approved by the CPM, USFWS, and CDFG in consultation with Western and BLM. Any

modifications to the approved final Plan shall be made only with written approval by the CPM, USFWS, and CDFG in consultation with Western and BLM.

Within 30 days after initiation of translocation activities, the Designated Biologist shall provide to the CPM for review and approval in consultation with Western, USFWS, BLM, and CDFG, a written report identifying which items of the final Desert Tortoise Translocation Plan have been completed, and a summary of any modifications to measures made during implementation of the Plan. Written monthly progress reports shall be provided to the CPM for the duration of the Plan implementation. Progress reports shall be made available to Western, BLM, CDFG, and USFWS upon request.

DESERT TORTOISE COMPENSATORY MITIGATION

BIO-16 The project owner shall provide compensatory mitigation acreage of 1,522 acres of desert tortoise habitat lands, adjusted to reflect the final project footprint, as specified in this condition. All or a portion of this compensation land may consist of land currently held by the project owner, pending analysis of its suitability (see Selection Criteria, below), as discussed in the analysis of impacts to desert tortoise, in the SA/DEIS. In addition, the project owner shall provide funding for initial improvement and long-term maintenance, enhancement, and management of the compensation lands for protection and enhancement of desert tortoise populations, and comply with other related requirements of this condition. This acreage was calculated as follows: Impacts to the solar generator site shall be compensated at a 1:1 ratio. Impacts along the generator tie-line and at the interconnector substation shall be compensated at a 3:1 ratio (see [Applicant's Opening Testimony, Part 2, October 22 2010]). These impact acreages are to be adjusted to reflect the final project footprint. For purposes of this condition, the Project footprint means all lands disturbed in the construction and operation of the Project, including all linear project components, as well as undeveloped areas inside the Project's boundaries that will no longer provide viable long-term habitat for the desert tortoise.

Costs of these requirements are estimated to be $3,888,055.50 based on the acquisition of 1,522 (see **Biological Resources Table 6** in the SA/DEIS for a list of acquisition and management costs and Exhibit 211 **Revised Biological Resources Table 10**, for calculations of total estimated habitat compensation costs).

As many as 37 acres (based on staff's estimate of generator tie-line and interconnector substation acreage on public land) of the compensation lands requirement may be satisfied by applicant's compliance with the desert tortoise habitat acquisition or enhancement requirements of BLM, to be calculated as an acre-for-acre offset in the Energy Commission requirement for mitigation provided to satisfy BLM's requirements. For purposes of this paragraph, credit will be

given for BLM-required mitigation without regard to whether BLM uses the mitigation funds for habitat acquisition or for enhancement projects to benefit the species.

The project owner shall provide financial assurances as described below in the amount of $3,888,055.50. In lieu of acquiring lands itself, the Project owner may satisfy the requirements of this condition by depositing funds into a Renewable Energy Action Team (REAT) Account established with the National Fish and Wildlife Foundation (NFWF), as described below. If the Project owner elects to establish a REAT NFWF Account and have NFWF and the agencies complete the required habitat compensation, then the total estimated cost of complying with this condition is $4,002,559.17. The amount of security or NFWF deposit shall be adjusted up or down to reflect any revised cost estimates recommended by REAT.

The actual costs to comply with this condition will vary depending on the final footprint of the Project, the costs of acquiring compensation habitat, the costs of initially improving the habitat, and the actual costs of long-term management as determined by a Property Analysis Report or similar analysis (below). The 1,522 acre habitat requirement, and associated funding requirements based on that acreage, shall be adjusted up or down if there are changes in the final footprint of the project or the associated costs of evaluation, acquisition, management, and other factors listed in **Biological Resources Table~~s~~ 6** in the SA/DEIS and Exhibit 211 **Revised Biological Resources Table 10**). Regardless of actual cost, the project owner shall be responsible for funding all requirements of this condition.

COMPENSATORY MITIGATION LAND ACQUISITION

1. Method of Acquisition. Compensation lands shall be acquired by either of the two options listed below. Regardless of the method of acquisition, the transaction shall be complete only upon completion of all terms and conditions described in this Condition of Certification.

    a. The project owner shall transfer title and/or conservation easement of compensation lands to a state or federal land management agency or to a third-party non-profit land management organization, as approved by the CPM in consultation with BLM, CDFG, and USFWS; staff recommends transfer in fee title to the lands to CDFG under terms approved by CDFG. Alternatively, a CDFG-approved non-profit organization qualified pursuant to California Government Code Section 65965 may hold the fee title or a conservation easement over the lands. In the event an approved non-profit holds title, a conservation easement shall be recorded in favor of CDFG in a form approved by CDFG; in the event an

approved non-profit holds a conservation easement over the lands, CDFG shall be named third party beneficiary; or

b. The Project owner shall deposit funds into a project-specific subaccount within the REAT Account established with the NFWF, in the amount as indicated in **Biological Resources Tables~~s~~ 6** in the SA/DEIS and Exhibit 211 **Revised Biological Resources Table 10** (adjusted to reflect final project footprint and any applicable REAT adjustments to costs).

2. Selection Criteria for Compensation Lands. Pending a review of the selection criteria below, staff has tentatively determined, in consultation with Western, CDFG, BLM, and USFWS, that applicant-owned land contiguous to the solar generator site would meet criteria as mitigation lands to partially satisfy this Condition of Certification. Any additional or alternate compensation lands selected for acquisition to meet Energy Commission and CESA requirements shall be equal to or better than the quality and function of the habitat impacted and shall:

   a. be within the Colorado Desert Recovery Unit, with potential to contribute to desert tortoise habitat connectivity and build linkages between desert tortoise designated critical habitat, known populations of desert tortoise, and/or other preserve lands;

   b. provide habitat for desert tortoise with capacity to regenerate naturally when disturbances are removed;

   c. be near larger blocks of lands that are either already protected or planned for protection, or which could feasibly be protected long-term by a public resource agency or a non-governmental organization dedicated to habitat preservation;

   d. be contiguous and biologically connected to lands currently occupied by desert tortoise, ideally with populations that are stable, recovering, or likely to recover;

   e. not have a history of intensive recreational use or other disturbance that might cause future erosional damage or other habitat damage, and make habitat recovery and restoration infeasible;

   f. not be characterized by high densities of invasive species, either on or immediately adjacent to the parcels under consideration, that might jeopardize habitat recovery and restoration; and

   g. not contain hazardous wastes that cannot be removed to the extent that the site could not provide suitable habitat; and

h. have water and mineral rights included as part of the acquisition, unless the CPM, in consultation with CDFG, BLM and USFWS, agrees in writing to the acceptability of land without these rights.

3. Review and Approval of Compensation Lands Prior to Acquisition. The project owner shall submit a formal acquisition proposal to the CPM describing the parcel(s) intended for purchase. This acquisition proposal shall discuss the suitability of the proposed parcel(s) as compensation lands for desert tortoise in relation to the criteria listed above and must be approved by the CPM. The CPM will share the proposal with and consult with Western, CDFG, BLM and the USFWS before deciding whether to approve or disapprove the proposed acquisition.

4. Compensation Lands Acquisition Conditions: The project owner shall comply with the following conditions relating to acquisition of the compensation lands after the CPM, in consultation with Western, CDFG, BLM and the USFWS, have approved the proposed compensation lands:

   a. Preliminary Report: The Project owner, or approved third party, shall provide a recent preliminary title report, initial hazardous materials survey report, biological analysis, and other necessary or requested documents for the proposed compensation land to the CPM. All documents conveying or conserving compensation lands and all conditions of title are subject to review and approval by the CPM, in consultation with Western, CDFG, BLM and the USFWS. For conveyances to the State, approval may also be required from the California Department of General Services, the Fish and Game Commission, and the Wildlife Conservation Board.

   b. Title/Conveyance: The Project owner shall acquire and transfer fee title to the compensation lands, a conservation easement over the lands, or both fee title and conservation easement as required by the CPM in consultation with CDFG. Any transfer of a conservation easement or fee title must be to CDFG, a non-profit organization qualified to hold title to and manage compensation lands (pursuant to California Government Code section 65965), or to BLM or other public agency approved by the CPM in consultation with CDFG. If an approved non-profit organization holds fee title to the compensation lands, a conservation easement shall be recorded in favor of CDFG or another entity approved by the CPM. If an approved non-profit holds a conservation easement, CDFG shall be named a third party beneficiary. If an entity other than CDFG holds a conservation easement over the compensation lands, the CPM may require that CDFG or another entity approved by the CPM,

in consultation with CDFG, be named a third party beneficiary of the conservation easement. The Project owner shall obtain approval of the CPM, in consultation with CDFG, of the terms of any transfer of fee title or conservation easement to the compensation lands.

c. Property Analysis Record. Upon identification of the compensation lands, the Project owner shall conduct a Property Analysis Record (PAR) or PAR-like analysis to establish the appropriate amount of the long-term maintenance and management fund to pay the in-perpetuity management of the compensation lands. The PAR or PAR-like analysis must be approved by the CPM, in consultation with CDFG, before it can be used to establish funding levels or management activities for the compensation lands.

5. Compensation Lands Acquisition Costs: The Project owner shall pay all other costs related to acquisition of compensation lands and conservation easements. In addition to actual land costs, these acquisition costs shall include but shall not be limited to the items listed below. Management costs including site cleanup measures are described separately, in the following section.

   a. Level 1 Environmental Site Assessment;

   b. Appraisal;

   c. Title and document review costs;

   d. Expenses incurred from other state, federal, or local agency reviews;

   e. Closing and escrow costs;

   f. Overhead costs related to providing compensation lands to CDFG or an approved third party;

   g. Biological survey(s) to determine mitigation value of the land; and

   h. Agency costs to accept the land (e.g., writing and recording of conservation easements; title transfer).

COMPENSATORY MITIGATION LAND IMPROVEMENT

1. Land Improvement Requirements: The Project owner shall fund activities that the CPM, in consultation with Western, CDFG, USFWS and BLM, requires for the initial protection and habitat improvement of the compensation lands. These activities will vary depending on the condition and location of the land acquired, but may include surveys of boundaries and property lines, installation of signs, trash removal and other site cleanup measures, construction and repair of fences, invasive plant removal, removal

of roads, and similar measures to protect habitat and improve habitat quality on the compensation lands.

The costs of these activities are estimated at $250 an acre, but will vary depending on the measures that are required for the compensation lands. A non-profit organization, CDFG or another public agency may hold and expend the habitat improvement funds if it is qualified to manage the compensation lands (pursuant to California Government Code section 65965), if it meets the approval of the CPM in consultation with CDFG, and if it is authorized to participate in implementing the required activities on the compensation lands. If CDFG takes fee title to the compensation lands, the habitat improvement fund must be paid to CDFG or its designee.

COMPENSATORY MITIGATION LAND LONG-TERM MANAGEMENT

1. Long-term Management Requirements: Long-term management is required to ensure that the compensation lands are managed and maintained to protect and enhance habitat for desert tortoise. Management activities may include maintenance of signs, fences, removal of invasive weeds, monitoring, security and enforcement, and control or elimination of unauthorized use.

2. Long-term Management Plan. The project owner shall pay for the preparation of a Management Plan for the compensation lands. The Management Plan shall reflect site-specific enhancement measures on the acquired compensation lands. The plan shall be submitted for approval of the CPM, in consultation with Western, CDFG, BLM and USFWS.

3. Long-Term Maintenance and Management Funding. The Project owner shall provide money to fund the long-term maintenance and management of the compensation lands. The amount of money to be paid will be determined through an approved PAR or PAR-like analysis conducted for the compensation lands. The amount of required funding is initially estimated to be $1,450 for every acre of compensation lands. If compensation lands will not be identified and a PAR or PAR-like analysis completed within the time period specified for this payment (see the verification section at the end of this condition), the Project owner shall provide initial payment of $2,206,900.00, calculated at $1,450 an acre for 1,522 acres, into an account for long-term maintenance and management of compensation lands. The amount of the required initial payment or security for this item shall be adjusted for any change in the Project footprint as described above. If an initial payment is made based on the estimated per-acre costs, the project owner shall deposit additional money as may be needed to provide the full amount of

long-term maintenance and management funding indicated by a PAR or PAR-like analysis, once the analysis is completed and approved. If the approved analysis indicates less than $1,450 an acre will be required for long-term maintenance and management, the excess paid will be returned to the Project owner.

The project owner must obtain the CPM's approval of the entity that will receive and hold the long-term maintenance and management fund for the compensation lands. The CPM will consult with the project owner and CDFG before deciding whether to approve an entity to hold the project's long-term maintenance and management funds on any lands. The CPM, in consultation with the project owner and CDFG, may designate another state agency or non-profit organization to hold the long-term maintenance and management fee if the organization is qualified to manage the compensation lands in perpetuity.

If CDFG takes fee title to the compensation lands, CDFG shall determine whether it will hold the long-term management fee in the special deposit fund, leave the money in the REAT Account, or designate another entity to manage the long-term maintenance and management fee for CDFG and with CDFG supervision.

The Project owner shall ensure that an agreement is in place with the long-term maintenance and management fee holder/manager to ensure the following conditions:

i. Interest. Interest generated from the initial capital shall be available for reinvestment into the principal and for the long-term operation, management, and protection of the approved compensation lands, including reasonable administrative overhead, biological monitoring, improvements to carrying capacity, law enforcement measures, and any other action approved by CDFG designed to protect or improve the habitat values of the compensation lands.

ii. Withdrawal of Principal. The long-term maintenance and management fee principal shall not be drawn upon unless such withdrawal is deemed necessary by the CPM, in consultation with CDFG, or the approved third-party long-term maintenance and management fee manager to ensure the continued viability of the species on the compensation lands. If CDFG takes fee title to the compensation lands, monies received by CDFG pursuant to this provision shall be deposited in a special deposit fund established solely for the purpose to manage lands in perpetuity unless CDFG designates NFWF or another entity to manage the long-term maintenance and management fee for CDFG.

iii. Pooling Funds. A CPM- approved non-profit organization qualified to hold long-term maintenance and management fees

solely for the purpose to manage lands in perpetuity, may pool the fund with other funds for the operation, management, and protection of the compensation lands for local populations of desert tortoise. However, for reporting purposes, the long-term maintenance and management fee fund must be tracked and reported individually to the CDFG and CPM.

iv. Reimbursement Fund. The project owner shall provide reimbursement to CDFG or an approved third party for reasonable expenses incurred during title, easement, and documentation review; expenses incurred from other State or State-approved federal agency reviews; and overhead related to providing compensation lands.

COMPENSATORY MITIGATION LAND SECURITY

1. Compensation Mitigation Security: The project owner shall provide security sufficient for funding acquisition, improvement, and long-term management of desert tortoise compensation land. Financial assurance can be provided to the CPM in the form of an irrevocable letter of credit, a pledged savings account or another form of security ("Security"). Prior to submitting the Security to the CPM, the Project owner shall obtain the CPM's approval, in consultation with CDFG, BLM and the USFWS, of the form of the Security.

   The security amount shall be based on the estimates provided in **Biological Resources Table~~s~~ 6** in the SA/DEIS and Exhibit 211 **Revised Biological Resources Table 10**. This amount shall be updated and verified prior to payment and shall be adjusted to reflect actual costs or more current estimates as agreed upon by the REAT agencies.

   The Project owner shall provide verification that financial assurances have been established to the CPM with copies of the document(s) to BLM, CDFG and the USFWS, to guarantee that an adequate level of funding is available to implement any of the mitigation measures required by this condition that are not completed prior to the start of ground-disturbing activities described in Section A of this condition.

   In the event that the project owner defaults on the Security, the CPM may use money from the Security solely for implementation of the requirements of this condition. The CPM's use of the security to implement measures in this condition may not fully satisfy the Project owner's obligations under this condition. Any amount of the Security that is not used to carry out mitigation shall be returned to the Project owner upon successful completion of the associated requirements in this condition.

Security for the requirements of this condition shall be provided in the amount of $3,888,055.50 (or $4,002,559.17 if the project owner elects to use the REAT Account with NFWF pursuant to paragraph 2 of this condition, below). The Security is calculated in part from the items that follow but adjusted as specified below (consult **Biological Resources Tables 6** in the SA/DEIS and Exhibit 211 **Revised Biological Resources Table 10** for the complete breakdown of estimated costs). However, regardless of the amount of the security or actual cost of implementation, the project owner shall be responsible for implementing all aspects of this condition.

i. land acquisition costs for compensation land, calculated at $500/acre;

ii. Site assessments, appraisals, biological surveys, transaction closing and escrow costs, calculated as $18,000 total per parcel (presuming 160 acres per parcel);

iii. Initial site clean-up, restoration, or enhancement, calculated at $250/acre;

iv. Third-party and agency administrative transaction costs and overhead, calculated as percentages of land cost;

v. Long-term management and maintenance fund, calculated at $1,450 per acre; and

vi. NFWF fees to establish a project-specific account; manage the sub-account for acquisition and initial site work; and manage the sub-account for long term management and maintenance.

2. The project owner may elect to comply with some or all of the requirements in this condition by providing funds to implement the requirements into the Renewable Energy Action Team (REAT) Account established with the National Fish and Wildlife Foundation (NFWF). To use this option, the Project owner must make an initial deposit to the REAT Account in an amount equal to the estimated costs of implementing the requirement (as set forth in the Security section of this condition, paragraph 1, above). If the actual cost of the acquisition, initial protection and habitat improvements, long-term funding or other cost is more than the estimated amount initially paid by the project owner, the project owner shall make an additional deposit into the REAT Account sufficient to cover the actual acquisition costs, the actual costs of initial protection and habitat improvement on the compensation lands, the long-term funding requirements as established in an approved PAR or PAR-like analysis, or the other actual costs that are estimated in the table. If those actual costs or PAR projections are less than the amount initially transferred by the applicant, the remaining balance shall be returned to the project owner.

3. The responsibility for acquisition of compensation lands may be delegated to a third party other than NFWF, such as a non-governmental organization supportive of desert habitat conservation, by written agreement of the Energy Commission. Such delegation shall be subject to approval by the CPM, in consultation with CDFG, BLM and USFWS, prior to land acquisition, enhancement or management activities. Agreements to delegate land acquisition to an approved third party, or to manage compensation lands, shall be executed and implemented within 18 months of the Energy Commission's certification of the project.

5. The project owner may request the CPM to provide it with all available information about any funds held by the Energy Commission, CDFG, or NFWF as project security, or funds held in a NFWF sub-account for this project, or other project-specific account held by a third party. The CPM shall also fully cooperate with any independent audit that the project owner may choose to perform on any of these funds.

Verification: The project owner shall provide the CPM with written notice of intent to start ground disturbance at least 30 days prior to the start of ground-disturbing activities on the project site.

If the mitigation actions required under this condition are not completed at least 30 days prior to the start of ground-disturbing activities, the Project owner shall provide verification to the CPM and CDFG that an approved Security has been established in accordance with this condition of certification no later than 30 days prior to beginning Project ground-disturbing activities. Financial assurance can be provided to the CPM in the form of an irrevocable letter of credit, a pledged savings account or another form of security ("Security"). Prior to submitting the Security to the CPM, the project owner shall obtain the CPM's approval, in consultation with Western, CDFG, BLM and the USFWS, of the form of the Security. The project owner, or an approved third party, shall complete and provide written verification to the CPM, Western, CDFG, BLM and USFWS of the compensation lands acquisition and transfer within 18 months of the start of Project ground-disturbing activities.

No later than 12 months after the start of ground-disturbing project activities, the project owner shall submit a formal acquisition proposal to the CPM describing the parcels intended for purchase or transfer, and shall obtain approval from the CPM, in consultation with Western, CDFG, BLM and USFWS, prior to the acquisition. If NFWF or another approved third party is handling the acquisition, the project owner shall fully cooperate with the third party to ensure the proposal is submitted within this time period. The project owner or an approved third party shall complete the acquisition and all required transfers of the compensation lands, and provide written verification to the CPM, Western, CDFG, BLM and USFWS of such completion, no later than 18 months after the issuance of the Energy Commission Decision. If NFWF or another approved third party is being used for all or part of the acquisition, the project owner shall ensure that funds

needed to accomplish the acquisition are transferred in timely manner to facilitate the planned acquisition and to ensure the land can be acquired and transferred prior to the 18-month deadline.

The project owner shall complete and submit to the CPM a PAR or PAR-like analysis no later than 60 days after the CPM approves compensation lands for acquisition associated with any phase of construction. The project owner shall fully fund the required amount for long-term maintenance and management of the compensation lands for that phase of construction no later than 30 days after the CPM approves a PAR or PAR-like analysis of the anticipated long-term maintenance and management costs of the compensation lands. Written verification shall be provided to the CPM and CDFG to confirm payment of the long-term maintenance and management funds.

No later than 60 days after the CPM determines what activities are required to provide for initial protection and habitat improvement on the compensation lands for any phase of construction, the project owner shall make funding available for those activities and provide written verification to the CPM of what funds are available and how costs will be paid. Initial protection and habitat improvement activities on the compensation lands for that phase of construction shall be completed, and written verification provided to the CPM, no later than six months after the CPM's determination of what activities are required on the compensation lands.

The project owner, or an approved third party, shall provide the CPM, Western, CDFG, BLM and USFWS with a management plan for the compensation lands within180 days of the land or easement purchase, as determined by the date on the title. The CPM, in consultation with Western, CDFG, BLM and the USFWS, shall approve the management plan after its content is acceptable to the CPM.

Within 90 days after completion of all project related ground disturbance, the project owner shall provide to the CPM, CDFG, BLM and USFWS an analysis, based on aerial photography, with the final accounting of the amount of habitat disturbed during Project construction. If this analysis shows that more lands were disturbed than was anticipated in this condition, the project owner shall provide the Energy Commission with additional compensation lands and funding commensurate with the added impacts and applicable mitigation ratios set forth in this condition. A final analysis of all project related ground disturbance may not result in a reduction of compensation requirements if the deadlines established under this condition for transfer of compensation lands and funding have passed prior to completion of the analysis.

RAVEN MONITORING, MANAGEMENT, AND CONTROL PLAN

BIO-17 The project owner shall prepare and implement a Raven Monitoring, Management, and Control Plan (Raven Plan) that shall be consistent with the most current USFWS-approved raven management guidelines and that meets the approval of the CPM in consultation with Western, BLM, USFWS, and CDFG. The draft Raven Plan submitted by the applicant (Appendix B of CH2MHill 2010c) shall provide the basis for

the final plan, subject to review, revisions and approval from the CPM in consultation with Western, BLM, USFWS, and CDFG. The purpose of the plan shall be to avoid any Project-related increases in raven numbers or activity during construction, operation, and decommissioning. The Plan shall address all project components and their potential effects on raven numbers and activity, including but not limited to the solar generator site, temporary logistics and lay down areas, generator tie-line alignment, and distribution line. The threshold for implementation of raven control measures shall be any increases in raven numbers from baseline conditions, as detected by monitoring to be implemented pursuant to the Plan. Regardless of raven monitoring results, the project owner shall be responsible for all other aspects of raven management described in the Plan, including avoidance and minimization of project-related trash, water sources, or perch/roost sites that could contribute to increased raven numbers, throughout the life of the project. In addition, to offset the cumulative contributions of the Project to desert tortoise from increased raven numbers, the Project owner shall also contribute to the USFWS Regional Raven Management Program. The Project owner shall do all of the following:

1. Prepare and Implement a Raven Management Plan that shall include, but shall not be limited to the following components:
    a. Identify conditions potentially associated with the Project that might provide raven subsidies or attractants;
    b. Describe management practices to avoid or minimize conditions that might increase raven numbers and predatory activities;
    c. Specify a program to monitor raven presence in the Project vicinity and detect any increase in numbers or activity;
    d. Specify raven activity thresholds for implementation of control measures;
    e. Describe control practices for ravens to be implemented as needed based on that monitoring results;
    f. Address monitoring and nest removal during construction and for the life of the Project; and
    g. Describe reporting schedules and requirements; for the first year of reporting the project owner shall provide quarterly reports describing implementation of the Plan; thereafter the reports shall be submitted annually for the life of the project.
2. Contribute to the USFWS Regional Raven Management Program. The project owner shall submit payment to the project sub-account of the REAT Account held by the National Fish and Wildlife Foundation (NFWF) to support the USFWS Regional Raven Management Program. The amount shall be a one-time payment of $105 per acre of long-term or permanent disturbance (totaling

$152,040.00 for disturbance area of 1,448 acres, to be adjusted according to final project footprint).

No later than 30 days prior to the start of construction, the project owner shall provide written verification to the CPM that NFWF has received and accepted payment into the project's sub-account of the REAT Account to support the USFWS Regional Raven Management Program.

No later than 30 days prior to any construction-related ground disturbance activities, the Project owner shall provide the CPM, USFWS, and CDFG with the final version of a Raven Management Plan. All modifications to the approved Raven Management Plan shall be made only with approval of the CPM in consultation with Western, BLM, USFWS and CDFG.

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.

On January 31st of each year following construction the Designated Biologist shall provide a report to the CPM that includes: a summary of the results of raven management and control activities for the year; a discussion of whether raven control and management goals for the year were met; and recommendations for raven management activities for the upcoming year.

GOLDEN EAGLE PRE-CONSTRUCTION SURVEYS

BIO-18 The Project owner shall implement the following measures to avoid or minimize Project-related construction impacts to golden eagles.

1. Annual Inventory During Construction. For each year during which construction will occur an inventory shall be conducted to determine if golden eagle territories occur in the area surrounding the solar generator site and generator tie-line alignment. Specific distances from the project facilities to be covered during field surveys shall be no less than one mile and shall be determined in consultation among the CPM, USFWS, CDFG, BLM and Western and stated in the Avian and Bat Protection Plan (see **Condition of Certification BIO-25**). Survey methods for the inventory shall be as described in the *Interim Golden Eagle Inventory and Monitoring Protocols; and Other Recommendations* (Pagel et al. 2010) or more current guidance from the USFWS.

2. Inventory Data: Data collected during the inventory shall include at least the following: territory status (unknown, vacant, occupied, breeding successful, breeding unsuccessful); nest location, nest elevation; age class of golden eagles observed; nesting chronology; number of young at each visit; digital photographs; and substrate upon which nest is placed.

3. Determination of Unoccupied Territory Status: A nesting territory or inventoried habitat shall be considered unoccupied by golden eagles only after completing at least two full aerial surveys in a single breeding season. In circumstances where ground observation occurs rather than aerial surveys, at least two ground observation periods lasting at least four hours are necessary to designate an inventoried habitat or territory as unoccupied as long as all potential nest sites and alternate nests are visible and monitored. These observation periods shall be at least 30 days apart for an inventory, and at least 30 days apart for monitoring of known territories.

4. Monitoring and Adaptive Management Plan: If an occupied nest (as defined by Pagel et al. 2010) is detected in the area surrounding the solar generator site or generator tie-line alignment, the Project owner shall prepare and implement a Golden Eagle Monitoring and Management Plan for the duration of construction to ensure that Project construction activities do not result in injury or disturbance to golden eagles. The monitoring methods shall be consistent with those described in the *Interim Golden Eagle Inventory and Monitoring Protocols; and Other Recommendations* (Pagel et al. 2010) or more current guidance from the USFWS. The Monitoring and Management Plan shall be prepared in consultation with the USFWS. Triggers for adaptive management shall include any evidence of Project-related disturbance to nesting golden eagles, including but not limited to: agitation behavior (displacement, avoidance, and defense); increased vigilance behavior at nest sites; changes in foraging and feeding behavior, or nest site abandonment. The Monitoring and Management Plan shall include a description of adaptive management actions, which shall include, but not be limited to, cessation of construction activities that are deemed by the Designated Biologist to be the source of golden eagle disturbance.

Verification: No fewer than 30 days from completion of the golden eagle inventory the Project owner shall submit a report to the CPM, Western, CDFG, BLM, and USFWS documenting the results of the inventory.

If an occupied nest is detected in the area surrounding the solar generator site or generator tie-line alignment, then at least 30 days prior to the start of any pre-construction site mobilization the project owner shall provide the CPM, Western, BLM, CDFG, and USFWS with the final version of the golden eagle monitoring and management plan. This final plan shall have been reviewed and approved by the CPM, USFWS, and Western in consultation with BLM, and CDFG. If no occupied nests are detected during the inventory and a plan is not warranted, a letter from USFWS documenting this determination shall be submitted to the CPM and Western at least 10 days prior to the start of any pre-construction site mobilization.

BURROWING OWL IMPACT AVOIDANCE, MINIMIZATION, AND COMPENSATION MEASURES

BIO-19 The project owner shall implement the following measures to avoid and offset impacts to burrowing owls. Nothing in this condition requires the project owner to conduct burrowing owl surveys by entering private lands adjacent to the project site when the project owner has made reasonable attempts to obtain permission to enter the property for survey work but was unable to obtain such permission. In this situation only, the project owner may substitute binocular surveys for protocol field surveys.

1. Pre-Construction Surveys. Concurrent with desert tortoise clearance surveys, the Designated Biologist shall conduct pre-construction surveys for burrowing owls no more than 30 days prior to the start of ground disturbing activities in any part of the project area. Surveys shall be conducted within the project site and along all linear facilities in accordance with CDFG guidelines (CBOC 1993). Surveys shall also be completed within 500 feet of all project disturbances.

2. Implement Avoidance Measures. If an active burrowing owl burrow is detected within 500 feet from the Project Disturbance Area the following avoidance and minimization measures shall be implemented:

   a. Establish Non-Disturbance Buffer. Fencing shall be installed at a 250-foot radius from the occupied burrow to create a non-disturbance buffer around the burrow. The non-disturbance buffer and fence line may be reduced to 160 feet if all Project-related activities that might disturb burrowing owls would be conducted during the non-breeding season (September 1st through January 31st). Signs shall be posted in English and Spanish at the fence line indicating no entry or disturbance is permitted within the fenced buffer.

   b. Monitoring: If construction activities would occur within 500 feet of the occupied burrow during the nesting season (February 1 – August 31st) the Designated Biologist or Biological Monitor shall monitor to determine if these activities have potential to adversely affect nesting efforts, and shall implement measures to minimize or avoid such disturbance.

3. Passive Relocation of Burrowing Owls. If active burrowing owl burrows are detected within the Project Area, the Project owner shall prepare and implement a Burrowing Owl Relocation and Mitigation Plan, in addition to the avoidance measures described above. The final Burrowing Owl Relocation and Mitigation Plan shall be based on the applicant's draft plan (CH2MHill 2010h) revised to incorporate pending review and recommendations by the

CPM in consultation with Western ,USFWS, BLM and CDFG, and shall:

a. Identify and describe suitable burrow replacement sites within 1 mile of the Project Disturbance Area, and describe measures to ensure that burrow installation or improvements would not affect sensitive species habitat or any burrowing owls already present in the relocation area; burrow replacement sites shall be in areas of suitable habitat for burrowing owl nesting, and be characterized by minimal human disturbance and access. Relative cover of non-native plants within the proposed relocation sites shall not exceed the relative cover of non-native plants in the adjacent habitats;

b. Provide guidelines for creation or enhancement of at least two natural or artificial burrows for each active burrow within the project disturbance area, including a discussion of timing of burrow improvements, specific location of burrow installation, and burrow design. Design of the artificial burrows shall be consistent with CDFG guidelines (CDFG 1995) and shall be approved by the CPM in consultation with Western, CDFG, BLM and USFWS; if artificial burrows are required, they shall be located on applicant-owned lands outside of the project boundary where construction/ development would not occur, and at sufficient distance from the project site to minimize noise and other disturbance;

c. Provide detailed methods and guidance for passive relocation of burrowing owls occurring during non-breeding season within the Project Disturbance Area. Occupied burrows may not be disturbed during the nesting season (February 1 to August 31) to avoid “take” under the MBTA and Fish and Game codes; and

d. Describe monitoring and management of the replacement burrow site(s), and provide a reporting plan. The objective shall be to manage the relocation area for the benefit of burrowing owls, with the specific goals of:

   i. maintaining the functionality of the burrows for a minimum of two years; and

   ii. Minimizing the occurrence of weeds (species considered “moderate” or “high” threat to California wildlands as defined by CAL-IPC [2006] and noxious weeds rated “A” or “B” by the California Department of Food and Agriculture and any federal-rated pest plants [CDFA 2009]) at less than 10 percent cover of the shrub and herb layers.

4. <u>Surveys of Relocation Area</u>. The Designated Biologist shall survey the relocation area(s) containing the artificial burrows installed in

accordance with Item 3 above during the nesting and wintering seasons to assess use of the artificial burrows, using methods consistent with Phase II and Phase III California Burrowing Owl Consortium Guideline protocols (CBOC 1993). Surveys shall start upon completion of artificial burrow construction and shall continue for a period of five years. If survey results indicate burrowing owls are not using the relocation area, remedial actions shall be developed and implemented in consultation with the CPM, Western, BLM, CDFG, and USFWS to correct conditions at the site that might be preventing owls from using it. A report describing survey results and remedial actions taken shall be submitted to the CPM, Western, BLM, CDFG, and USFWS no later than January 31st of each year for five years.

5. Acquisition and protection of compensatory mitigation lands for burrowing owls. The Project owner shall provide, in fee or in easement, for the management and protection in perpetuity of 19.5 acres of land for each single burrowing owl or breeding pair or burrowing owls that is displaced by construction of the Project. This compensation acreage of 19.5 acres per single bird or pair of nesting owls assumes that there is no evidence that the compensation lands are occupied by burrowing owls. If burrowing owls are observed to occupy the compensation lands, then only 9.75 acres per single bird or pair is required, per CDFG (1995) guidelines. If the compensation lands are contiguous to currently occupied habitat, then the replacement ratio will be 13.0 acres per pair or single bird.

   Compensation land acreage and cost estimates described here are based on the applicant's report that as many as five single burrowing owls or breeding pairs may occur on the solar generator site and one or two single owls or breeding pairs may occur along the generator tie-line alignment. At 19.5 acres of compensation land per single owl or nesting pair, the project owner shall be responsible for dedicating and protecting 136.5 acres of burrowing owl habitat. This estimated acreage shall be adjusted based upon pre-construction survey data and the occurrence of burrowing owls on proposed compensation lands (above).

   The project owner shall transfer fee title or a conservation easement on the compensation lands to CDFG under terms approved by CDFG. Alternatively, a non-profit organization qualified to manage compensation lands (pursuant to California Government Code section 65965) and approved by CDFG and the CPM may hold fee title or a conservation easement over the habitat mitigation lands. If the approved non-profit organization holds title, a conservation easement shall be recorded in favor of CDFG in a form approved by CDFG. If the approved non-profit holds a

conservation easement, CDFG shall be named a third party beneficiary. If a Security is provided, the project owner or an approved third party shall complete the proposed compensation lands acquisition within 18 months of the start of project ground-disturbing activities. Acquisition funding shall be based on the adjusted land values at the time of construction. In lieu of acquiring lands itself, the Project owner may satisfy the requirements of this condition by depositing funds into the Renewable Energy Action Team (REAT) Account established with the National Fish and Wildlife Foundation (NFWF), as described in Section 3.i. of Condition of Certification **BIO-16**.

In addition, the Project owner shall provide funding for the enhancement and long-term management of these compensation lands. The acquisition or easement and subsequent management of the compensation lands may be delegated by written agreement to CDFG or to a third party, such as a non-governmental organization dedicated to habitat conservation, subject to approval by the CPM, in consultation with CDFG, Western, BLM, and USFWS prior to land acquisition or management activities. Management funding shall be based on the adjusted transaction and management expenses at the time of construction to acquire and manage habitat.

a. Criteria for Burrowing Owl Compensation Lands. The terms and conditions of this acquisition or easement shall be as described in Paragraph 1 of **BIO-16** (Desert Tortoise Compensatory Mitigation), with the additional criteria to include: 1) the burrowing owl compensation land must provide suitable habitat for burrowing owls, and 2) the compensation lands must either currently support burrowing owls or be within dispersal distance from areas occupied by burrowing owls (generally approximately 5 miles). The burrowing owl compensation lands may be included with the desert tortoise compensation lands only if these two burrowing owl criteria are met. If the burrowing owl compensation land is separate from the acquisition required for desert tortoise compensation lands, the Project owner shall fulfill the requirements described below in this condition.

b. Security. If the burrowing owl habitat compensation land is separate from the acreage required for desert tortoise compensation lands, then the Project owner or an approved third party shall complete acquisition of the proposed compensation lands prior to initiating ground-disturbing Project activities. Alternatively, financial assurance can be provided by the Project owner to the CPM with copies of the document(s) to Western, CDFG, BLM and the USFWS, to guarantee that an adequate level of funding is available to implement the

a. mitigation measure described in this condition. These funds shall be used solely for implementation of the measures associated with the Project. Financial assurance can be provided to the CPM in the form of an irrevocable letter of credit, a pledged savings account or another form of security ("Security") prior to initiating ground-disturbing Project activities. Prior to submittal to the CPM, the Security shall be approved by the CPM, in consultation with Western, CDFG, BLM and the USFWS to ensure funding. As of the publication of the SA/DEIS, this amount is $358,701.17 but this amount may change based on land costs or adjustments to the estimated costs of enhancement and endowment (see **Biological Resources Table 6** and Compensatory Mitigation Land Security in **BIO-16** for a discussion of the assumptions used in calculating the Security, which are based on an estimate of $2,622 per acre to fund acquisition, enhancement, and long-term management). The final amount due will be determined by the PAR or PAR-like analysis conducted pursuant to **BIO-16**.

Verification: If pre-construction surveys detect burrowing owls or active burrows outside the project disturbance area but within 500 feet of proposed construction activities, the Designated Biologist shall provide to the CPM, CDFG, USFWS, BLM, and Western a Burrowing Owl Monitoring and Mitigation Plan at least 10 days prior to the start of any project-related site disturbance activities. The project owner shall report monthly to the CPM, CDFG, USFWS, BLM, and Western for the duration of construction on the implementation of burrowing owl avoidance and minimization measures described in the Burrowing Owl Monitoring and Mitigation Plan. Within 30 days after completion of construction the project owner shall provide to the CPM, CDFG, USFWS, BLM, and Western a written construction termination report identifying how mitigation measures described in the plan have been completed.

If pre-construction surveys detect burrowing owls within 500 feet of proposed construction activities, the Designated Biologist shall provide to the CPM, Western, BLM, CDFG and USFWS documentation indicating that non-disturbance buffer fencing has been installed at least 10 days prior to the start of any construction-related ground disturbance activities. The Project owner shall report monthly to the CPM, Western, CDFG, BLM and USFWS for the duration of construction on the implementation of burrowing owl avoidance and minimization measures. Within 30 days after completion of construction the Project owner shall provide to the CPM, Western, BLM, CDFG and USFWS a written construction termination report identifying how mitigation measures described in the plan have been completed.

If pre-construction surveys detect burrowing owls within the Project Disturbance Area, the Project owner shall notify the CPM, Western, BLM, CDFG and USFWS no less than 10 days of completing the surveys that a relocation of owls is

necessary. The Project owner shall do all of the following if relocation of one or more burrowing owls is required:

a. Within 30 days of completion of the burrowing owl pre-construction surveys, submit to the CPM, Western, CDFG and USFWS a Draft Burrowing Owl Relocation and Mitigation Plan.

b. No less than 90 days prior to purchase or dedication of the burrowing owl compensation lands, the Project owner, or an approved third party, shall submit a formal acquisition proposal to the CPM, Western, CDFG, and USFWS describing the parcel intended for purchase or dedication. At the same time the Project owner shall submit a PAR or PAR-like analysis for the parcels for review and approval by the CPM, CDFG and USFWS.

c. Within 90 days of the purchase or dedication, as determined by the date on the title, the Project owner shall provide the CPM with a management plan for review and approval, in consultation with Western, CDFG, BLM and USFWS, for the compensation lands and associated funds.

d. No later than 30 days prior to the start of construction-related ground disturbing activities, the Project owner shall provide written verification of Security in accordance with this condition of certification.

e. No later than 18 months after the start of construction-related ground disturbance activities, the Project owner shall provide written verification to the CPM, Western, BLM, CDFG and USFWS that the compensation lands or conservation easements have been acquired and recorded in favor of the approved recipient.

f. On January 31st of each year following construction for a period of five years, the Designated Biologist shall provide a report to the CPM, USFWS, BLM and CDFG that describes the results of monitoring and management of the replacement burrow area. The annual report shall provide an assessment of the status of the replacement burrow area with respect to burrow function and weed infestation, and shall include recommendations for actions the following year for maintaining the burrows as functional burrowing owl nesting sites and minimizing the occurrence of weeds.

AMERICAN BADGER AND DESERT KIT FOX IMPACT AVOIDANCE AND MINIMIZATION MEASURES

BIO-20 Prior to ground disturbance the project owner shall conduct pre-construction surveys for American badgers and desert kit fox. These surveys may be conducted concurrently with the desert tortoise pre-construction surveys (Condition of Certification **BIO-14**, above). Surveys shall be conducted as described below:

1. Biological Monitors shall perform pre-construction surveys for badger and kit fox dens throughout the project area, including areas within 250 feet of all project facilities, utility corridors, and access roads. If dens are detected, each den shall be classified as inactive, potentially active, or definitely active.

2. Inactive dens within the proposed security and perimeter fences, or that would be directly impacted by any construction activities, shall be excavated by hand and backfilled to prevent reuse by badgers or kit fox. Potentially active dens that would be directly impacted by construction activities shall be monitored by the Biological Monitor for three consecutive nights using a tracking medium (such as diatomaceous earth or fire clay) and/or infrared camera stations at the entrance. If no tracks are observed in the tracking medium or no photos of the target species are captured after three nights, the den shall be excavated and backfilled by hand.
3. If present, occupied badger or kit fox dens shall be flagged; monitored daily to determine whether the den is occupied by a female with young (i.e., a maternity den) and ground-disturbing activities avoided within 100 feet of the den as long as it remains occupied. Maternity dens shall be avoided during the pup-rearing season (15 February through 1 July) and a minimum 200-foot disturbance-free buffer established. Buffers may be modified with the concurrence of CDFG and the CPM. Maternity dens shall be flagged for avoidance, identified on construction maps, and a biological monitor shall be present during any construction activity within 500 feet of the maternity den.
4. If avoidance of an occupied non-maternity den is not feasible, badgers or kit foxes shall be passively relocated by slowly excavating the burrow (either by hand or mechanized equipment under the direct supervision of the biologist, removing no more that 4 inches at a time) and allowing the animal to disperse from the site (e.g., by providing a temporary monitored opening in the tortoise exclusion fence and directing the animal toward the opening with temporary plastic construction fencing). Female kit foxes or badgers with young would not be directed off-site until the young are ready to leave the dens. Any forced dispersal of badgers or kit foxes shall occur only after consultation with the CDFG and approval by the CPM. A written report documenting the animal's removal or forced dispersal shall be provided to the CPM within 30 days of relocation. In the event that passive relocation techniques fail for badgers, the Applicant will contact CDFG to explore other relocation options, which may include trapping.

Verification: The project owner shall submit a report to the CPM and CDFG within 30 days of completion of badger and kit fox surveys. The report shall describe survey methods, results, further mitigation measures (if any) to be implemented, and shall specify reporting and verification requirements (e.g., CDFG approval for forced dispersal plans) for those measures. Results of any follow-up measures shall be reported to the CPM in monthly and annual compliance reports and on any reporting schedule required or recommended by CDFG.

FENCE LOCATIONS: LOGISTICS, LAY-DOWN AREA, AND ACCESS ROAD

BIO-21 To allow east-west wildlife passage alongside the highway and to minimize road mortality during project construction, the project owner shall design and build the facility to provide a minimum 100-foot unfenced wildlife passage area south of SR-62 and north of the solar field and any contiguous project components that would interrupt wildlife passage. These include temporary and permanent project components, including but not limited to logistics and lay-down areas, administrative area, cultural resources interpretive site, permanent or temporary fencing, security gate, and any other project component, excluding unfenced linear facilities such as access roads or electrical distribution lines. With the exception of minimal disturbance necessary for linear project features, this wildlife passage area shall consist of undisturbed or revegetated desert shrubland.

Verification: The project owner shall submit final plan drawings to the CPM and Western no less than 30 days prior to scheduled commencement of ground-disturbing activities, to indicate thelocation of the wildlife passage area. No fence construction or other ground-disturbing activities shall proceed within the designated wildlife passage area without written authorization of the CPM.

STREAMBED IMPACT MINIMIZATION AND COMPENSATION MEASURES

BIO-22 The project owner shall implement the following measures to avoid, minimize and mitigate for direct and indirect impacts to waters of the State and to satisfy requirements of California Fish and Game Code sections 1600 and 1607.

1. Eliminate Proposed Storm Water Detention Basins: The project owner shall eliminate the proposed detention basins from the project design. The owner shall design and construct the perimeter road at existing grade in the southern portion of the project site to allow runoff to cross the road freely, as shown in the applicant's Response to CEC Staff Workshop Query 12 (SR 2010a). The project owner may adopt the road design as submitted (SR 2010a) or provide an alternate design to minimize potential for road damage during heavy rains (e.g., the owner may elect to pave the road or install periodic low-water crossings that would not impede runoff).

2. Finalize Acreages of Impacts to State Waters: Staff estimates that 82.8 acres of state-jurisdictional waters would be directly or indirectly impacted by the project. Upon completion of final engineering, the project owner shall review and quantify the project's permanent and long-term impacts to state-jurisdictional waters. The calculated acreage of permanent and long-term impacts shall include all ephemeral drainages impacted by construction within or adjacent to the fenced boundary of the solar field site, including the proposed logistics and lay-down areas and

diversion channels, as well as impacts to drainages resulting from the construction or widening of access for new or existing transmission line access road; transmission line tower access; logistics, staging, and lay-down areas; road turnouts; pull sites; interconnection substation; and any other project-related disturbance to jurisdictional waters.

3. Acquire Off-Site State Waters: Permanent and long-term impacts to waters of the State shall be mitigated by compensation at a 1:1 ratio. The project owner shall acquire, in fee or in easement, a parcel or parcels of land that includes at least the same acreage of State jurisdictional waters as would be impacted by construction of the project, as determined in Item 1 above. The parcel or parcels comprising the off-site State waters shall include similar vegetation and habitat types as those mapped in the project footprint. The terms and conditions of this acquisition or easement shall be as described in Condition of Certification **BIO-16**. Mitigation for impacts to State waters shall occur within the surrounding watersheds, as close to the project site as possible. State waters occurring on desert tortoise compensation lands (Condition of Certification **BIO-16**) may be used to fulfill the requirements of this condition. Additional off-site State waters shall be acquired if desert tortoise compensation lands do not contain the minimum acreage of State waters as required for compliance with this Condition of Certification.

4. Preparation and Implementation of Habitat Management Plan for Off-site Compensation Land: The project owner shall prepare and implement a Management Plan that describes site-specific enhancement measures for the acquired compensation lands, as described in Condition of Certification **BIO-16**. The Management Plan, as developed for Condition of Certification **BIO-16**, shall include site-specific enhancement measures for all drainages on compensation lands that will be used to fulfill the requirements of this Condition of Certification. Any additional lands beyond those required for compliance with Condition of Certification **BIO-16** that may be required for compliance with this Condition of Certification shall also be included in the Management Plan. The management plan shall be submitted for the CPM'S review in consultation with CDFG, Western, and BLM.

5. Code of Regulations: The project owner shall provide a copy of the Streambed Impact Minimization and Compensation Measures from the Energy Commission Decision and Western and BLM Records of Decision to all contractors, subcontractors, and the project owner's project supervisors. Copies shall be readily available at work sites at all times during periods of active work and must be presented to any CDFG personnel or personnel from another

agency upon demand. The CPM reserves the right to issue a stop work order or allow CDFG to issue a stop work order after giving notice to the project owner and the CPM, if the CPM in consultation with CDFG determines that the project owner has breached any of the terms or conditions or for other reasons, including but not limited to the following:

a. The information provided by the project owner regarding streambed alteration is incomplete or inaccurate;

b. New information becomes available that was not known to it in preparing the terms and conditions; or

c. The project or project activities as described in future environmental documentation or in decision documents prepared by the Energy Commission, Western or BLM have changed.

6. Best Management Practices: The project owner shall also comply with the following conditions to protect drainages near the Project Disturbance Area:

   a. The project owner shall not operate vehicles or equipment in ponded or flowing water except as described in this condition.

   b. With the exception of the detention basin(s) and drainage control system installed for the project, the installation of bridges, culverts, or other structures shall be such that water flow (velocity and low flow channel width) is not impaired. Bottoms of temporary culverts shall be placed at or below stream channel grade.

   c. When any activity requires moving of equipment across a flowing drainage, such operations shall be conducted without substantially increasing stream turbidity.

   d. Vehicles driven across ephemeral drainages when water is present shall be completely clean of petroleum residue and water levels shall be below the vehicles' axles.

   e. The project owner shall minimize road building, construction activities, and vegetation clearing within ephemeral drainages to the extent feasible for all project components both within and outside the perimeter fence.

   f. The project owner shall not allow water containing mud, silt, or other pollutants from grading, aggregate washing, or other activities to enter off-site state-jurisdictional waters or be placed in locations that may be subjected to high storm flows.

   g. The project owner shall comply with all litter and pollution laws. All contractors, subcontractors, and employees shall also obey

these laws, and it shall be the responsibility of the project owner to ensure compliance.

h. Spoil sites shall be located and protected as necessary to prevent spoils from eroding into any off-site state-jurisdictional waters. No spoils shall be placed in locations that may be subjected to high storm flows, where spoils might be washed back into drainages.

i. Raw cement/concrete or washings thereof, asphalt, paint or other coating material, oil or other petroleum products, or any other substances that could be hazardous to vegetation or wildlife resources, resulting from project-related activities, shall be prevented from contaminating the soil and/or entering off-site state-jurisdictional waters. These materials, if placed within or where they may enter a drainage by the project owner or any party working under contract or with the permission of the project owner, shall be removed immediately.

j. No broken concrete, debris, soil, silt, sand, bark, slash, sawdust, rubbish, cement or concrete or washings thereof, oil or petroleum products or other organic or earthen material from any construction or associated activity of whatever nature shall be allowed to enter into, or placed where it may be washed by rainfall or runoff into, off-site state-jurisdictional waters .

k. When operations are completed, any excess materials or debris shall be removed from the work area. No rubbish shall be deposited within 150 feet of the high water mark of any category 3, 4, or 5 streambed or any streambed greater~~d~~ than 10 feet wide.

l. No equipment maintenance shall occur within 150 feet of any category 3, 4, or 5 streambed or any streambed greated than 10 feet wide and no petroleum products or other pollutants from the equipment shall be allowed to enter these areas or enter any off-site state-jurisdictional waters under any flow.

m. Stationary equipment such as motors, pumps, generators, and welders, located within or adjacent to a drainage, shall be positioned over drip pans. Stationary heavy equipment shall have suitable containment to handle a catastrophic spill/leak. Clean up equipment such as booms, absorbent pads, and skimmers shall be on site prior to the start of construction.

n. The cleanup of all spills shall begin immediately. The CPM, Western, CDFG, and BLM shall be notified immediately by the project owner of any spills and shall be consulted regarding clean-up procedures.

7. Non-Native Vegetation Removal. The project owner shall remove any non-native vegetation (Consistent with the Weed Management Plan, Condition of Certification **BIO-11**) from any drainage on the project site that requires the placement of a bridge, culvert, or other structure. Removal shall be done at least twice annually (Spring/Summer) throughout the life of the project.

8. Reporting of Special-Status Species: Consistent with Condition of Certification **BIO-2**, if any special-status species are observed on or in proximity to the project site, or during project surveys, the project owner shall submit California Natural Diversity Data Base (CNDDB) forms and maps to the CNDDB within five working days of the sightings and provide the regional CDFG office with copies of the CNDDB forms and survey maps. The CNDDB form is available online at: www.dfg.ca.gov/whdab/pdfs/natspec.pdf. This information shall be mailed within five days to: California Department of Fish and Game, Natural Diversity Data Base, 1807 13th Street, Suite 202, Sacramento, CA 95814, (916) 324-3812. A copy of this information shall also be mailed within five days to the CPM, Western, USFWS, CDFG, and BLM.

9. Avoidance (North of Desert Center Alternative): If the North of Desert Center Alternative is selected, project design and implementation shall avoid direct or indirect impacts to the primary wash on the site and a 100-foot buffer area surrounding the wash, including associated native vegetation.

10. Notification: The project owner shall notify the CPM, Western, BLM, and CDFG, in writing, at least five days prior to initiation of project activities in jurisdictional areas and at least five days prior to completion of project activities in jurisdictional areas. The project owner shall notify the CPM, Western, BLM, and CDFG of any change of conditions to the project, the jurisdictional impacts, or the mitigation efforts, if the conditions at the site of the proposed project change in a manner which changes risk to biological resources that may be substantially adversely affected by the proposed project. The notifying report shall be provided to the CPM, Western, BLM, and CDFG no later than 7 days after the change of conditions is identified. As used here, change of condition refers to the process, procedures, and methods of operation of a project; the biological and physical characteristics of a project area; or the laws or regulations pertinent to the project, as described below. A copy of the notifying change of conditions report shall be included in the annual reports.

    a. Biological Conditions: a change in biological conditions includes, but is not limited to, the following: 1) the presence of biological resources within or adjacent to the project area, whether native or non-native, not previously known to occur in the area; or 2)

the presence of biological resources within or adjacent to the project area, the status of which has changed to endangered, rare, or threatened, as defined in section 15380 of Title 14 of the California Code of Regulations.

b. Physical Conditions: a change in physical conditions includes, but is not limited to, the following: 1) a change in the morphology of a river, stream, or lake, such as the lowering of a bed or scouring of a bank, or changes in stream form and configuration caused by storm events; 2) the movement of a river or stream channel to a different location; 3) a reduction of or other change in vegetation on the bed, channel, or bank of a drainage, or 4) changes to the hydrologic regime such as fluctuations in the timing or volume of water flows in a river or stream.

c. Legal Conditions: a change in legal conditions includes, but is not limited to, a change in Regulations, Statutory Law, a Judicial or Court decision, or the listing of a species, the status of which has changed to endangered, rare, or threatened, as defined in section 15380 of Title 14 of the California Code of Regulations.

Verification: Within 30 days of the completion of final engineering, the project owner shall notify the CPM, Western, BLM, and CDFG of the total acreage of impacts to jurisdictional waters. No fewer than 30 days prior to the start of any site or related facilities mobilization activities, the project owner shall implement the construction-related mitigation measures described above, shall verify that appropriate compensation lands have been identified, and shall submit a draft Habitat Management Plan for the identified compensation lands. No fewer than 30 days prior to the start of work potentially affecting waters of the State, the project owner shall provide written verification (i.e., through incorporation into the BRMIMP) to the CPM, Western, BLM, and CDFG that the above best management practices will be implemented and provide a discussion of planned work in waters of the State in Compliance Reports for the duration of the project.

Within 30 days after completion of the first year of project construction, the project owner shall provide to the CPM, Western, BLM, and CDFG for review and approval a report identifying that appropriate compensatory mitigation lands have been obtained, that the Habitat Management Plan has been reviewed and approved by all responsible agencies, that implementation as specified in the Plan has been initiated, verification of ongoing enhancement techniques, and a summary of all modifications made to the existing channels.

Verification of non-native vegetation removal from drainages on-site, and reporting of special-status species shall be included in monthly and annual compliance reports (Condition of Certification **BIO-2**). Verification of implementation and completion of the compensation land Habitat Management Plan shall be as specified in that Plan.

COUCH'S SPADEFOOT SURVEYS AND BREEDING HABITAT AVOIDANCE

BIO-23 The Project Owner shall implement focused surveys to delineate any potential Couch's spadefoot breeding habitat along the length~~s~~ of the generator tie-line alignment and delineate these areas for avoidance in consultation with Western, CDFG, and BLM. These surveys shall be conducted prior to the initiation of ground disturbance for transmission line construction work and shall be conducted by a biologist knowledgeable with Couch's spadefoot biology and habitat. No disturbance shall take place within suitable breeding ponds while water is present. If suitable breeding ponds, adult spadefoots, eggs, or larvae/tadpoles are found, a 200 foot buffer shall be placed around these areas and shall remain in place until the larva/tadpoles complete metamorphosis and retreat to upland areas or until the pools are completely dry.

Impacts to all potential breeding habitat for Couch's spadefoot shall be avoided to the extent feasible. If work within this habitat cannot be avoided, work shall be conducted only while any potential breeding pools are completely dry.

Verification: No less than 30 days prior to initiating ground disturbing activities along either transmission line alignment, the project biologist shall provide a written report detailing the survey results and compliance with avoidance measures to the CPM for review in consultation with Western, CDFG, and BLM.

EVAPORATION POND DESIGN, MONITORING, AND MANAGEMENT PLAN

BIO-24 The project owner shall cover the evaporation ponds prior to any discharge with 1.5-inch mesh netting designed to exclude birds and other wildlife from drinking or landing on the water of the ponds. Netting with mesh sizes other than 1.5-inches may be installed if approved by the CPM in consultation with CDFG and USFWS. The netted ponds shall be monitored regularly to verify that the netting remains intact, is fulfilling its function in excluding birds and other wildlife from the ponds, and does not pose an entanglement threat to birds and other wildlife. The ponds shall include a visual deterrent in addition to the netting, and shall be designed such that the netting shall never contact the water.

The project owner shall also design and implement an Evaporation Pond Design, Monitoring, and Management Plan (Evaporation Pond Plan) that meets the approval of the CPM, USFWS, CDFG, and Western. The goal of the Evaporation Pond Plan shall be to avoid the potential for bird and wildlife mortality associated with the evaporation ponds. The Evaporation Pond Plan shall include:

1. A discussion of the objectives of the Evaporation Pond Plan;

2. A description of project design features such as side slope specifications, freeboard and depth requirements, covering, and fencing;
3. A discussion on the placement of the evaporation ponds as to reduce the potential of collision or electrocution of wildlife near the transmission line;
4. Monitoring of the ponds, which shall include:
    a. Monthly Monitoring. The Designated Biologist or Biological Monitor shall regularly survey the ponds at least once per month starting with the first month of operation of the evaporation ponds. The purpose of the surveys shall be to determine if the netted ponds are effective in excluding birds, if the nets pose an entrapment hazard to birds and wildlife, and to assess the structural integrity of the nets. Surveys shall be of sufficient duration and intensity to provide an accurate assessment of bird and wildlife use of the ponds during all seasons. Surveyors shall be experienced with bird identification and survey techniques. Operations staff at the project site shall also report finding any dead birds or other wildlife at the evaporation ponds to the Designated Biologist within one day of the detection of the carcass. The Designated Biologists shall report any bird or other wildlife deaths or entanglements within two days of the discovery to the CPM, Western, CDFG, and USFWS.
    b. Dead or Entangled Birds. If dead or entangled birds are detected, the Designated Biologist shall take immediate action to correct the source of mortality or entanglement. The Designated Biologist shall make immediate efforts to contact and consult the CPM, Western, CDFG, and USFWS by phone and electronic communications prior to taking remedial action upon detection of the problem, but the inability to reach these parties shall not delay taking action that would, in the judgment of the Designated Biologist, prevent further mortality of birds or other wildlife at the evaporation ponds.
    c. Quarterly Monitoring. If after 12 consecutive monthly site visits no bird or wildlife deaths or entanglements are detected by or reported to the Designated Biologist, monitoring can be reduced to quarterly visits.
    d. Biannual Monitoring. If after 12 consecutive quarterly site visits no bird or wildlife deaths or entanglements are detected by or reported to the Designated Biologist, and with approval from the CPM, USFWS and CDFG, future surveys may be reduced to two surveys per year, during spring and fall migration.

5. Management actions such as bird deterrence/hazing and water level management and triggers for those management actions; and
6. Reporting requirements.

Verification: No less than 30 days prior to operation of the evaporation ponds the project owner shall provide to the CPM as-built drawings and photographs of the ponds indicating that the bird exclusion netting has been installed. At least 30 days prior to start of any project-related ground disturbance activities, the project owner shall provide the CPM, Western, USFWS, and CDFG with the final version of the Evaporation Pond Plan that has been reviewed and approved by USFWS, CDFG, and staff. The CPM shall determine the plan's acceptability within 15 days of receipt of the final plan. All modifications to the approved Evaporation Pond Plan must be made only after consultation with the CPM, Western, USFWS, and CDFG. The project owner shall notify the CPM no less than 5 working days before implementing any CPM-approved modifications to the Evaporation Pond Plan.

Within 30 days after completion of project construction, the project owner shall provide to the CPM for review and approval a report identifying which items of the Evaporation Pond Plan have been completed, a summary of all modifications to mitigation measures made during the project's construction phase, and as-built drawings of the evaporation ponds.

For the first year of operation the Designated Biologist shall submit quarterly reports to the CPM, Western, CDFG, and USFWS describing the dates, durations and results of site visits conducted at the evaporation ponds. Thereafter the Designated Biologist shall submit annual monitoring reports with this information. The quarterly and annual reports shall fully describe any bird or wildlife mortality or entanglements detected during the site visits or at any other time, and shall describe actions taken to remedy these problems. The annual report shall be submitted to the CPM, Western, CDFG, and USFWS no later than January 31st of every year for the life of the project.

AVIAN AND BAT PROTECTION PLAN / MONITORING OPERATIONAL IMPACTS OF SOLAR COLLECTION FACILITY ON BIRDS AND BATS

BIO-25 Avian and Bat Protection Plan: The project owner shall prepare and implement an Avian and Bat Protection Plan adopting all applicable guidelines recommended by the USFWS (2010e) in coordination with the Heliostat Positioning Plan (Condition of Certification **TRANS-5**) to minimize death and injury of birds or bats from (1) collisions with facility features including the heliostat structures, central tower, and generator tie-line towers or transmission lines and (2) focused light and heat at and near the central tower or at "standby points" while the heliostats are focused away from the tower. The Avian and Bat Protection Plan shall include modifications to proposed plant operation to avoid or minimize focusing heliostats at standby points and, instead, move heliostats into a stowed position or another alternative configuration when the power plant is in standby mode. The Avian and Bat

Protection Plan shall identify additional adaptive management measures to minimize collisions and incinerations. The Avian and Bat Protection Plan shall also provide documentation that the project is in compliance with the Bald and Golden Eagle Protection Act (Title 16, United States Code, Section 668) and shall provide specific construction activity and scheduling guidelines to avoid disturbance to golden eagle nesting territories (see **Condition of Certification BIO-18**). The Avian and Bat Protection Plan shall provide a reporting schedule for all actions taken during project construction or operation. Upon USFWS approval, it shall be reviewed and approved by the CPM in consultation with Western, CDFG, and BLM. Upon review and approval, it shall be incorporated into the project's BRMIMP and implemented.

Bird and Bat Monitoring Study: The project owner shall prepare and implement a Bird and Bat Monitoring Study to monitor the death and injury of birds and bats from collisions with project facilities including heliostats and solar receiver tower, and burning caused by flying through focused sunlight around the solar receiver tower or standby points. The study design shall be approved by the CPM in consultation with Western, CDFG and USFWS, and shall be incorporated into the project's BRMIMP and implemented by the Designated Biologist in coordination with the project owner, CPM, Western, CDFG, BLM, and USFWS. The Bird and Bat Monitoring Study shall include detailed specifications on data and carcass collection protocol, to include identification of each carcass to species whever possible and a proposed schedule of carcass searches to be based upon a valid sampling rationale. All bird or bat carcasses shall be retained in a freezer on-site, with all collection data written on an attached data form, pending disposition to CDFG or a certified museum (e.g., San Bernardino County Museum; Western Foundation of Vertebrate Zoology or California Academy of Sciences) pending recommendation of the wildlife agencies. For any special-status species carcasses, the Biological Monitor shall contact CDFG and USFWS (for golden eagle or any federally-listed species) within one working day of receipt of the carcass for guidance on disposal or storage of the carcass. The Biological Monitor shall report the special-status species record as described in Conditions of Certification **BIO-2, BIO-7,** and **BIO-22**.

. The study shall also include seasonal trials to assess bias from carcass removal by scavengers as well as searcher bias.

Adaptive management and mitigation strategies that may be implemented in the event that the Bird and Bat Monitoring Study identifies the need for additional mitigation could include the use of visual or auditory deterrents, or the acquisition and conservation of offsite habitat of similar type and quality as was present at the RSEP site prior to project development.

Verification: No more than 60 days following the docketing of the Energy Commission Final Decision or publication of Western's Record of Decision, whichever comes first, the project owner shall submit for approval by the CPM, in consultation with Western, BLM, and CDFG a final Avian and Bat Protection Plan which has already been reviewed and approved by USFWS. The Plan shall include documentation that the project is in compliance with the Bald and Golden Eagle Protection Act (Title 16, United States Code Section 668). This documentation shall include a written or electronic transmittal from the USFWS indicating its approval of the Avian and Bat Protection Plan, the status of any permit that may be required, and any follow-up actions required by the applicant. Modifications to the Avian and Bat Protection Plan shall be made only after approval from the CPM, in consultation with Western, BLM, USFWS, and CDFG.

Implementation and results of the Avian and Bat Protection Plan shall be described in periodic reports, scheduled according to the reporting schedule set forth in the approved Plan. The project owner shall submit reports to the CPM for review and approval, in consultation with Western, CDFG, BLM, and USFWS.

No more than 30 days following the publication of the Energy Commission Decision, the project owner shall submit to the CPM, Western, USFWS, and CDFG a draft Bird and Bat Monitoring Study. At least 60 days prior to start of any project-related ground disturbance activities, the project owner shall provide the CPM with the final version of the Bird and Bat Monitoring Study, as reviewed and approved by the CPM in consultation with Western, CDFG and USFWS. Modifications to the Bird and Bat Monitoring Study shall be made only with the approval of the CPM in consultation with Western, CDFG and USFWS.

For at least two years following the beginning of operation the project owner shall submit quarterly reports to the CPM, Western, CDFG, and USFWS describing the dates, durations, and results of monitoring. The quarterly reports shall provide detailed descriptions of any project-related bird or wildlife deaths or injuries detected during the monitoring study or at any other time.

Following the completion of the fourth quarter of monitoring each year, the Designated Biologist shall prepare an Annual Report that summarizes the year's data, analyzes any project-related bird and/or bat fatalities or injuries detected, and provides recommendations for future monitoring and any adaptive management actions needed. The Annual Report shall be provided to the CPM, Western, CDFG, and USFWS.

Quarterly reporting shall continue until the CPM, in consultation with Western, CDFG and USFWS determine whether further monitoring is needed, and whether mitigation (e.g., development and/or implementation of bird deterrent technology, etc.) and/or adaptive management measures are necessary. After the Bird and Bat Monitoring Study is determined by the CPM to be complete, the project owner or contractor shall prepare a paper that describes the study design and monitoring results to be submitted to a peer-reviewed scientific journal. A copy of the manuscript and proof of submittal shall be provided to the CPM within one year of concluding the monitoring study.

IN-LIEU FEE MITIGATION OPTION

BIO-26 The Project owner may choose to satisfy its mitigation obligations identified in this Decision by paying an in lieu fee instead of acquiring compensation lands, pursuant to Fish and Game code sections 2069 and 2099 or any other applicable in-lieu fee provision, provided that the project's in-lieu fee provision is found by the Commission to be in compliance with CEQA and CESA requirements. If the in-lieu fee proposal is found by the Commission to be in compliance, and the Project Owner chooses to satisfy its mitigation obligations through the in-lieu fee, the Project Owner shall provide proof of the in-lieu fee payment to the CPM.

Verification: If electing to use this provision, the Project Owner shall notify the Commission and all parties to the proceeding that it would like a determination that the Project's in-lieu fee proposal meets CEQA and CESA requirements. If the project owner elects to use this provision prior to posting security required by the conditions of certification, the Project Owner shall provide proof of the in-lieu fee payment to the CPM prior to any ground disturbance. If the Project owner elects to use this provision after posting such security, the Project owner shall provide proof of the in lieu fee payment prior to the time required for habitat compensation lands to be surrendered in accordance with the Condition of Certification

Appendix B
Resumes of Designated Biologists

James R. Marble
Manager/NEPA Specialist/Wildlife Conservation and Habitat Restoration Biologist

Education

Ph.D., Wildlife and Range Resource Management, 1990, Brigham Young University, Provo, Utah, 1990

M.S., Applied Terrestrial Ecology, University of Nevada, Las Vegas, 1985

B.S., Applied Terrestrial Ecology, University of Nevada, Las Vegas, 1982

Professional Registrations

Desert Tortoise Habitat Assessment, Construction Monitoring and Handling (federal and state): Nevada, California

Distinguishing Qualifications

- Energy project experience
- Large-project management
- Resource case law
- Department manager
- Contracting/budget
- Strategic planning
- Habitat restoration
- Endangered Species Act (ESA) permitting
- National Environmental Policy Act (NEPA) preparation

Relevant Experience

James Marble is an accomplished, innovative professional with 22 years of experience—12 years in consulting and 10 years in government. He has demonstrated skills in permitting, regulatory compliance, restoration biology, and conservation. He has a broad range of advanced formal education and years of practical experience completing large-scale projects. Mr. Marble is a recognized leader and valued member of many collaborative teams and boards. He has saved clients $1 million with innovative approaches and persuasive negotiation. He has successfully managed a department with complex and controversial projects, budgets over $4.5 million, staffing, and contracting. James is driven to get things done and to represent client interests. Mr. Marble's experience includes the following:

- Prepared and managed development of planning and/or NEPA projects as a third-party consultant for 10 years; lead agencies included Department of Defense, Bureau of Reclamation (BOR), and Bureau of Land Management (BLM). Project proponents included energy companies, telecommunications companies, utility company, homebuilders, land developers and local government

James R. Marble

- Contributed to many NEPA processes over 10 years as a cooperating agency
- Served on six multi-agency adaptive management teams for sensitive species, gaining experience in developing and implementing landmark inter-local conservation agreements; the teams managed sage grouse, Amargosa toad, Columbia spotted frog (Chair), desert tortoise, Railroad Valley springfish and White River spinedace (Mr. Marble led development of the Pahrump Valley Desert Tortoise HCP Nye County Multi-species Habitat Conservation Plan)
- Conducted scoping and negotiated appropriate environmental methods to assess impacts, acting as the principal contact with clients and agencies
- Provided oversight of the preparation of technical analysis by staff planners, scientists, and engineers
- Prepares and reviewed proposals and budgets; performs fiscal program management, achieving high client satisfaction and meeting financial targets; managed budgets as large as $4.5 million, managed 15 to 20 projects simultaneously, and 8 to 10 contractors and his staff
- Developed and managed teams of environmental scientists and planners, managed department staff, including hiring, mentoring, training, evaluations, etc.
- Experience working on large, complex planning projects; represented Nye County in developing the BLM Ely Resource Management Plan; also worked on the Forest Plan Revision for the U.S. Forest Service (USFS) Humboldt-Toiyabe National Forest; prepared reports for gas pipeline projects up to 30 miles long, a network of 30 utility installations, a hydroelectric plant, road projects, Federal Energy Regulatory Commission (FERC) permits, USFS Central Nevada Recreation Planning Framework (31,000 square miles), Central Nevada Recreation Planning Guide (31,000 square miles); led the Nye County Land Use Plan effort (18,159 square miles), Nye County Strategic Plan development, various public outreach plans and the Nye County Alternate Energy Development Action Plan; led the efforts to develop the Pahrump Valley Desert Tortoise Habitat Conservation Plan and the Nye County Multi-species Habitat Conservation Plan and required NEPA documents
- Participated in business development activities for two firms and his own practice; led multiple community economic development efforts working with various industry sectors, agencies, stakeholders, and conservation groups
- Strong knowledge of environmental laws and regulations from the federal, state, and local governments
- Applies strong organizational skills and ability to effectively coordinate and manage projects, to manage staff, numerous contractors, and projects simultaneously in government and consulting positions
- Excellent writing and oral presentation skills; colleagues often ask me to write and make oral reports on behalf of teams; the U.S. Environmental Protection Agency (EPA) asked him to speak at a number of regional and national conferences; lobbyists specifically requested that

he represent Nye County before legislative committees; he frequently appeared on television programs and routinely worked with reporters; he maintained public relations with a broad range of diverse interest groups over 10 years in government

Representative Projects

Senior Environmental Scientist; CH2M HILL; Santa Ana, California; 8/2010 – Present. Primary representative of technology to projects; responsible for quality of technical work. Ensures quality assurance (QA) reviews are completed and documented; lead QA facilitator for technical work and deliverables. Project risk management, including intellectual property protection. Project manager's primary technical support to meet project and client objectives including communication, schedule, and quality. Positive feedback to project manager/project delivery/technology practice. Skilled communication and mentoring for staff development and oversight. Supports service management and business development with proposals, technical presentations the clients

Provided senior review for Terra-Gen Power wind facilities; Cogentrix solar project; BrightSource Energy Ivanpah Solar Energy Generation System revegetation planning, remedial action plan and sensitive plant plan development; First Solar project, Clark County, Nevada.

Experience Prior to CH2M HILL

Department Manager, Environmental Studies and Permitting; Burns & McDonnell Engineers, Inc.; San Diego, California (Contract); 3/2010 – 7/2010. Managed all environmental activities for Burns & McDonnell including providing support to San Diego Gas and Electric (SDG&E) environmental staff in preparing Notice-to-Proceed applications for the Sunrise Powerlink Project, development of mitigation, monitoring and compliance plans, variance requests, weekly summaries, etc. Managed the environmental monitoring program that includes biological resource, cultural resource and Native American monitors. Supervised construction monitoring efforts on the Tehachapi Renewable Transmission Project (TRTP).

Habitat Restoration Biologist; Soil-Tech/Native Resources; Las Vegas, Nevada; 2009 – 2010. Research and Development technical leader to improve protocols and products. Liaison with University of Nevada Department of Biology on research projects. Government relations and marketing. Developed quality Control (QC)/QA protocols. Designed, implemented, and designed statistical model for experimental treatments. Documentation and statistical analysis of previous project results. Restoration planning and consulting for alternate energy and utility infrastructure projects in California and Nevada.

Senior Biologist and QA/QC Manager; Chambers Group, Inc., Santa Ana, CA; 2008 – 2009. QA/QC manager for the Wood to Steel Pole Replacement Project for SDG&E. This project involved the replacement of existing wood poles in undeveloped or rural, fire-prone areas with equivalent steel poles to improve system reliability in high-risk fire zones. The project consists primarily of pole replacements in existing SDG&E rights-of-way, associated road maintenance to provide access to those poles, pulling sites required for reconductoring, and temporary construction staging areas to support the replacement of existing wood poles. Responsible for document processing, QA/QC, and Natural Community Conservation Plan (NCCP) compliance. Participated in development of several proposals, pre-bid conferences participation,

and reporting. Developed work plans and strategies for proposals. Identified and contacted subconsultants. Identified and contacted project proponents in the alternate energy industry (marketing). Sensitive species surveys and construction monitoring on AT&T fiber optic cable in southern California.

Director of Natural Resources Office (Department Manager); Nye County, Nevada; Tonopah/Pahrump, Nevada; 1998 – 2008. Coordinated permitting and compliance with special use permits, right-of-way permits, ESA, Archaeological Resources Protection Act (ARPA), Recreation and Public Purposes Act, Wilderness Act, Clean Water Act, etc. Developed economic development and fund-raising activities, including alternate energy. Participated in many NEPA processes over 10 years as a cooperating agency. Prepared detailed planning documents and strategic plans. Headed and managed the Brownfields program. Testified before legislative committees. Represented Nye County on more than 20 boards and committees. Reported grants, kept budgets, and checked and approved invoices for merchandise and contractors. Prepared reports and presentations; invited speaker at state, regional, and national conferences.

Environmental Consultant (Owner); J. R. Marble Consulting and Revegetation Innovations; Las Vegas, Nevada; 1991 – 1998. Prepared ESA Habitat Conservation Plans, 10(a) and Section 7 permit applications. Conducted field surveys for sensitive plant and animal species (288,000+ acres/450+ square miles). Wrote NEPA documents for utilities, energy projects, communication sites, and land developers. Designed and implemented large-scale reclamation and revegetation plans for utility companies, mines, private land development firms, and government agencies. Prepared bids and proposals, and also managed budgets and finances. Managed teams of up to 14 biologists. Consulted on establishing the first National Park and revegetation issues, Kuwait Institute of Scientific Research (KISR), Kuwait.

Project Manager; Converse Environmental Consultants; Las Vegas, Nevada; 1990 – 1991. Conducted field surveys for threatened, endangered, and sensitive plant and animal species. Prepared Habitat Conservation Plans, 10(a) and Section 7 permit applications and NEPA documents. Prepared bids and proposals, sub-consultant contracts, and managed budgets and finances. Managed work crews and biologists, including contracting with subconsultants.

Environmental and Revegetation Consultant; Self-employed; Provo, Utah; 1988 – 1990. Designed, implemented, monitored and assessed revegetation techniques for mining companies. Conducted field surveys for threatened, endangered, and sensitive plant and animal species in California. Prepared bids and proposals, and also managed budgets and finances.

College Instructor; Utah Valley State College; Orem, Utah; 1989 – 1990. Taught general biology, advanced biology, and environmental science.

Graduate Research/Teaching Assistant; Brigham Young University; Provo, Utah; 1985 – 1990. Assisted in teaching many classes, including Plant Physiology, Plant Taxonomy, General Biology, Quantitative Ecology, General Ecology, Rangeland Improvements, and Watershed Management. Conducted research on the relationship of lichens, soil chemistry and vascular plant physiology, fish winter mortality in a lake environment, relationship of weather events and mass shrub die-off events, and the impacts of grazing on seedling recruitment.

Graduate Research Assistant; University of Nevada; Las Vegas, Nevada; 1983 – 1985.
Conducted thesis research on applying plant physiology and ecology principles to reestablish vascular plants and habitats on off-highway vehicle (OHV) disturbed sites (National Park Service grant).

Representative Professional Publications

Marble, J.R. 1994. Equestrian Detention Basin Facility-specific [NEPA] Analysis. Prepared for Bureau of Reclamation, City of Henderson and Poggemeyer Design Group by JR Marble Consulting.

Marble, J.R. 1992. Environmental Assessment for the Proposed Cellular One Telecommunications Site in Boulder Basin, Lake Mead National Recreation Area. Prepared for Lake Mead National Recreation Area and McCaw Cellular Communications/Cellular One by Revegetation Innovations.

Marble, J.R. 1992. Fighter Weapons Center Range Complex [459 sq. mi.] Biological Assessment for the Desert Tortoise (*Gopherus agassizii*). Prepared for The Department of Defense, United States Air Force Fighter Weapons Center/Environmental Management (FWC/EV) Nellis Air Force Base, Nevada. Contract No. F266600-91.

Marble, J.R. 1998. Vegetation Rehabilitation Plan for the Southwest Gas Corporation Gas Pipeline Extension, Primm, Nevada. USFWS File No. 1-5-94-F-183, BLM Permit N-57939.

Marble, J.R. 2003. Draft Amargosa River Adaptive Management Plan. Nye County Natural Resources Office.

Amargosa Toad Working Group. 2000. Amargosa Toad Conservation Agreement and Strategy. (contributor)

Nevada Department of Wildlife. 2003. Conservation Strategy for the Northeastern Nevada Subpopulations of the Columbia Spotted Frog (*Rana luteiventris*). (contributor/reviewer)

Representative Academic Publications

Marble, J.R. and K.T. Harper. 1989. The effects of timing of grazing on soil-surface cryptogamic communities in a Great Basin low-shrub desert: A preliminary report. Great Basin Naturalist 48: 104-107. Serial Date (31 Jan 1989)

Nelson, D.L., K.T. Harper, K.C. Boyer, D.J. Weber, B.A. Haws and J.R. Marble. 1989. Wildland shrub die-offs in Utah: An approach to understanding the cause. pp. 119-135. In: Proceedings – Symposium on Shrub Ecophysiology and Biotechnology. USDA Forest Service Intermountain Research Station. General Technical Report INT-256.

Harper, K.T. and J.R. Marble. 1988. A role for non-vascular plants in the management of arid and semi-arid rangelands. In: Tueller, P.T. (ed.) *Vegetation Science Applications for Rangeland Analysis and Management.* Kluwer Academic Publishers, Boston.

James R. Marble

Marble, J.R. 1985. Techniques of reclamation and revegetation of lands damaged by Off-road Vehicle Traffic in the Lake Mead National Recreation Area, 71 pp. National Park Service/University of Nevada, Las Vegas. Contribution Number CPSU/UNLV 027/03.

Marble, J.R. 1990. Rangeland microphytic crust management: distribution, grazing impacts, and mineral nutrition relations. Ph.D. dissertation, Brigham Young University, Provo, Utah.

Consulting Services Performed or Managed

Management Skills

- Prepare and submit bids and proposals with competitive budgets
- Find, contract, and manage subcontractors
- Maintain standards of ethics, confidentiality, and client relations
- Assure documentation to support collections, arbitration and lawsuits

Regulatory Support

- NEPA Compliance, environmental impact statement/environmental assessment/biological assessment (EIS/EA/BA) mechanics and politics
- ESA, endangered species surveys, Section 7 Consultation, listing process, compliance, Section 10(a) Permitting, Habitat Conservation Plans (HCP), impact mitigation, proactive management, recovery plans, etc.
- Clean Water Act, Section 404 Permitting
- Other regulatory requirements (dust, visual resources, traffic, noise, etc.)
- Wetlands evaluation, delineation, protection and restoration
- State and Local Entity Compliance (zoning, hydrology, etc.)
- FERC permitting
- Ecological Research
- Aquatic and Terrestrial Habitat Studies
- Wildlife and Fisheries Studies
- Natural Resources Management
- Wildlife Management (Native and Exotic Species)
- Wildlife Habitat Management and Enhancement
- Mitigation Planning and Monitoring
- Revegetation Design and Management
- Watchable Wildlife Management Programs
- Educational Awareness Programs and Seminars
- Visual Resource Quality Management

Land Planning

- Preliminary Environmental Site Analysis (PESA)
- Mitigation Design
- Urban Wildlife Habitat Design
- Golf Course and Resort Biological/Ecological Services
- Natural and Green Area Design and Management
- Public Presentation and Expert Testimony

Cultural Resource Management

- National Historic Preservation Act, Section 106 Compliance
- Inventory Surveys and Data Extraction
- Overviews and Assessments
- Excavation and Mitigation
- ARPA Compliance

Speaking Engagements

- EPA National Brownfields Conference 2007: Portland, Oregon: invited speaker
- EPA National Brownfields Conference 2006: Boston, Massachusetts: invited speaker
- EPA National Brownfields Conference 2005: Denver, Colorado: invited speaker
- EPA National Brownfields Conference 2004: St. Louis, Missouri: invited speaker
- EPA National Brownfields Conference 2003: Portland, Oregon: invited speaker
- EPA Nevada Brownfields Conference 2003, Reno, Nevada: invited speaker
- National Association of Local Government Environmental Professionals (NALGEP) 2004: Washington, D.C.: invited speaker
- Nye County Board of Commissioners, Nevada legislative committees, various town boards, conservation districts, public informational meetings, etc.
- Specifically requested by lobbyists to represent Nye County to state legislators

Supplemental Information

Years Experience Prior to CH2M HILL: 22

References

John Carrier
CH2M HILL
2485 Natomas Park Drive, Ste 600
Sacramento, CA 95833
Tel. (916) 286-0224
John.carrier@ch2m.com

Amy Hiss
CH2M HILL
2485 Natomas Park Drive, Ste 600

James R. Marble

Sacramento, CA 95833
Tel. (916) 286-0282
amy.hiss@ch2m.com

Dr. Teri Knight
Natural Resources Conservation Service
5820 South Pecos Road
Building A, Suite 400
Las Vegas, NV 89120
Tel. (702) 262-9047 ext. 108

Mr. Jon C. Sjöberg
Supervising Biologist
Nevada Department of Wildlife
4747 Vegas Drive, Las Vegas, NV 89108
(702) 486-5127 ext. 3300

Mr. Michael Burroughs
U.S. Fish and Wildlife Service
4701 North Torrey Pines Drive
Las Vegas, Nevada 89130
Telephone: (702) 515-5230
e-mail Michael_Burroughs@fws.gov.

Bair, Janet. Regional Field Supervisor
US Fish and Wildlife Service
4701 North Torrey Pines Drive
Las Vegas, Nevada 89130
Telephone: (702) 515-5230
e-mail janet_bair@fws.gov

Contact Information

Jim Marble, Ph.D.
Senior Environmental Scientist
CH2M HILL
6 Hutton Centre Drive
Santa Ana, CA 92707-5735
Direct: (714) 435-6208 x36208

MERCY L. VAUGHN **SUNDANCE BIOLOGY, INC.**

179 Niblick Rd. PMB 272, Paso Robles, CA 93446 • (928) 380-5507 • manydogs10@aol.com

Mercy Vaughn is Co-owner and President of Sundance Biology, Inc. and has been conducting biological field studies since 1990.

AREAS OF EXPERTISE

Biological resource inventories for environmental assessments, wildlife and botanical inventories, environmental compliance monitoring, and biological monitoring for Threatened, Endangered, and sensitive species. Supervised field research teams as well as environmental monitoring crews for T & E species protection, erosion control, and habitat restoration pertaining to linear and non-linear construction projects. Experience working in California, Nevada, and Arizona for the private sector, federal, state, and local agencies, and on U.S. military installations. Experience working in Mexico with state and federal agencies.

Experience in all aspects of scientific research including study design, proposal writing, data collection, data analysis, reporting, field crew training and supervision.

Foreign Language: Bilingual Spanish/English

PERSONAL DATA

Birth date: 1 April 1968
Telephone: (928) 380-5507

179 Niblick Rd. PMB 272
Paso Robles, CA 93446

EDUCATION

B.A. Ecology and Evolutionary Biology, 1993. University of Arizona, Tucson, Arizona.
Eight units of graduate level biology course work completed at University of Arizona, Tucson, Arizona-1993 and Northern Arizona University, Flagstaff, Arizona-2000.

Baccalaureate Research: Conducted a two and one-half year study in conjunction with Dr. Charles Lowe (Dept. of Ecology and Evolutionary Biology, University of Arizona), to determine population density, age structure, movement patterns and natural history of the desert tortoise on Desert Peak in Southeastern Arizona. The study was conducted year-round from August 1990 through December 1992 and again in 2003.

SPECIALIZED EXPERIENCE

Twenty-one years experience as a Biological and Environmental/Compliance specialist, conducting small and large scale presence / absence surveys, clearance surveys, density-estimate transects, and demographic and health studies of the federally listed desert tortoise (*Gopherus agassizii*) in California, Arizona, Nevada and Sonora and Sinaloa, Mexico. Studies involved detailed collection of data on plant communities, geomorphology, assessment of human impacts and other threats to the species, wildlife species lists in addition to intensive data collection of tortoise populations. Have handled desert tortoises in over 3000 encounters since 1990. Authorized to put radio transmitters on desert tortoises by USFWS. Authorization to handle desert tortoises on over 30 projects has been obtained in California from the Ventura and Barstow offices of the US Fish & Wildlife Service, the Barstow and Needles offices of the Bureau of Land Management, and the Palmdale and Fresno offices of the California Dept. of Fish & Game; in Arizona from the Phoenix office of the Arizona Dept. of Game & Fish; in Nevada the Nevada Dept. of Wildlife; and in Sonora, Mexico from the Gobierno Tradicional Coma'ac (Seri Indian Traditional Government) and SEMARNAT (Secretaria del Medio Ambiente de Recursos Naturales).

Authorized by CDFG to collect and transport flat-talied horned lizard since 2010.

Authorized Field Investigator for CA threatened Mojave Ground Squirrel since 2005.

California Scientific Collecting Permit since 2005.

SUMMARY OF PROJECTS

Natural Resource Management……..….35+
Environmental Compliance Monitoring……..….50+
Resource Inventory……..…50+
Interpretive…….2
Research…….7
***Bold notation indicates current projects**

August 2010 since Nov. 2005	**Northwestern Mexico Desert Tortoise Research Project**	**Research coordinator since 2005 for ongoing desert tortoise ecology, genetics and disease studies in the tropical deciduous forest and desert thornscrub communities of Sonora and Sinaloa Mexico. Extensive research is ongoing annually with the most recent expedition in August 2010.**
April-July 2010	Sapphos Env., Inc. Pasadena, CA	Consulting Biologist managed 11 Mojave Ground Squirrel Trapping grids on 2 proposed wind generation sites in the West Mojave Desert, CA.
April- July 2010	Rincon Consultants Ventura, CA	Consulting Biologist managed general wildlife surveys (focused species included desert tortoise, burrowing owl, badger, Swainson's hawk, golden eagle) on 20 sites from 10-450 acres in San Bernardino, Kern, and Los Angeles Counties, CA. Biological crew of 8 people.
April 2010	WEST, Inc. Cheyenne, WY	Consulting Biologist managed desert tortoise presence/absence Survey on a 3,200 acre proposed wind energy site in the West Mojave Desert. Biological crew of 8 people.
April-July 2010	AES Wind Generation San Diego, CA	Consulting Biologist managed sensitive plant survey on a proposed 20 mile transmission line, managed desert tortoise presence/absence survey on a 12 mile fiber optic line, and conducted 3 Mojave Ground Squirrel Trapping grids, Barstow, CA.
April-June 2010	URS, Corporation San Diego, CA	Consulting Biologist managed botanical surveys and Mojave Ground Squirrel Trapping grids on two sites in the West Mojave Desert, CA.
May 2010	CH2MHill Sacramento, CA	Consulting Biologist managed desert tortoise presence/absence survey on a 500 acre construction site, a 500 acre translocation site and probabilistic sampling on a 6,000 acre relocation site for a proposed solar facility near Primm, NV. Biological crew of 12 people.
May 2010	ESA, Inc. San Francisco, CA	Consulting Biologist conducted desert tortoise presence/absence Survey on 2 sites for a film production in the Colorado Desert. Biological crew of 3 people.
April 2010	ESA, Inc. San Francisco, CA	Consulting Biologist managed desert tortoise presence/absence Survey on a 145 acre proposed wind energy site in the West Mojave Desert. Biological crew of 2 people.
April-May 2010	Conservation Science and Research, San Diego, CA	Consulting Biologist conducted sensitive plant surveys on a proposed solar site in the West Mojave Desert, CA.
March-July 2010	CH2MHill Sacramento, CA	Consulting Biologist managed desert tortoise presence/absence and general biological survey on a proposed 22 mile transmission line, and avian point count surveys on an associated proposed solar site in the Colorado Desert. Biological crew of 10 people.
April-May 2009	CH2MHill Sacramento, CA	Consulting Biologist managed burrowing owl and desert tortoise presence/absence survey on 940 acres and conducted a habitat assessment on two alternative transmission lines for a proposed solar energy facilities near Phelan, CA totaling 1300 acres. Biological crew of 6 people.
April-May 2009	CH2MHill Sacramento, CA	Consulting Biologist managed desert tortoise presence/absence survey on two sites for proposed solar energy facilities near Mojave, and Lucerne, CA totaling 1300 acres. Biological crew of 12 people.
April-May 2009	Hyundai Motor America Ann Arbor, MI	Lead Biologist for 5 year post construction desert tortoise clearance surveys on the Hyundai/Kia Proving Grounds on 4,600 acres in the West Mojave Desert. Supervised 65 biologists.
April 2009	Dagget Ridge Wind Farm, LLC San Diego, CA	Consulting Biologist co-managed Mojave monkeyflower presence/ absence survey on a 150 acre proposed wind energy site near Dagget, CA . Biological crew of 3 people.
March-July 2009	Sapphos Env. Inc. Pasadena, CA	Consulting Biologist, Conducted three Mojave Ground Squirrel Protocol Trapping Surveys on a site near Mojave, CA.

March-April 2009	Sapphos Env. Inc. Pasadena, CA	Consulting Biologist managed desert tortoise presence/absence survey on a 7,500 acre proposed wind energy site in the West Mojave Desert. Biological crew of 16 people.
Nov. 2008-present	**URS Corporation, Fresno, CA**	**Developing and overseeing implementation of a revegetation plan for CALTRANS for the Mojave Bypass, Kern County, CA**
Oct. 2008	CH2MHill Sacramento, CA	Consulting Biologist managed desert tortoise presence/absence Surveys on a proposed solar energy site in southern Nevada.
August 2008	enXco Development Corporation N. Palm Springs, CA	Consulting Biologist conducted habitat quality assessment for desert tortoise on 640 acres near California City, CA
March-July 2008	Sapphos Env. Inc. Pasadena, CA	Consulting Biologist managed desert tortoise presence/absence Survey on a 11,700 acre proposed wind energy site in the West MojaveDesert. Biological crew of 16 people.
March-July 2008	Sunrise Consulting Big Bear, CA	Consulting Biologist, Managed Six Mojave Ground Squirrel Protocol Trapping Surveys on one site, Adelanto, CA.
March-July 2008	Impact Sciences, Inc. Pasadena,, CA	Consulting Biologist, Conducted Mojave Ground Squirrel Protocol Trapping Survey and managed desert tortoise presence/absence surveys on a 140 acre site, Lenwood, CA.
March-July 2008	CH2MHill Sacramento, CA	Consulting Biologist managed desert tortoise presence/absence Surveys on a proposed solar energy site in Ivanpah Valley, CA.
March-July 2008	CH2MHill Sacramento, CA	Consulting Biologist managed desert tortoise presence/absence Surveys on a proposed solar energy site in southern Nevada.
March-July 2008	CH2MHill Sacramento, CA	Consulting Biologist managed desert tortoise presence/absence Surveys on a proposed casino site in 29Palms, CA.
March-July 2008	Bill Vanherweg San Luis Obispo, CA	Wildlife Biologist, Conducted Mojave Ground Squirrel Protocol Trapping Surveys at three sites for SCE proposed powerline, Rosamond, CA.
March 2008-August	AES Wind Generation San Diego, CA	Consulting Biologist, Conducted Mojave Ground Squirrel Protocol Trapping Surveys and managed comprehensive sensitive species survey for a proposed Wind Energy site, Dagget, CA.
Jan. 2008-Dec. 2009	ESA, Inc. Sacramento,CA	On-call construction compliance monitor for the Nacimiento water pipeline installation, San Luis Obispo County, CA
March- July 2007	Bill Vanherweg, San Luis Obispo, CA	Consulting Biologist, Conducted Mojave Ground Squirrel Protocol Trapping Surveys on three sites, Mojave, CA.
March- July 2007	Royal Investors Group, Llc, Santa Monica, CA	Consulting Biologist, Managed Mojave Ground Squirrel Protocol Trapping Surveys on three sites, Palmdale, CA.
March 2007-July	DUDEK, Inc. Sacramento, CA	Consulting Biologist, Conducted Mojave Ground Squirrel Protocol Trapping Surveys and managed desert tortoise, Mojave-fringe-toed lizard, and burrowing owl presence/absence surveys on a 1200 acre site, Barstow, CA.
March 2007-July	Impact Sciences, Inc. Pasadena,, CA	Consulting Biologist, Managed Mojave Ground Squirrel Protocol Trapping Surveys and managed desert tortoise presence/absence surveys at two sites, Palmdale, CA.
March 2007-July	Hillcrest Development, Barstow, CA	Consulting Biologist, Conducted Mojave Ground Squirrel Protocol Trapping Surveys and conducted a general biological inventory on a 69 acre site, Barstow, CA.
Jan. 2007	Asphalt Construction, Inc. Mojave, CA	Wildlife Biologist, Conducted desert tortoise presence/absence surveys for reclamation of a mine site near Ridgecrest, CA.
Jan. and Aug. 2007	AES Seawest, Inc. San Diego, CA	Wildlife Biologist, Conducted desert tortoise presence/absence surveys for meteorological stations near Dagget, CA

July 2006	CSU, Bakersfield	Wildlife Biologist, Assisted with long-term monitoring study trapping Tipton kangaroo rats, giant kangaroo rats, San Joaquin Valley antelope ground squirrels, Bakersfield, CA.
Nov. 2006	Rachel Woodard Ridgecrest, CA	Monitored Implementation of Remedial Revegetation along SOCAL Gas Pipeline 6905, Kramer JCT, CA
Aug.-Nov 2006	Jones and Stokes Associates, Inc. Sacramento, CA	Lead Biologist for desert tortoise biological monitoring for Caltrans projects along I-15, I-40, and SR95, CA.
March –July 2006	Sapphos Env. Inc. Pasadena, CA	Lead Biologist for desert tortoise biological monitoring for Caltrans projects along I-15, I-40, and San Bernardino kangaroo rat monitoring along SR210, CA.
July 2006	Environmental Planning Group, Tucson, AZ	Wildlife Biologist, Conducted desert tortoise relative abundance transects along a proposed power line corridor, NV.
March –July 2006	Sapphos Env. Inc. Pasadena, CA	Wildlife Biologist, Conducted Mojave Ground Squirrel Protocol Trapping Surveys at two sites, Rosamond, CA and one site in Victorville, CA, managed desert tortoise presence/ absence survey at Victorville site.
March –July 2006	Circle Mountain Biological Wrightwood, CA	Wildlife Biologist, Conducted Mojave Ground Squirrel Protocol Trapping Surveys, Ridgecrest, CA
March-June 2006	Morro Group San Luis Obispo, CA	Lead Field Biologist , Coordinated desert tortoise clearance surveys, monitoring of tortoise proof fence installation, burrowing owl relocation and Joshua tree relocation for SR14 expansion for Caltrans.
March –July 2006	Impact Sciences, Inc. Pasadena, CA	Wildlife Biologist, Conducted Mojave Ground Squirrel Protocol Trapping Surveys and managed desert tortoise presence/absence surveys at two sites, Palmdale, CA and Barstow, CA.
October 2005	Alice Karl and Assoc.	Wildlife Biologist, Conducted desert tortoise clearance surveys on 2,200 acres in the Colorado Desert near Brawley, CA.
Sept. 2005	University of Arizona	Lead Field Biologist for desert tortoise research conducted at Organ Pipe Natl. Monument, AZ.
April-July 2005	Bill Vanherweg Bakersfield, CA	Wildlife Biologist, Conducted Mojave Ground Squirrel Protocol Trapping Surveys at two sites in Lancaster, CA.
Mar 2005	Phil Leitner	Wildlife Biologist, Assisted with Mojave Ground Squirrel trapping study in Coso Basin on the Naval Air Weapons Station at China Lake, CA. (handled 12 Mojave ground squirrels)
Mar-May 2005	Sapphos Env. Inc. Pasadena, CA	Lead Field Biologist for desert tortoise presence/absence survey on a 5,500 acre proposed wind energy site in the West Mojave Desert. Biological crew of up to 16 people.
Sept 2003-present	**Hyundai Motor America Ann Arbor, MI**	**Lead Biologist for construction compliance monitoring, desert Tortoise clearance surveys for construction of vehicle test track on 4,600 acres in the West Mojave Desert and long-term mitigation monitoring,including sensitive plant and bird surveys, MGS trapping and revegetation implementation. Managed biological crew of up to 60 people. Kern County, CA.**
Dec. 2002-July 2003	Rincon Consultants, Inc. Ventura, CA	Environmental Consultant/Biological Monitor. Environmental assessments and biological monitoring/environmental compliance for right-of-way maintenance of SCG gas transmission lines. San Bernardino, Riverside, and Los Angeles Co. Monitored for multiple species and sensitive habitats. 20 projects to date.
Dec. 2002	Southern California Gas Co. Victorville, CA	Monitored 2 miles of road grading along SCG gas transmission line 6905 near Kramer Junction, CA. Monitored for sensitive species, Mojave ground squirrel, burrowing owl, and desert tortoise.

Nov. 2002	EnviroPlus Consulting Ridgecrest, CA	Monitored restoration of a 6 mile water line ROW in Victorville, CA. In addition to restoration monitored for sensitive species, Mojave ground squirrel, burrowing owl, and desert tortoise.
Nov. 2002	Chambers Group Irvine, CA	Supervised crew and monitored restoration of a 32 mile gas transmission line ROW between Adelanto and Kramer Junction, CA. In addition to restoration monitored for sensitive species, Mojave ground squirrel, burrowing owl, and desert tortoise.
Oct. 2002	Center for Sustainable Environments Northern Arizona University Flagstaff, AZ	Principle Investigator, Organized and supervised 25 person field crew to train Indigenous Group on Desert Tortoise Resource Management and Handling Techniques, Conducted Tortoise Mortality Survey on two 1km^2 study plots on Seri Indian lands in Sonora, Mexico.
June –Nov. 2002	EnviroPlus Consulting Ridgecrest, CA	Biological Monitor, Species of concern: Desert tortoise, Mojave ground squirrel, Burrowing owl; Installation of 24" natural gas line from Adelanto to Kramer Junction, CA
May 2002	Alice Karl & Associates, Davis, CA	Desert tortoise demographic and health study at two 1.5 km^2 study sites located within the proposed expansion area of Fort Irwin NTC. Marked, measured and weighed desert tortoises encountered.
May 2002	EnviroPlus Consulting Ridgecrest, CA	Wildlife Biologist, Conducted presence/absence surveys for desert tortoises on a proposed housing development in the Indio Hills, Riverside, Co.
May 2002	EnviroPlus Consulting Ridgecrest, CA	Wildlife Biologist, Conducted clearance survey for desert tortoise, cacti and *Yucca* sp. along a 5-mile high-power transmission line, Moapa, NV.
April 2002	EnviroPlus Consulting Ridgecrest, CA	Wildlife Bilologist, Supervised crew conducting intensive preconstruction surveys along a 32-mile gas line corridor from Adelanto to Kramer Jct., CA, Species of concern: Desert tortoise, Burrowing owl, Mojave ground squirrel, Joshua tree and all cacti species.
Jan. 2002- March 2002	AMEC Earth and Environmental San Diego, CA	Biological Monitor, Species of concern: Desert tortoise, Mojave ground squirrel, Burrowing owl; Installation of 30" natural gas line from Adelanto to Kramer Junction, CA
Oct. 2001	Center for Sustainable Environments Northern Arizona University Flagstaff, AZ	Principle Investigator, Trained Indigenous Group on Desert Tortoise Resource Management and Handling Techniques, Established Six Permanent Study Areas for Ongoing Research on Seri Lands, Conducted Tortoise Mortality Survey on km^2 study area on Tiburon Island, Gulf of California. Sonora, Mexico
Aug. 2001	EnviroPlus Consulting Ridgecrest, CA	Biological Monitor, Species of concern: Desert tortoise, High Desert Power Project, San Bernardino Co., CA
July-Aug. 2001	U.S.D.I. Bureau of Land Management, Barstow, CA	Biologist, conducted 200 of 1500 desert tortoise density estimate transects throughout the West Mojave Desert to establish baseline data for developing a West Mojave Management plan. San Bernardino, Co. CA
June 2001	Endangered Species Recovery Program, California State University, Stanislaus, Stanislaus County, Ca	Conducted desert tortoise surveys along proposed expansion of Hwy 395 near Olancha, CA
May-June 2001	Charis Inc., Barstow, CA	Desert tortoise demographic and health study at six 1 km^2 study sites located within the proposed expansion area of Fort Irwin NTC. Marked, measured and weighed desert tortoises encountered.
April 2001	Alice Karl & Associates, Davis, CA	On site designated biologist. Managed environmental monitoring team for installation of a natural gas power plant in Blythe, CA. Authorized to move desert tortoises from project site.

May-Dec. 2000	North State Resources, Redding, CA	Environmental Compliance Monitor. Fiber optic cable installation. Issues of concern included erosion control, protection of coastal dune scrub, wetlands, breeding birds, and the endangered Morro shoulder-banded snail. Coordinated implementation and maintenance of overland restoration, San Luis Obispo Co., CA.
May 2000	North State Resources, Redding, CA	Conducted a clearance/salvage survey for the Morro shoulder-banded snail in San Luis Obispo County, CA
March 2000	Death Valley National Park, Death Valley, CA	Biologist, conducted a desert tortoise survey for a road realignment project and 10 desert tortoise density estimate transects, Death Valley National Park, CA
Jul.-Sept. 1999	U.S.D.I. Bureau of Land Management, Barstow, CA	Biologist, conducted 200 of 1400 desert tortoise density estimate transects throughout the West Mojave Desert to establish baseline data for developing a West Mojave Management plan. San Bernardino, Co. CA
Aug.-Sept. 1998	U.S. Geological Service, Biological Resource Division, Riverside, CA	Biologist, conducted 200 of 1000 desert tortoise density estimate transects throughout the West Mojave Desert to establish baseline data for developing a West Mojave Management plan. San Bernardino, Co. CA
Jan.-March 1998	North State Resources, Redding, CA	Environmental Compliance Monitor, Spread Leader. Training and supervision of monitors on fiber optic line. Species of concern: Desert tortoise, San Bernardino Co., CA
Sept. 1997	BBJ Mining Co., San Juan Capistrano, CA	Biological Consultant, Presence/Absence survey for the desert tortoise, Death Valley National Park, CA
March-July 1997	National Biological Service, Riverside, CA	Lead Biologist, Desert tortoise demographic and health study, Fort Irwin NTC, CA
May 1997	Desert Tortoise Preserve Committee, San Bernardino, CA	Biologist, Desert tortoise demographic and health study, Desert Tortoise Natural Area, CA
Nov. 1996	Death Valley National Park, Death Valley, CA	Biological Consultant, Conducted transects throughout the DVNP to determine locations of local desert tortoise populations
Sept. 1996	University of Arizona, Tucson, AZ	Biologist, Desert tortoise demographic study, Organ Pipe National Monument, AZ
May-Sept. 1996	National Biological Service, Riverside, CA	Biologist, Desert tortoise demographic and health study, Fort Irwin NTC, CA
Sept.-Oct. 1995 May-June 1996	Desert Tortoise Preserve Committee, San Bernardino, CA	Biological Monitor, Species of concern: Desert tortoise, Harper Lake Road, San Bernardino Co., CA
May 1995	National Biological Service, Riverside, CA	Biologist, Desert tortoise demographic and health study, Upper Ward Valley, San Bernardino Co., CA
March-Apr. 1995	Lake Mead National Park, Boulder City, NV	Biologist, Desert tortoise demographic and health studies at three sites within the LMNP
Aug.-Sept. 1994	Arizona Game and Fish Department, Phoenix, AZ	Biologist, Desert tortoise demographic and health study, Little Shipp Wash, Yavapai Co., AZ
Aug. 1994	Dames & Moore, Tucson, AZ	Biologist, Testing method for estimating desert tortoise densities, Luke Air Force Base, AZ
Apr. 1994	Nevada Division of Wildlife, Las Vegas, NV	Technician, Set up three desert tortoise study plots in Southern NV
Apr.-June 1994	National Biological Service, Riverside, CA	Biologist, Desert tortoise demographic and health study, Goffs, Lucerne Valley, Johnson Valley, San Bernardino Co., CA
Feb-.March 1994	LSA Associates, Inc., Pt. Richmond, CA	Environmental Compliance Monitor, natural gas line; Species of concern: desert tortoise, Imperial Co. CA
Oct. 1993	University of Arizona, Tucson, AZ Arizona Game and Fish Heritage Grant Recipient: Elizabeth Wirt	Biologist, Assisted in locating desert tortoises for reproduction study, Maricopa Mnts, Maricopa Co. AZ
Aug.-Oct. 1993	Arizona Game and Fish Department, Phoenix, AZ	Biologist, Desert tortoise demographic and health study, Granite Hills, Pinal Co., AZ
July 1993	Pacific Southwest Biological Survey, San Diego, CA	Biologist, Presence/Absence survey for desert tortoises, Little Morongo Canyon, San Bernardino Co., CA

March-May 1993	Desert Tortoise Preserve Committee, San Bernardino, CA	Naturalist (part time), Provide public education, Desert Tortoise Natural Area, San Bernardino Co., CA
March-May 1993	National Biological Service, Riverside, CA	Biologist, Desert tortoise demographic and health study, Desert Tortoise Natural Area and Fremont Peak, San Bernardino Co., CA
Feb. 1993	LSA Associates, Inc., Pt. Richmond, CA	Biologist, Desert tortoise survey on proposed natural gas line, Chocolate Mountain Gunnery Range, San Bernardino Co., CA
Feb. 1993	Ogden Environmental, San Diego, CA	Biologist, Desert tortoise survey on proposed utility corridor, Marine Corps Air Ground Combat Center, Twenty-nine Palms, CA
Sept. 1992	Arizona Game and Fish Department, Phoenix, AZ	Biologist, Desert tortoise demographic and health studies at three study sites in southern AZ
March-July 1992	Bureau of Land Management, Riverside, CA	Biologist, Sheep grazing effects on desert tortoise habitat, San Bernardino Co., CA
July 1992	City of Twenty-nine Palms, CA	Biologist, Presence/Absence survey for desert tortoises, City of Twenty-nine Palms, San Bernardino Co., CA
Sept.-Oct 1991	Arizona Game and Fish Department, Phoenix, AZ	Biologist, Desert tortoise demographic and health studies at three study sites in southern AZ
June-July 1991	Dames and Moore, Las Vegas, NV	Environmental Compliance Monitor, natural gas line; Species of concern: desert tortoise, San Bernardino Co., CA
May 1991	University of Arizona, Tucson, AZ	Volunteer Research Assistant, Desert tortoise habitat selection study, Buckskin Mnts., Mohave Co., AZ

References and Report and Publication list available upon request.

DESERT TORTOISE AUTHORIZED BIOLOGIST REQUEST FORM

This form should be used to provide your qualifications to agency officials if you wish to undertake the duties of an authorized biologist with regard to desert tortoises during construction or other projects authorized under Sections 7 (Biological Opinions) or 10(a)(1)(B) (i.e., Habitat Conservation Plans) of the Endangered Species Act.

(If you seek approval to attach/remove/insert any devices or equipment to/into desert tortoises, withdraw blood, or conduct other procedures on desert tortoises, a recovery permit or similar authorization may be required. Application for a recovery permit requires completion of Form 3-200-55, which can be downloaded at http://www.fws.gov/forms/3-200-55. pdf.)

1. Contact Information:

Name	Mercy Vaughn
Address	179 Niblick Rd. PMB 272
City, State, Zip Code	Paso Robles, CA 93446
Phone Number(s)	928-380-5507
Email Address	Manydogs10@aol.com

2. Date:

3. Areas in which authorization is requested (check all that apply):

- ☒ San Bernardino, Kern, Inyo and Los Angeles Counties, California (Ventura office)
- ☐ Riverside, San Diego, and Imperial Counties, California (Carlsbad office)
- ☐ Nevada ☐ Utah ☐ Arizona

4. Please provide information on the project:

USFWS Biological Opinion or HCP No. When Applicable		**Date:** June 6, 2011
Project Name	Rice Solar Energy Project	
Federal Agency	BLM	
Proponent or Contractor	Solar Reserve	

5. If you hold, or have held, any relevant state or federal wildlife permits provide the following:

Species	Dates	State (specify) or Federal Permit Number	Authorized Activities
Reptiles, small mammals	10-27-2004-present	California Resident scientific collecting permit #SC007670	Tortoise handling under appropriate permits

6. Education: Provide up to three schools, listing most recent first:

Institution	Dates attended	Major/Minor	Degree received
1. University of Arizona	1990-1993	Ecology and Evolutionary Biology	B. A.
2. Northern Arizona University	2000	Ecology coursework	

7. Desert Tortoise Training.

Name/Type of Training	Dates (From/To)	Location	Instructor/Sponsor
1. Classes			
2. Field Training	1990-2011	Sonoran and Mojave Deserts	Dr. Charles Lowe, Dr. Cecil Schwalbe, Dr. Alice Karl, Dr. Kristin Berry
3. Translocation	2004-2011	Mojave Desert	Hyundai, BrightSource
4. Health and Blood	2011	Las Vegas, NV	USFWS

8. Experience – Include only those positions relevant to the requested work with desert tortoises. Distinguish between wild Mojave desert tortoise and other experience. Include only your experience, not information for the project you worked on (e.g., if 100 tortoises were handled on a project and you handled 5 of those tortoises, include only those 5. List most recent experience first. Handling a Mojave desert tortoise must be authorized by a Biological Opinion or other permit and reported to the USFWS. Information proved in this section will be used by the USFWS to track the numbers of tortoises affected by previous projects (baseline). **Be sure to include a project supervisor or other contact that can verify your skills and experience in relation to your job performance.** Attach additional sheets as necessary.

Experience by project and activity: (Values provided are best estimate)

Project Dates	Project Contact Information	Project Description/Name	Conduct Clearance Surveys (Hrs/Days)	Excavate DT burrows (No.)	Locate DT No. < 100mm ≥ 100mm	Handled for Relocation DTs (No.)	Excavate, and relocate DT nests (No.)	Construct Artificial Burrows (No.)	Monitor project equipment and activities (Hrs/days)	Oversee project compliance (Hrs/days)	Supervise DT field staff (Hrs/Days) and No. staff supervised	DT fence Installation and inspection (Hrs/Days)	Present DT Awareness Training (No.)
ENVIRONMENTAL COMPLIANCE / BIOLOGICAL MONITORING													
Aug.-Nov 2006	Jones and Stokes Associates, Inc., Sacramento, CA	Lead Biologist for desert tortoise biological monitoring for Caltrans projects along I-15, I-40, and SR95, CA.	0	0	0	0	0	0	0	500/50	500/50/5	0	5
March – July 2006	Sapphos Env. Inc., Pasadena, CA	Lead Biologist for desert tortoise biological monitoring for Caltrans projects along I-15, I-40, and San Bernardino kangaroo rat monitoring along SR210, CA.	50/5	0	0	0	0	0	0	800/80	800/80/1	0	0
March-June 2006	Morro Group, San Luis Obispo, CA	Lead Field Biologist , Coordinated desert tortoise clearance surveys, monitoring of tortoise proof fence installation, burrowing owl relocation and Joshua tree relocation for SR14 expansion for Caltrans.	200/20	0	0	0	0	0	0	900/90	900/90/5	160/20	5
Sept 2003-present	Hyundai Motor America, Ann Arbor, MI	Monitored 2 miles of road grading along SCG gas transmission line 6905 near Kramer Junction, CA. Monitored for sensitive species, Mojave ground squirrel, burrowing owl, and desert tortoise.	200/20	35	0/5	30	0	10	200/20	10,000/1000	7500/750/50	300/30	150
Dec. 2002-July 2003	Rincon Consultants, Inc., Ventura, CA	Environmental Consultant/Biological Monitor. Environmental assessments and biological monitoring/environmental compliance for right-of-way maintenance of SCG gas transmission lines. San Bernardino, Riverside, and Los Angeles Co. Monitored for multiple species and sensitive habitats. 20 projects to date.	700/140	0	50	20``	0	0	700/140	1400/140	700/70/4	0	10
Dec. 2002	Southern California Gas Co., Victorville, CA	Monitored 2 miles of road grading along SCG gas transmission line 6905 near Kramer Junction, CA. Monitored for sensitive species, Mojave ground squirrel, burrowing owl, and desert tortoise.	20/4	0	5	0	0	0	20/4	40/4	0	0	1
Nov. 2002	EnviroPlus Consulting, Ridgecrest, CA	Monitored restoration of a 6 mile water line ROW in Victorville, CA. In addition to restoration monitored for sensitive species, Mojave ground squirrel, burrowing owl, and desert tortoise.	0	0	0	0	0	0	100/10	0	0	0	2

Nov.-Dec 2002	Chambers Group, Irvine, CA	Supervised crew and monitored restoration of a 32 mile gas transmission line ROW between Adelanto and Kramer Junction, CA. In addition to restoration monitored for sensitive species, Mojave ground squirrel, burrowing owl, and desert tortoise.	0	0	0/30	0	0	0	250/25	0	100/10/3	0	2
June – Nov. 2002	EnviroPlus Consulting, Ridgecrest, CA	Biological Monitor, Species of concern: Desert tortoise, Mojave ground squirrel, Burrowing owl; Installation of 24" natural gas line from Adelanto to Kramer Junction, CA	1000/100	15	7/28	25	0	5	500/50	0	0	0	20
Jan. 2002-March 2002	AMEC Earth and Environmental, San Diego, CA	Biological Monitor, Species of concern: Desert tortoise, Mojave ground squirrel, Burrowing owl; Installation of 30" natural gas line from Adelanto to Kramer Junction, CA	100/10	1	2/20	0	0	0	700/70	0	0	0	0
Aug.2001	EnviroPlus Consulting, Ridgecrest, CA	Biological Monitor, Species of concern: Desert tortoise, High Desert Power Project, San Bernardino Co., CA	0	0	0	0	0	0	50/5	0	0	0	1
Apr-01	Alice Karl & Associates, Davis, CA	On site designated biologist. Managed environmental monitoring team for installation of a natural gas power plant in Blythe, CA. Authorized to move desert tortoises from project site.	50/5	0	0	0	0	0	150/15	200/20	200/20/4	0	4
Jan.-March 1998	North State Resources, Redding, CA	Environmental Compliance Monitor, Spread Leader. Training and supervision of monitors on fiber optic line. Species of concern: Desert tortoise, San Bernardino Co., CA	100/10	10	0/10	0	0	0	500/50	0	500/50/7	0	10
Sept.-Oct. 1995 May-June 1996	Desert Tortoise Preserve Committee, San Bernardino, CA	Biological Monitor, Species of concern: Desert tortoise, Harper Lake Road, San Bernardino Co., CA	0	0	0/10	5	0	0	0	500/50	0	0	0
Feb-.March 1994	LSA Associates, Inc., Pt. Richmond, CA	Environmental Compliance Monitor, natural gas line; Species of concern: desert tortoise, Imperial Co. CA	200/20	0	5	0	0	0	300/30	0	0	0	3
June-July 1991	Dames and Moore, Las Vegas, NV	Environmental Compliance Monitor, natural gas line; Species of concern: desert tortoise, San Bernardino Co., CA	0	0	0	0	0	0	500/50	0	0	0	0
CLEARANCE SURVEY													
April-May 2009	Hyundai Motor America, Ann Arbor, MI	Lead Biologist for 5 year post construction desert tortoise clearance surveys on the Hyundai/Kia Proving Grounds on4,600 acres in the West Mojave Desert. Supervised 65 biologists.	0	0	0	0	0	0	n/a	n/a	150/15/65	n/a	n/a
Oct-05	Alice Karl and Assoc.	Wildlife Biologist, Conducted desert tortoise clearance surveys on 2,200 acres in the Colorado Desert near Brawley, CA.	200/20	3	2/5	5	0	0	n/a	n/a	0	n/a	n/a
May 2002	EnviroPlus Consulting, Ridgecrest, CA	Wildlife Biologist, Conducted clearance survey for desert tortoise, cacti and *Yucca* sp. along a 5-mile high-power transmission line, Moapa, NV.	100/10	0	0/8	0	0	0	n/a	n/a	100/10/2	n/a	n/a

Apr-02	EnviroPlus Consulting, Ridgecrest, CA	Wildlife Biologist, Supervised crew conducting intensive preconstruction surveys along a 32-mile gas line corridor from Adelanto to Kramer Jct., CA, Species of concern: Desert tortoise, Burrowing owl, Mojave ground squirrel, Joshua tree and all cacti species.	300/30	0	4/25	0	0	0	n/a	n/a	300/30/2	n/a	n/a
PRESENCE / ABSENCE SURVEYS													
Aug-09	enXco Development Corporation, N. Palm Springs, CA	Consulting Biologist conducted habitat quality assessment for desert tortoise on 100 acres near Borrego Springs, CA	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a
April-present 2009	CH2MHill, Sacramento, CA	Consulting Biologist managed desert tortoise presence/absence survey on a 9,800 acre proposed wind energy site in the West Mojave Desert April-May 2009. Consulting with client and Agencies on mitigation plan. Biological crew of 20 people.	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a
May-09	CH2MHill, Sacramento, CA	Consulting Biologist managed desert tortoise presence/absence survey on a 2,240 acre proposed wind energy site in the West Mojave Desert. Biological crew of 20 people.	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a
April-May 2009	CH2MHill, Sacramento, CA	Consulting Biologist co-managed desert tortoise presence/absence survey on a 2,240 acre proposed solar energy site in the East Mojave Desert. Biological crew of 14 people.	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a
April-May 2009	CH2MHill, Sacramento, CA	Consulting Biologist managed burrowing owl and desert tortoise presence/absence survey on 940 acres and conducted a habitat assessment on two alternative transmission lines for a proposed solar energy facilities near Phelan, CA totaling 1300 acres. Biological crew of 6 people.	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a
April-May 2009	CH2MHill, Sacramento, CA	Consulting Biologist managed desert tortoise presence/absence survey on two sites for proposed solar energy facilities near Mojave, and Lucerne, CA totaling 1300 acres. Biological crew of 12 people.	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a
March-April 2009	Sapphos Env. Inc., Pasadena, CA	Consulting Biologist managed desert tortoise presence/absence survey on a 7,500 acre proposed wind energy site in the West Mojave Desert. Biological crew of 16 people.	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a
Oct. 2008	CH2MHill, Sacramento, CA	Consulting Biologist managed desert tortoise presence/absence surveys on a proposed solar energy site in southern Nevada.	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a
Aug-08	enXco Development Corporation, N. Palm Springs, CA	Consulting Biologist conducted habitat quality assessment for desert tortoise on 640 acres near California City, CA	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a

March-July 2008	Sapphos Env. Inc., Pasadena, CA	Consulting Biologist managed desert tortoise presence/absence survey on a 11,700 acre proposed wind energy site in the West Mojave Desert. Biological crew of 16 people.	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a
March-July 2008	CH2MHill, Sacramento, CA	Consulting Biologist managed desert tortoise presence/absence surveys on a proposed solar energy site in Ivanpah Valley, CA.	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a
March-July 2008	CH2MHill, Sacramento, CA	Consulting Biologist managed desert tortoise presence/absence surveys on a proposed solar energy site in southern Nevada.	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a
March-July 2008	CH2MHill, Sacramento, CA	Consulting Biologist managed desert tortoise presence/absence surveys on a proposed casino site in 29Palms, CA.	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a
Jan. 2007	Asphalt Construction, Inc., Mojave, CA	Wildlife Biologist, Conducted desert tortoise presence/absence surveys for reclamation of a mine site near Ridgecrest, CA.	n/a	n/a	0	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a
Jan. and Aug. 2007	AES Seawest, Inc., San Diego, CA	Wildlife Biologist, Conducted desert tortoise presence/absence surveys for meteorological stations near Dagget, CA	n/a	n/a	1	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a
Mar-May 2005	Sapphos Env. Inc., Pasadena, CA	Lead Field Biologist for desert tortoise presence/absence survey on a 5,500 acre proposed wind energy site in the West Mojave Desert. Biological crew of up to 16 people.	n/a	n/a	0	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a
May-02	EnviroPlus Consulting, Ridgecrest, CA	Wildlife Biologist, Conducted presence/absence surveys for desert tortoises on a proposed housing development in the Indio Hills, Riverside, Co.	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a
Jun-01	Endangered Species Recovery Program, California State University, Stanislaus, Stanislaus County, Ca	Conducted desert tortoise surveys along proposed expansion of Hwy 395 near Olancha, CA	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a
Mar-00	Death Valley National Park, Death Valley, CA	Biologist, conducted a desert tortoise survey for a road realignment project and 10 desert tortoise density estimate transects, Death Valley National Park, CA	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a
Sept. 1997	BBJ Mining Co., San Juan Capistrano, CA	Biological Consultant, Presence/Absence survey for the desert tortoise, Death Valley National Park, CA	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a
Jul-93	Pacific Southwest Biological Survey, San Diego, CA	Biologist, Presence/Absence survey for desert tortoises, Little Morongo Canyon, San Bernardino Co., CA	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a
Feb. 1993	LSA Associates, Inc., Pt. Richmond, CA	Biologist, Desert tortoise survey on proposed natural gas line, Chocolate Mountain Gunnery Range, San Bernardino Co., CA	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a

Feb. 1993	Ogden Environmental, San Diego, CA	Biologist, Desert tortoise survey on proposed utility corridor, Marine Corps Air Ground Combat Center, Twenty-nine Palms, CA	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a
Jul-92	City of Twenty-nine Palms, CA	Biologist, Presence/Absence survey for desert tortoises, City of Twenty-nine Palms, San Bernardino Co., CA	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a
DENSITY ESTIMATE TRANSECTS													
Aug-09	CH2MHill, Sacramento, CA	Biologist, conducted 5 relative abundance transects for a proposed solar energy facility near Primm, NV.	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a
Jul-06	Environmental Planning Group, Tucson, AZ	Wildlife Biologist, Conducted desert tortoise relative abundance transects along a proposed power line corridor, NV.	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a
July-Aug.2001	U.S.D.I. Bureau of Land Management, Barstow, CA	Biologist, conducted 200 of 1500 desert tortoise density estimate transects throughout the West Mojave Desert to establish baseline data for developing a West Mojave Management plan. San Bernardino, Co. CA	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a
Jul.-Sept. 1999	U.S.D.I. Bureau of Land Management, Barstow, CA	Biologist, conducted 200 of 1400 desert tortoise density estimate transects throughout the West Mojave Desert to establish baseline data for developing a West Mojave Management plan. San Bernardino, Co. CA	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a
Aug.-Sept.1998	U.S. Geological Service, Biological Resource Division, Riverside, CA	Biologist, conducted 200 of 1000 desert tortoise density estimate transects throughout the West Mojave Desert to establish baseline data for developing a West Mojave Management plan. San Bernardino, Co. CA	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a
Nov. 1996	Death Valley National Park, Death Valley, CA	Biological Consultant, Conducted transects throughout the DVNP to determine locations of local desert tortoise populations	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a
Aug. 1994	Dames & Moore, Tucson, AZ	Biologist, Testing method for estimating desert tortoise densities, Luke Air Force Base, AZ	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a
RESEARCH STUDIES													
August 2009 since Nov. 2005	Northwestern Mexico Desert Tortoise Research Project	Research coordinator since 2005 for ongoing desert tortoise ecology, genetics and disease studies in the tropical deciduous forest and desert thornscrub communities of Sonora and Sinaloa Mexico. Extensive research is ongoing annually with the most recent expedition in August 2009.	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a
Nov. 2005-present	Northwestern Mexico Desert Tortoise Research Project	Research coordinator for ongoing desert tortoise ecology, genetics and disease studies in the tropical deciduous forest and desert thornscrub communities of Sonora and Sinaloa Mexico.	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a
Sept. 2005	University of Arizona	Lead Field Biologist for desert tortoise research conducted at Organ Pipe Natl. Monument, AZ.	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a

Oct.2002	Center for Sustainable Environments, Northern Arizona University, Flagstaff, AZ	Principle Investigator, Organized and supervised 25 person field crew to train Indigenous Group on Desert Tortoise Resource Management and Handling Techniques, Conducted Tortoise Mortality Survey on two 1km2 study plots on Seri Indian lands in Sonora, Mexico.	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a
May-02	Alice Karl & Associates, Davis, CA	Desert tortoise demographic and health study at two 1.5 km^2 study sites located within the proposed expansion area of Fort Irwin NTC. Marked, measured and weighed desert tortoises encountered.	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a
Oct.2001	Center for Sustainable Environments, Northern Arizona University, Flagstaff, AZ	Principle Investigator, Trained Indigenous Group on Desert Tortoise Resource Management and Handling Techniques, Established Six Permanent Study Areas for Ongoing Research on Seri Lands, Conducted Tortoise Mortality Survey on km2 study area on Tiburon Island, Gulf of California. Sonora, Mexico	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a
May-June2001	Charis Inc., Barstow, CA	Desert tortoise demographic and health study at six 1 km^2 study sites located within the proposed expansion area of Fort Irwin NTC. Marked, measured and weighed desert tortoises encountered.	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a
March-July 1997	National Biological Service, Riverside, CA	Lead Biologist, Desert tortoise demographic and health study, Fort Irwin NTC, CA	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a
May-97	Desert Tortoise Preserve Committee, San Bernardino, CA	Biologist, Desert tortoise demographic and health study, Desert Tortoise Natural Area, CA	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a
Sept. 1996	University of Arizona, Tucson, AZ	Biologist, Desert tortoise demographic study, Organ Pipe National Monument, AZ	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a
May-Sept. 1996	National Biological Service, Riverside, CA	Biologist, Desert tortoise demographic and health study, Fort Irwin NTC, CA	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a
May-95	National Biological Service, Riverside, CA	Biologist, Desert tortoise demographic and health study, Upper Ward Valley, San Bernardino Co., CA	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a
March-Apr. 1995	Lake Mead National Park, Boulder City, NV	Biologist, Desert tortoise demographic and health studies at three sites within the LMNP	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a
Aug.-Sept. 1994	Arizona Game and Fish Department, Phoenix, AZ	Biologist, Desert tortoise demographic and health study, Little Shipp Wash, Yavapai Co., AZ	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a
Apr. 1994	Nevada Division of Wildlife, Las Vegas, NV	Technician, Set up three desert tortoise study plots in Southern NV	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a
Apr.-June 1994	National Biological Service, Riverside, CA	Biologist, Desert tortoise demographic and health study, Goffs, Lucerne Valley, Johnson Valley, San Bernardino Co., CA	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a

Oct. 1993	University of Arizona, Tucson, AZ Arizona Game and Fish Heritage Grant Recipient: Elizabeth Wirt	Biologist, Assisted in locating desert tortoises for reproduction study, Maricopa Mnts, Maricopa Co. AZ	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a
Aug.-Oct. 1993	Arizona Game and Fish Department, Phoenix, AZ	Biologist, Desert tortoise demographic and health study, Granite Hills, Pinal Co., AZ	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a
March-May 1993	National Biological Service, Riverside, CA	Biologist, Desert tortoise demographic and health study, Desert Tortoise Natural Area and Fremont Peak, San Bernardino Co., CA	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a
Sept. 1992	Arizona Game and Fish Department, Phoenix, AZ	Biologist, Desert tortoise demographic and health studies at three study sites in southern AZ	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a
March-July 1992	Bureau of Land Management, Riverside, CA	Biologist, Sheep grazing effects on desert tortoise habitat, San Bernardino Co., CA	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a
Sept.-Oct 1991	Arizona Game and Fish Department, Phoenix, AZ	Biologist, Desert tortoise demographic and health studies at three study sites in southern AZ	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a
May-91	University of Arizona, Tucson, AZ	Volunteer Research Assistant, Desert tortoise habitat selection study, Buckskin Mnts., Mohave Co., AZ	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a
PUBLIC AWARENESS													
March-May 1993	Desert Tortoise Preserve Committee, San Bernardino, CA	Naturalist (part time), Provide public education, Desert Tortoise Natural Area, San Bernardino Co., CA	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a

Past Associates:

Edward LaRue	PO Box 3197, Wrightwood, CA 92397	760-964-0012	ed.larue@verizon.net
Paul Frank	PO Box 71, Moab, UT 84532	801-910-4359	paulfrank@frontiernet.net
Jacquelyn Smith	1628 E Southern Ave #9-322, Tempe, AZ 85282	480-363-4918	desertbiogirl@gmail.com
Alice E. Karl, Ph.D.	P.O. Box 74006, Davis, CA 95617	530-304-4121	heliophile@mindspring.com
Peter Woodman	PO Box 1210, Inyokern, CA 93527	760-377-3466	Kivabio@aol.com
Stephen Boland	179 Niblick Rd., PMB 272, Paso Robles, CA 93446	928-380-8850	spboland@aol.com
William Vanherweg	1020 O'Connor Way, San Luis Obispo, CA 93405	805-839-0375	bvan53@gmail.com

Summary of experience:

Total time spent for all desert tortoise-related field activities (referenced above):
Specify total number of hours: >20,000 hours
OR Total number of 8-hour days:_____

Total number of miles/kilometers walked conducting survey transects: > 12,000 miles

Total number of wild, free-ranging desert tortoises you personally handled:

<100 mm: 100+

>100 mm: 3000+

Additional supervisory experience other than with desert tortoise work

Project	Hours	Staff (No.)
Caltrans Mojave Bypass-Revegetation project	200	2
Revegetation along existing SoCal gas lines	100	3
Revegetation on the Hyundai Test Track	200	4

I certify that the information submitted in this form is complete and accurate to the best of my knowledge and belief.

I understand that any false statement herein may subject me to the criminal penalties of 18 U.S.C. Ch.47, Sec. 1001.

Signed: **Date:** September 24, 2009

STEPHEN P. BOLAND SUNDANCE BIOLOGY INC.

179 Niblick Rd. PMB 272, Paso Robles, CA 93446 • (928) 380-8850 • spboland@aol.com

Stephen Boland is Co-owner and Vice-President of Sundance Biology, Inc. and has been conducting environmental studies since 1983.

AREAS OF EXPERTISE

Wildlife and botanical resource inventories for environmental assessments and environmental impact reports; environmental compliance monitoring; biological monitoring for Threatened, Endangered, & Sensitive species; and mitigation planning. Supervised field research teams as well as environmental monitoring crews (up to 30 monitors) for T & E species protection, NEPA and CEQA requirements, habitat restoration, and cultural/paleontological resources pertaining to construction projects. Clients include federal, state, and local agencies; US military installations in California, Arizona, and Nevada; mining interests; construction and development firms; and other consultancies. A detailed list of projects is attached.

Experience in all aspects of scientific research including study design, proposal writing, data collection, data analysis, reporting, field crew training, and supervision.

Twenty years of experience as a Biological and Environmental Compliance monitor, conducting presence / absence surveys, density-estimate transects, and demographic and health studies of the federally listed desert tortoise (*Gopherus agassizii*) in California, Arizona, and Nevada.

Authorization to handle desert tortoises on over 35 projects have been obtained in California from the Ventura and Barstow offices of the US Fish & Wildlife Service, the Barstow and Needles offices of the Bureau of Land Management, and the Palmdale office of the California Dept. of Fish & Game; in Arizona from the Phoenix office of the Arizona Dept. of Game & Fish; in Nevada the Nevada Dept. of Wildlife; and in Sonora, Mexico from the Gobierno Tradicional Coma'ac (Seri Indian Traditional Government).

Authorized Field Investigator for CA threatened Mojave Ground Squirrel on two MOU's as follows: William Vanherweg and Mike McGovern. He has conducted over 40 Mojave Ground Squirrel trapping surveys since 1990.

Conducted over 25 Burrowing owl phase 1, 2, and 3 surveys since 1993.

EDUCATION

Bachelor of Science, 1985-California State University, Fresno
Major-Environmental Biology, Major-Surveying and Photogrammetry, Minor-Mathematics

OTHER PROFESSIONAL EXPERIENCE

STAFF BIOLOGIST 1983-1989, Kings River Conservation District, Fresno, CA
Coordination and responsibility in planning and conducting field research for an environmental impact and mitigation study for a major hydroelectric power project which involved avian, raptor, deer and small mammal, reptilian, fish, threatened and endangered species, vegetation, and water quality studies. Supervised seasonal field crews. Authored annual technical reports.

PHOTOGRAMMETRIST 1980-1982 ERTEC, Longbeach, CA
Worked in all phases of generating topographic maps from aerial photographs including flight line planning, control surveys, map generation on stereo plotters, and preparation/editing of final maps for reproduction.

PUBLICATIONS

Berry, K.H., S.P. Boland, G.O. Goodlett, and T. Shields. 1990. The distribution and abundance of the desert tortoise (*Gopherus agassizii*) on the desert tortoise natural area. Proc. Desert Tortoise Council Meetings 1990.

Boland, S.P. J.A. Halstead, and B.E. Valentine. 1989. Willow flycatcher nestling parasitized by larval fly (*Protocalliphora cuprina*). Wilson Bulletin 101: 75

Valentine, B.E., T.A. Roberts, S.B. Boland, and A.P. Woodman. 1988. Livestock Management and productivity of willow flycatchers in the central Sierra Nevada. 1988 Transactions of the Western Section of the Wildlife Society 24:105-114.

TECHNICAL REPORTS

Stephen Boland has authored or co-authored over 200 reports for biological assessments and environmental surveys.

WORK SUMMARY OF SPECIES OF CONCERN

INVERTEBRATES
Morro shoulder-banded snail

REPTILES
Desert tortoise
Red legged frog
Southwestern pond turtle
SJV blunt nosed leopard lizard

MAMMALS
San Joaquin Valley (SJV) Kit Fox
Stephen's kangaroo rat
Tipton kangaroo rat
Mojave ground squirrel
SJV antelope ground squirrel

MAMMALS
Giant kangaroo rat

BIRDS
Willow flycatcher
Spotted owl

SUMMARY OF PROJECTS SINCE 1983

Environmental Compliance Monitoring ……26
Resource Inventory and Assessments……161
Natural Resource Management / Research ……38

ATTACHED LIST OF PROJECTS

RESOURCE INVENTORIES AND ASSESSMENTS

March-July 2009	William Vanherweg, Morro Bay, CA.	Wildlife Biologist. Conducted two CDFG protocol Mojave ground squirrel trapping surveys near Ridgecrest, CA
Oct 2009	Daggett Ridge Wind Farm, LLC San Diego, CA	Consulting Biologist managed vegetation mapping survey and desert tortoise survey on a proposed wind energy site near Daggett, CA . Biological crew of 3 people.
Aug 2009	CH2MHill Sacramento, CA	Biologist, conducted eight relative abundance transects for a proposed solar energy facility near Primm, NV.
May 2009	CH2MHill Sacramento, CA	Consulting Biologist co-managed desert tortoise presence/absence survey on a 2,240 acre proposed wind energy site in the West Mojave Desert. Biological crew of 20 people.
April-May 2009	CH2MHill Sacramento, CA	Consulting Biologist managed desert tortoise presence/absence survey on a 2,240 acre proposed solar energy site in the East Mojave Desert. Biological crew of 14 people.
April-May 2009	CH2MHill Sacramento, CA	Consulting Biologist co-managed burrowing owl and desert tortoise presence/absence survey on 940 acres and conducted a habitat assessment on two alternative transmission lines for a proposed solar energy facility near Phelan, CA totaling 1300 acres. Biological crew of 6 people.
April-May 2009	CH2MHill Sacramento, CA	Consulting Biologist co-managed desert tortoise presence/absence survey on two sites for proposed solar energy facilities near Mojave, and Lucerne, CA totaling 1300 acres. Biological crew of 12 people.
Apr-2009	Daggett Ridge Wind Farm, LLC San Diego, CA	Consulting Biologist co-managed Mojave monkeyflower presence/absence survey on a 150 acre proposed wind energy site near Daggett, CA. Biological crew of 3 people.
April-May 2009	CH2MHill Sacramento, CA	Consulting Biologist co-managed burrowing owl and desert tortoise presence/absence survey on 940 acres. Biological crew of 6 people.
March-July 2009	Sapphos Env. Inc. Pasadena, CA	Consulting Biologist, Conducted three Mojave Ground Squirrel Protocol Trapping Surveys on a site near Mojave, CA.
March-April 2009	Sapphos Env. Inc. Pasadena, CA	Consulting Biologist managed desert tortoise presence/absence survey on a 7,500 acre proposed wind energy site in the West Mojave Desert. Biological crew of 16 people.
March-April 2009	Hyundai Motor America Ann Arbor, MI	Managed and conducted annual Mojave Ground Squirrel trapping effort on the Hyundai Motor America proving grounds wildlife easement area.

Oct 2008	CH2M Hill, Sacramento, CA	Wildlife Biologist, Conducted 24 desert tortoise density estimate transects on the proposed Primm Solar Generating Project in Ivanpah Valley, Clark County, Nevada
Aug 2008	EnXco, Palm Springs, CA	Wildlife Biologist, Conducted habitat assessment on 640 acres to determine potential for desert tortoise, California City, CA
June 2008	CH2M Hill, Sacramento, CA	Wildlife Biologist, Conducted 20 desert tortoise density estimate transects on a proposed 3,500 acre solar site on Mormon Mesa in Nevada.. Additionally, 3.5 miles of a proposed water and gas tie-in line and 6.4 miles of proposed access road were surveyed out to 100 feet on each side. Overton, NV
Aug 2007	AES SeaWest, Inc., San Diego, CA	Wildlife Biologist, Conducted desert tortoise survey for seismic refraction study on Daggett Ridge near Barstow, CA
Feb 2007	Asphalt Construction Company, Palmdale, CA	Wildlife Biologist, Conducted desert tortoise clearance project on a 5 acre abandoned mining operation slated for revegetation efforts in. Ridgecrest, CA
Oct 2005	Alice Karl & Ass.	Wildlife Biologist, Conducted desert tortoise clearance surveys on 2,200 acres in the Colorado Desert near Brawley, CA.
Oct 2004	Bill Vanherweg, Bakersfield, CA	Wildlife Biologist, Radio transmittered desert tortoises and supervised crew of 10 biologist conducting final clearance surveys for desert tortoises on a proposed vehicle test track facility for Hyundai Motor America in California City, CA
Sept-Nov 2003	Bill Vanherweg, Bakersfield, CA	Wildlife Biologist, Supervised crew of 30 biologist conducting clearance surveys for desert tortoises on a proposed vehicle test track facility for Hyundai Motor America in California City, CA
May 2007	Hillcrest Development, Reno NV	Wildlife Biologist, Conducted desert tortoise and Mojave ground squirrel presence/ absence surveys on 69 acre parcel in Barstow, CA
March-July 2007	Various Clients	Wildlife Biologist, Conducted Mojave Ground Squirrel Protocol Trapping Surveys at six sites and supervised 18 additional surveys throughout its range in the west Mojave Desert of California.
Sep 2006	William Vanherweg, Morro Bay, CA.	Wildlife Biologist, Coordinated, supervised, and conducted desert tortoise presence/absence survey on a 1000 acre parcel near North Edwards, CA.
Mar-July 2006	Various Clients	Wildlife Biologist, Conducted Mojave Ground Squirrel Protocol Trapping Surveys at six sites and supervised 13 additional surveys throughout its range in the west Mojave Desert of California.
May 2006	Caltrans, San Bernardino County, CA	Wildlife Biologist, Conducted desert tortoise presence/absence surveys for proposed I-15 Mojave River Overpass Expansion, Victorville, CA
Mar-July 2005	Various Clients	Wildlife Biologist, Conducted Mojave Ground Squirrel Protocol Trapping Surveys at one site in Palmdale, CA and five sites in Victorville, CA
Sep 2004	Bill Vanherweg, Bakersfield, CA	Wildlife Biologist, Tehachapi pocket mouse trapping surveys at two sites west of Rosedale, CA
Apr-July 2004	Environmental Science & Associates, Oakland, CA	Wildlife Biologist, Conducted Mojave Ground Squirrel Protocol Trapping Surveys at three sites in Palmdale, CA
Apr-July 2004	Eremico, Weldon, CA	Wildlife Biologist, Conducted Mojave Ground Squirrel Protocol Trapping Surveys at two sites in Victorville, CA and California City, CA
Apr 2003	Bill Vanherweg, Bakersfield, CA	Wildlife Biologist, Supervised crew of 15 biologist conducting presence/absence surveys for desert tortoises on a proposed vehicle test track facility for Hyundai Motor America in California City, CA

April-July 2003	Eremico, Weldon, CA	Wildlife Biologist, Conducted Mojave Ground Squirrel Protocol Trapping Surveys at two sites in Adelanto, CA and California City, CA
May 2002	Enviroplus Consulting, Ridgecrest, CA	Wildlife Biologist, Conducted presence/absence surveys for desert tortoises on a proposed housing development in the Indio Hills, Riverside, Co.
Mar-Apr 2002	Enviroplus Consulting, Ridgecrest, CA	Wildlife Biologist, Conducted intensive preconstruction surveys along a 32-mile gas line corridor from Adelanto to Kramer Jct., CA, Species of concern: Desert tortoise, Burrowing owl, Mojave ground squirrel, Joshua tree and all cacti species.
Jun 2001	Endangered Species Recovery Program, Calif. State Univ., Stanislaus, Stanislaus County, CA	Conducted desert tortoise surveys along proposed expansion of Hwy 395 near Olancha, CA
Jun 2000	North State Resources, Redding, CA	Conducted a clearance/salvage survey for the Morro shoulder-banded snail in San Luis Obispo County, CA
May 1999	Quad Knopf, Bakersfield, CA	Biological assessment for proposed water bank development, Semitropic, San Joaquin Valley, Kern County, CA
Apr 1999	Quad Knopf, Bakersfield, CA	Floristic survey for proposed gas line route, Elk Hills, Kern County, CA
Mar 1999	Quad Knopf, Bakersfield, CA	Biological assessment for proposed power line corridor, Elk Hills, Kern County, CA
Jan 1999	Circle Mountain Biology, Wrightwood, CA	Desert tortoise survey along proposed water line for water bank development, San Bernardino County, CA
Jun 1998	Dames and Moore, Tucson, AZ	Desert tortoise survey for proposed power plant gas pipeline, Bullhead City, AZ
Sep 1997	BBJ Mining Co., San Juan Capistrano, CA	Desert tortoise survey at proposed mine site, Death Valley National Park, CA
Nov 1996	Garcia and Associates, San Anselmo, CA	Conducted red-legged frog surveys in the Coastal Range of central California along proposed 36 inch water line for California Dept. of Water Resources, San Luis Obispo County, CA
Jun 1993	City of Victorville, Victorville, CA	Desert tortoise survey for proposed road improvements in Victorville, CA
Jun 1993	MHA Environmental Consulting, San Mateo, CA	Desert tortoise survey at proposed meter station on the Mojave natural gas line, San Bernardino County, CA
Feb 1993	Ogden Environmental Services, San Diego, CA	Desert tortoise survey for proposed sewage line & electric power line, Marine Corps Air Ground Combat Center, Twentynine Palms, CA
Jan 1993	LSA Associates, Inc., Point Richmond, CA	Desert tortoise survey along a proposed 31 mile natural gas line corridor in Riverside and Imperial Counties, CA
1992-95	CALTRANS, San Bernardino, CA	On call biologist to conduct desert tortoise surveys prior to small highway improvement projects in San Bernardino County, CA
Apr 1991	Chemgold, Inc., Yuma, CA	Biological assessment on proposed leach pad site at the Picacho mine, Yuma, AZ
Mar 1991	FMC Gold Company, Reno, NV	Biological assessment on proposed mine exploration site, San Bernardino County, CA
1990-1995	Small private developers in San Bernardino County, CA	Surveys for desert tortoises and Mojave ground squirrels for 65 private urban development projects in the West Mojave desert, San Bernardino County, CA
Dec 1990	US Air Force, Edwards Air Force Base, CA	Conducted 30 desert tortoise density estimation transects within the blast zone of proposed rocket engine test firing site on Edwards AFB, CA

Dec 1990	Owl Rock Co., Arcadia, CA	Desert tortoise survey on proposed 40 acre quarry expansion site, Barstow, CA
Oct 1990	City of Ridgecrest, Ridgecrest, CA	Desert tortoise survey for proposed golf course, Ridgecrest, CA
Oct 1990	Environmental Solutions, Irvine, CA	Biological assessment at the American Mine near Amboy, CA
Oct 1990	Gold Fields Mining Co., Lakewood, CO	Biological assessment on proposed mine exploration site, Barstow, CA
Sep 1990	Pacific Agriculture Holdings, Inc., Fresno, CA	Desert tortoise survey on 8,320 acres for proposed agricultural development, San Bernardino County, CA
May-Jun 1990	O'Farrel Biological Consulting, Las Vegas, NV	Assisted in conducting 35 Stephen's kangaroo rat surveys, including habitat mapping, density estimation transects, and live trapping, Riverside County, CA
May 1990	O'Farrel Biological Consulting, Las Vegas, NV	Assisted in conducting two Mojave ground squirrel live trapping surveys, Palmdale, CA
Apr 1990	CALTRANS, San Bernardino County, CA	Relocation of desert tortoises from right-of-way expansion zone for Hwy 58 in San Bernardino County, CA
Apr 1990	Southwest Earth Resources, Houston, TX	Biological assessment on proposed mine exploration site, Halloran Springs, CA
Mar 1990	Rand Mining Co., Randsburg, CA	Biological assessment on proposed leach pad site at the Randsburg gold mine, San Bernardino County, CA
Mar 1990	Pacific Passage, Inc., Palm Springs, CA	Biological assessment for proposed 1500 acre wind energy conversion facility, Cabazon, CA
Jan-Feb 1990	MHA Environmental Consulting, San Mateo, CA	Desert tortoise survey along a proposed 300 mile natural gas line corridor, San Bernardino County, CA
May 1989	MB Gilbert Associates, Long Beach, CA	Desert tortoise survey for proposed building expansion site at Fort Irwin Goldstone Complex, CA
Aug 1988	CWESA, Clovis, CA	San Joaquin Valley kit fox survey, Coalinga, CA
Jun 1988	CWESA, Clovis, CA	Assisted with biological assessment in coastal stream riparian habitat, Lompoc, CA
Sep 1987	CWESA, Clovis, CA	Fish population survey in Sierra Nevada mountain stream, Sonora, CA
Aug 1987	CWESA, Clovis, CA	San Joaquin Valley kit fox survey and avian survey for biological assessment, Newman, CA
Apr 1987	CWESA, Clovis, CA	Diurnal/nocturnal raptor survey for proposed hydroelectric development in Kern River canyon, Kern County. CA
May 1985	CWESA, Clovis, CA	Assisted with wildlife and floristic surveys for biological assessment in foothill woodland habitat, La Grange, CA

ENVIRONMENTAL COMPLIANCE MONITORING

Jan 2010	Daggett Ridge Wind Farm, LLC San Diego, CA	Environmental Compliance Monitor. Monitored construction of four Met towers on Sand Ridge near Daggett, CA.
Jan-Mar 2008 -	EDAW, San Diego, CA	Environmental Compliance Monitor. Monitored dike removal along 45 mile stretch of UPRR ROW through Meadow Wash Canyon between Moapa and Caliente, NV
Jan-June 2007	The Morro Group, San Luis Obispo, CA.	Environmental Compliance Monitor, Conducted bi-weekly inspection along 7 miles of Hwy 14 road improvement project by Caltrans near Mojave, CA.

Nov-Dec 2005	EDAW, San Diego, CA	Environmental Compliance Monitor. Monitored restoration/reconstruction of altered Meadow Wash stream bed by Union Pacific Railroad 29 miles south of Caliente, NV
Sep 2005	Caltrans, San Bernardino County, CA	Environmental Compliance Monitor. Maintenance of protective berms along Hwy 95 between Vidal Junction and Needles, CA
Jan 2005	Eremico, Weldon, CA	Mojave ground squirrel monitoring at two sites in Adelanto CA.
Jan-Mar 2004	Bill Vanherweg, Bakersfield, CA	Environmental Compliance Monitor, Supervised crew of Environmental Compliance Monitors and desert tortoise clearance teams for construction of vehicle test track facility for Hyundai Motor America in California City, CA
May-Aug 2003	Rincon, Ventura, CA	Environmental Compliance Monitor. Maintenance of high pressure gas line ROW's in the East and West Mojave Desert, CA
Nov 2002	Enviroplus Consulting, Ridgecrest, CA	Environmental Compliance Monitor. Installation of cathotic protection station on a 24" natural gas line from Adelanto to Kramer Junction, CA
Jun-Aug 2002	Enviroplus Consulting, Ridgecrest, CA	Environmental Compliance Monitor. Installation of 24" natural gas line from Adelanto to Kramer Junction, CA
Feb-Mar 2002	AMEC Earth and Environmental, San Diego, CA	Environmental Compliance Monitor. Installation of 30" natural gas line from Adelanto to Kramer Junction, CA
Jun 2001	Garcia and Associates, San Anselmo, CA	Environmental Compliance Monitor. Installation of a new pressure limiting station on a PG&E 36' natural gas line in Barstow, CA
Apr 2001	Alice Karl & Associates, Davis, CA	Environmental Compliance Monitor. Installation of natural gas power plant in Blythe, CA
Mar-Dec 2000	North State Resources, Redding, CA	Managed environmental and cultural monitoring program and crew of up to 30 monitors for the installation of a fiber optic line from Montana De Oro State Park to San Luis Obispo in San Luis Obispo County, CA
Oct 1999-Jan 2000	Quad Knopf, Bakersfield, CA	Environmental Compliance Monitor. Seismic reflection survey in the Elk Hills, Kern County, CA.
Mar-Apr 1998	On-Track Consulting and Research, Ridgecrest, CA	Environmental Compliance Monitor. Heavy metal cleanup of soils in small arms firing range, Marine Corps Air Ground Combat Center, San Bernardino, CA
Nov 1997-Mar 1998	North State Resources, Redding, CA	Environmental Compliance Monitor. Spread Leader. Training and supervision of monitors on fiber optic line, San Bernardino Co., CA
Nov 1996-Feb 1997	Garcia and Associates, San Anselmo, CA	Environmental compliance monitor. Installation of 36 inch water line for California Dept. of Water Resources, San Luis Obispo County, CA
Sep 1995	Desert Tortoise Preserve Committee, San Bernardino, CA	Monitored fall activity of desert tortoises along Harper Lake road, San Bernardino County, CA
Jan-Mar 1994	LSA Associates, Inc., Point Richmond, CA	Environmental Compliance Monitor. Installation of 36 inch natural gas line in Riverside and Imperial Counties, CA
Apr 1993	MHA Environmental Consulting, San Mateo, CA	Environmental Compliance Monitor. Installation of 40 cathotic metering stations along the Mojave natural gas line, San Bernardino, CA
Oct 1992	CALTRANS, San Bernardino County, CA	Environmental Compliance Monitor. Construction of desert tortoise exclusion fence at 14 proposed culvert sites along Hwy 395 in San Bernardino, CA

Jun-Jul 1992	MHA Environmental Consulting, San Mateo, CA	Environmental Compliance Monitor. Seismic reflection survey conducted at the Naval Air Weapons Center, China Lake, Kern and San Bernardino Counties, CA
Jun 1992	The Planning Center, Bakersfield, CA	Environmental Compliance Monitor, Species of Concern: SJV blunt-nosed leopard lizard. Installation of natural gas line in Kern County, CA
Jun 1992	MHA Environmental Consulting, San Mateo, CA	Environmental Compliance Monitor. Right-of-way maintenance along AT&T fiber optic line in San Bernardino County, CA
May-June 1991	Dames and Moore, Las Vegas, NV	Environmental Compliance Monitor. Duties included training of monitors, desert tortoise surveys, and monitoring installation of 36" natural gas line in San Bernardino, CA

NATURAL RESOURCE MANAGEMENT / RESEARCH

Aug 2006	Center for Natural Lands Management, Bakersfield, CA.	Wildlife Biologist, Conducted nocturnal small mammal surveys for population studies on Semitropic Ridge and Lokern Preserves, Kern County, CA.
Mar 2004	BEA & Associates, Fort Collins, CO	Wildlife Biologist, Conducted Mojave Ground Squirrel Trapping Surveys at three sites on Edwards Air Force Base, CA
Mar 2003	Phil Leitner	Wildlife Biologist, Assisted with Mojave Ground Squirrel trapping study in Coso Basin on the Naval Air Weapons Station at China Lake, CA
Aug 2003	Center For Natural Lands Management, Bakersfield, CA	Wildlife biologist, Assisted with small mammal trapping studies at the Semitropic Ridge and Lokern Preserves, Kern County, CA
Apr-May 2001	Charis Inc., Barstow, CA	Desert tortoise demographic and health study at six 1-km2 study sites located within the proposed expansion area of Fort Irwin NTC. Marked, measured and weighed all desert tortoises encountered.
Jul-Aug 2001	U.S.D.I. Bureau of Land Management, Barstow, CA	Biologist, conducted 200 of 1500 desert tortoise density estimate transects throughout the West Mojave Desert to establish baseline data for developing a West Mojave Management plan. San Bernardino Co., CA
Sep-Dec 2001	The Arboretum at Flagstaff, Flagstaff, AZ	Compilation of existing data and activities for T,E, & S plant species in the Verde Valley, AZ and writing a draft habitat management plan for the USDA, Forest Service
Oct 2001	Center for Sustainable Environments, Northern Arizona University, Flagstaff, AZ	Trained Indigenous Group on Desert Tortoise Resource Management and Handling Techniques, Established Six Permanent Study Areas for Ongoing study area on Tiburon Island, Gulf of California. Sonora, Mexico
Mar 2000	Death Valley National Park, Death Valley, CA	Conducted survey for potential desert tortoise habitat and desert tortoise population distribution in Death Valley National Park, CA
Feb 1999	Death Valley National Park, Death Valley, CA	Survey for potential desert tortoise habitat and desert tortoise population distribution in Death Valley National Park, CA
Jun 1999	Quad Knopf, Bakersfield, CA	Small mammal live trapping at Coles Levee Ecological Preserve to determine rodent populations, particularly the Tipton kangaroo rat, Kern County, CA

Jul-Sep 1999	US Geological Service, Biological Resource Division, Riverside, CA	Conducted 250 desert tortoise density estimate transects throughout the west Mojave desert to establish baseline data for consideration of Fort Irwin Training Center expansion, San Bernardino, CA
Aug-Sep 1998	US Geological Service, Biological Resource Division, Riverside, CA	Conducted 350 desert tortoise density estimate transects throughout the west Mojave desert to establish baseline data for the west Mojave management plan, San Bernardino, CA
Mar-Jul 1997	US Geological Service, Biological Resource Division, Riverside, CA	Field supervisor for desert tortoise demographic and health study at three sites at Fort Irwin National Training Center, CA. Trained crews on survey and handling procedures for desert tortoises.
Mar-Jun 1996	National Biological Service, Riverside, CA	Field supervisor for desert tortoise demographic and health study at two sites at Fort Irwin National Training Center, CA. Trained crews on survey and handling procedures for desert tortoises.
Sep 1996	University of Arizona, Tucson, AZ	Desert tortoise demographic study at Oregon Pipe National Monument, AZ. Marked, measured and weighed all desert tortoises encountered.
Oct-Nov 1996	Death Valley National Park, Death Valley, CA	Park wide survey using density estimate transects for potential desert tortoise habitat and desert tortoise population distribution in Death Valley National Park, CA
Apr-Jun 1995	National Biological Service, Riverside, CA	Desert tortoise demographic and health study, Upper Ward Valley site, San Bernardino County, CA. Marked, measured and weighed all desert tortoises encountered.
Apr-Jun 1994	National Biological Service, Riverside, CA	Desert tortoise demographic and health study, Goffs site, San Bernardino County, CA. Marked, measured and weighed all desert tortoises encountered.
Aug 1994	Dames and Moore, Tucson, AZ	Tested "zippen" style transects for estimating tortoise densities at Luke Air Force base in Southern Arizona.
Mar 1993	MHA Environmental Consulting, San Mateo, CA	Conducted small mammal live trapping inventories and vegetation descriptions at 11 sites on the Naval Air Weapons Station, China Lake, San Bernardino County, CA. Trapping focused on finding *Microtus* species.
Jul-Sep 1993	Arizona Game and Fish Dept., Phoenix, AZ	Desert tortoise demographic and health study, Granite Hills site, Yavapai County, AZ. Marked, measured and weighed all desert tortoises encountered.
Apr-Jun 1992	Bureau of Land Management, Riverside, CA	Desert tortoise demographic and health study, Chuckwalla Bench site, Riverside County, CA. Marked, measured and weighed all desert tortoises encountered.
Jul-Sep 1992	Arizona Game and Fish Dept., Phoenix, AZ	Desert tortoise demographic and health study, Bonanza Wash site, Yavapai County, AZ. Marked, measured and weighed all desert tortoises encountered.
Jul 1991	Bureau of Land Management, Riverside, CA	Conducted 270 desert tortoise density estimate transects in the East Mojave desert, San Bernardino County, CA
Aug-Oct 1991	Arizona Game and Fish Dept., Phoenix, AZ	Desert tortoise demographic and health study, Hualapai Mnts site, Yavapai County, AZ. Marked, measured and weighed all desert tortoises encountered.
Dec 1990-Jan 1991	McClenahan & Hopkins Associates, San Mateo, CA	Conducted 370 desert tortoise density estimate transects on the Naval Air Weapons Station, China Lake, Kern and San Bernardino Counties, CA
Aug 1990	U.S Army Corp of Engineers, Los Angeles, CA	Conducted 150 desert tortoise density estimate transects on the Fort Irwin National Training Center proposed annex area, San Bernardino County, CA

Mar-May 1989	Bureau of Land Management, Riverside, CA	Desert tortoise demographic and health study, Desert Tortoise Natural Area, Kern County, CA. Marked, measured and weighed all desert tortoises encountered.
Jun-Aug 1989	Institute of Arctic Biology, Univ. of Alaska, Fairbanks, AK	Conducted black guillemot breeding behavior study and general demographic study on Cooper Island, AK
Sep 1989	Institute of Marine Science, Univ. of Alaska, Fairbanks, AK	Assisted with damage assessment of coastal intertidal habitats along the Kenai peninsula, AK relating to a major oil spill.
Nov 1989	Chambers Group, Inc., Santa Ana, CA	Conducted 75 desert tortoise density estimate transects in the West Mojave desert, San Bernardino County, CA
1984-1988	Kings River Conservation District, Fresno, CA	Multi-year Willow Flycatcher study surveying potential habitat and color banding individuals, nesting pairs and offspring to develop USFS management practices and appropriate mitigation for proposed hydro-electric project that would flood existing nesting habitat. Central Sierra Nevada Mnts, Fresno County, CA.
1984-1988	Kings River Conservation District, Fresno, CA	Multi-year American Dipper study surveying potential habitat and color banding individuals, nesting pairs and offspring to develop USFS management practices and appropriate mitigation for proposed hydro-electric project that would flood existing nesting habitat. Central Sierra Nevada Mnts, Fresno County, CA.
1983-1987	Kings River Conservation District, Fresno, CA	Multi-year nesting raptor surveys including spotted owls, and goshawks to develop appropriate mitigation for proposed hydro-electric project that would flood existing nesting habitat. Central Sierra Nevada Mnts, Fresno County, CA.
1983-1987	Kings River Conservation District, Fresno, CA	Multi-year demographic cold water fisheries (electro-shock mark recapture) studies to develop instream mitigation for proposed hydro-electric project that would flood existing fisheries. Central Sierra Nevada Mnts, Fresno County, CA.
Mar 1986	Moss Landing Marine Labs, Moss Landing, CA	Conducted marine mammal and pelagic bird surveys from Miami, FL to Moss Landing, CA via the Panama Canal.
Sep-Dec 1985	CWESA, Clovis, CA	Reviewed scientific literature and compiled natural history reports on 27 avian species

DESERT TORTOISE AUTHORIZED BIOLOGIST REQUEST FORM

This form should be used to provide your qualifications to agency officials if you wish to undertake the duties of an authorized biologist with regard to desert tortoises during construction or other projects authorized under Sections 7 (Biological Opinions) or 10(a)(1)(B) (i.e., Habitat Conservation Plans) of the Endangered Species Act.

(If you seek approval to attach/remove/insert any devices or equipment to/into desert tortoises, withdraw blood, or conduct other procedures on desert tortoises, a recovery permit or similar authorization may be required. Application for a recovery permit requires completion of Form 3-200-55, which can be downloaded at http://www.fws.gov/forms/3-200-55. pdf.)

1. Contact Information:

Name	Stephen Boland
Address	179 Niblick Road, PMB 272
City, State, Zip Code	Paso Robles, CA 93446
Phone Number(s)	928.380.8850
Email Address	spboland@aol.com

2. Date: 1-15-2010

3. Areas in which authorization is requested (check all that apply):

- ☒ San Bernardino, Kern, Inyo and Los Angeles Counties, California (Ventura office)
- ☐ Riverside, San Diego, and Imperial Counties, California (Carlsbad office)
- ☐ Nevada ☐ Utah ☐ Arizona

4. Please provide information on the project:

USFWS Biological Opinion or HCP No. When Applicable		
Project Name	RICE SOLAR ENERGY PROJECT	
Federal Agency	USFWS	
Proponent or Contractor		

5. If you hold, or have held, any relevant state or federal wildlife permits provide the following:

Species	Dates	State (specify) or Federal Permit Number	Authorized Activities
Reptiles and small mammals	1993 to present	California Scientific Collecting Permit # SC 006641	Tortoise handling under appropriate permits
Mohave Ground Squirrel	2004 to present	MOU William Vanherweg	Independent Investigator

6. Education: Provide up to three schools, listing most recent first:

Institution	Dates attended	Major/Minor	Degree received
1. California State Univ., Fresno	1980-1985	Environmental Biology, Surveying & Photogrammetry / Mathematics	B. S.

7. Desert Tortoise Training.

Name/Type of Training	Dates (From/To)	Location	Instructor/Sponsor
1. Classes			
2. Field Training	1988-89	Mojave and Sonoran Deserts	Dr. Kristin Berry, Peter Woodman
3. Translocation			

8. Experience – Include only those positions relevant to the requested work with desert tortoises. Distinguish between wild Mojave desert tortoise and other experience. Include only your experience, not information for the project you worked on (e.g., if 100 tortoises were handled on a project and you handled 5 of those tortoises, include only those 5. List most recent experience first. Handling a Mojave desert tortoise must be authorized by a Biological Opinion or other permit and reported to the USFWS. Information proved in this section will be used by the USFWS to track the numbers of tortoises affected by previous projects (baseline). **Be sure to include a project supervisor or other contact that can verify your skills and experience in relation to your job performance.** Attach additional sheets as necessary.

Experience by project and activity: (Values provided are best estimate)

Project Dates	Project Contact Information	Project Description/Name	Conduct Clearance Surveys (Hrs/Days)	Excavate DT burrows (No.)	Locate DT No. < 100mm ≥ 100mm	Handled for Relocation DTs (No.)	Excavate, and relocate DT nests (No.)	Construct Artificial Burrows (No.)	Monitor project equipment and activities (Hrs/days)	Oversee project compliance (Hrs/days)	Supervise DT field staff (Hrs/Days) and No. staff supervised	DT fence Installation and inspection (Hrs/Days)	Present DT Awareness Training (No.)
ENVIRONMENTRAL COMPLIANCE / BIOLOGICAL MONITORING													
Dec 2010 to present	RMT, Tehachapi, CA	Designated biologist for Windstar wind energy construction project near Mojave, CA	100/10	0	0	0	0	0	50/5	1000/ 150	1000/150/ 10	25/5	5 (also recorded video)
Jan-Mar 2008 -	EDAW, San Diego, CA	Environmental Compliance Monitoring. Dike removal along 45 mile stretch of UPRR ROW through Meadow Wash Canyon between Moapa and Caliente, NV	30/50	0	0/5	0	0	0	500/50	0	0	0	0
Jan-June 2007	The Morro Group, San Luis Obispo, CA.	Environmental Compliance Monitoring. Conducted bi-weekly inspection along 7 miles of Hwy 14 road improvement project by Caltrans near Mojave, CA.	0	0	0	0	0	0	0	0	0	96/12	0
Nov-Dec 2005	EDAW, San Diego, CA	Environmental Compliance Monitoring. Restoration / reconstruction of altered Meadow Wash stream bed by Union Pacific Railroad 29 miles south of Caliente, NV	10/40	0	0/3	0	0	0	400/40	0	0	0	5
Sep-05	Caltrans, San Bernardino County, CA	Environmental Compliance Monitoring. Maintenance of protective berms along Hwy 95 between Vidal Junction and Needles, CA	30/30	0	3	0	0	0	300/30	0	0	0	2
Jan-Mar 2004	Bill Vanherweg, Bakersfield, CA	Environmental Compliance Monitoring. Supervised crew of Environmental Compliance Monitors and desert tortoise clearance teams for construction of vehicle test track facility for Hyundai Motor America in California City, CA	300/30	10	0/2	2	0	0	300/30	300/30	900/90	0	12
May-Aug 2003	Rincon, Ventura, CA	Environmental Compliance Monitoring. Maintenance of high pressure gas line ROW's in the East and West Mojave Desert, CA	400/80	50	5/20	10	0	0	400/80	800/80	0	0	1

Project Dates	Project Contact Information	Project Description/Name	Conduct Clearance Surveys (Hrs/Days)	Excavate DT burrows (No.)	Locate DT No. < 100mm ≥ 100mm	Handled for Relocation DTs (No.)	Excavate, and relocate DT nests (No.)	Construct Artificial Burrows (No.)	Monitor project equipment and activities (Hrs/days)	Oversee project compliance (Hrs/days)	Supervise DT field staff (Hrs/Days) and No. staff supervised	DT fence Installation and inspection (Hrs/Days)	Present DT Awareness Training (No.)
Nov-02	Enviroplus Consulting, Ridgecrest, CA	Environmental Compliance Monitoring. Installation of cathotic protection station on a 24" natural gas line from Adelanto to Kramer Junction, CA	0	0	0	0	0	0	40	40	0	0	1
Jun-Aug 2002	Enviroplus Consulting, Ridgecrest, CA	Environmental Compliance Monitoring. Installation of 24" natural gas line from Adelanto to Kramer Junction, CA	200/20	10	3/7	10	0	5	600/60	0	0	0	5
Feb-Mar 2002	AMEC Earth and Environmental, San Diego, CA	Environmental Compliance Monitoring. Installation of 30" natural gas line from Adelanto to Kramer Junction, CA	0	0	0	0	0	0	500/50	0	0	0	0
Jun-01	Garcia and Associates, San Anselmo, CA	Environmental Compliance Monitoring. Installation of a new pressure limiting station on a PG&E 36' natural gas line in Barstow, CA	0	0	0	0	0	0	200/20	0	0	20/20	5
Apr-01	Alice Karl & Associates, Davis, CA	Environmental Compliance Monitor. Installation of natural gas power plant in Blythe, CA	0	10	0	0	0	0	200/20	0	0	0	3
Mar-Apr 1998	On-Track Consulting and Research, Ridgecrest, CA	Environmental Compliance Monitoring. Heavy metal cleanup of soils in small arms firing range, Marine Corps Air Ground Combat Center, San Bernardino, CA	0	0	0	0	0	0	400/40	400/40	0	0	4
Nov 1997-Mar 1998	North State Resources, Redding, CA	Environmental Compliance Monitoring. Spread Leader. Training and supervision of monitors on fiber optic line, San Bernardino Co., CA	200/20	20	0/10	10	0	3	1000/100	0	600/60/5	0	20
Sep-95	Desert Tortoise Preserve Committee, San Bernardino, CA	Monitored fall activity of desert tortoises along Harper Lake road, San Bernardino County, CA	0	0	0/10	10	0	0	0	150/15	0	0	0
Jan-Mar 1994	LSA Associates, Inc., Point Richmond, CA	Environmental Compliance Monitoring. Installation of 36 inch natural gas line in Riverside and Imperial Counties, CA	300/30	25	5/15	20	0	10	500/50	800/80	800/80/20	0	10
Apr-93	MHA Environmental Consulting, San Mateo, CA	Environmental Compliance Monitoring. Installation of 40 cathotic metering stations along the Mojave natural gas line, San Bernardino, CA	30/15	0	0/15	5	0	0	150/14	150/15	0	0	1

Project Dates	Project Contact Information	Project Description/Name	Conduct Clearance Surveys (Hrs/Days)	Excavate DT burrows (No.)	Locate DT No. < 100mm ≥ 100mm	Handled for Relocation DTs (No.)	Excavate, and relocate DT nests (No.)	Construct Artificial Burrows (No.)	Monitor project equipment and activities (Hrs/days)	Oversee project compliance (Hrs/days)	Supervise DT field staff (Hrs/Days) and No. staff supervised	DT fence Installation and inspection (Hrs/Days)	Present DT Awareness Training (No.)
Oct-92	CALTRANS, San Bernardino County, CA	Environmental Compliance Monitoring. Construction of desert tortoise exclusion fence at 14 proposed culvert sites along Hwy 395 in San Bernardino, CA	10/10	0	0	0	0	0	100/10	100/10	0	100/10	2
Jun-Jul 1992	MHA Environmental Consulting, San Mateo, CA	Environmental Compliance Monitoring. Seismic reflection survey conducted at the Naval Air Weapons Center, China Lake, Kern and San Bernardino Counties, CA	160/40	5	0	0	0	0	400/40	400/40	0	0	3
Jun-92	MHA Environmental Consulting, San Mateo, CA	Environmental Compliance Monitoring. Right-of-way maintenance along AT&T fiber optic line in San Bernardino County, CA	10/10	10	0	0	0	0	100/10	100/10	0	0	2
May-June 1991	Dames and Moore, Las Vegas, NV	Environmental Compliance Monitoring. Duties included training of monitors, desert tortoise surveys, and monitoring installation of 36" natural gas line in San Bernardino, CA	200/20	30	5/15	20	0	5	350/35	0	200/20/2	0	1
CLEARANCE SURVEY													
Dec 2010-Jan 2011	RMT, Tehachapi, CA	Clearance for Windstar wind energy development, Mojave, CA	10/10	0	0	0	0	0	n/a	n/a	n/a	n/a	n/a
Feb-07	Asphalt Construction Company, Palmdale, CA	Wildlife Biologist, Conducted desert tortoise clearance project on a 5 acre abandoned mining operation slated for revegetation efforts in. Ridgecrest, CA	30/3	0	0	0	0	0	n/a	n/a	n/a	n/a	n/a
Oct-05	Alice Karl & Ass.	Wildlife Biologist, Conducted desert tortoise clearance surveys on 2,200 acres in the Colorado Desert near Brawley, CA.	200/20	5	0/3	1	0	0	n/a	n/a	n/a	n/a	n/a
Oct-04	Bill Vanherweg, Bakersfield, CA	Wildlife Biologist, Radio transmittered desert tortoises and supervised crew of 10 biologist conducting final clearance surveys for desert tortoises on a proposed vehicle test track facility for Hyundai Motor America in California City, CA	200/20	5	2	2	0	0	n/a	n/a	200/20/10	0	n/a

Project Dates	Project Contact Information	Project Description/Name	Conduct Clearance Surveys (Hrs/Days)	Excavate DT burrows (No.)	Locate DT No. < 100mm ≥ 100mm	Handled for Relocation DTs (No.)	Excavate, and relocate DT nests (No.)	Construct Artificial Burrows (No.)	Monitor project equipment and activities (Hrs/days)	Oversee project compliance (Hrs/days)	Supervise DT field staff (Hrs/Days) and No. staff supervised	DT fence Installation and inspection (Hrs/Days)	Present DT Awareness Training (No.)
Sept-Nov 2003	Bill Vanherweg, Bakersfield, CA	Wildlife Biologist, Supervised crew of 30 biologist conducting clearance surveys for desert tortoises on a proposed vehicle test track facility for Hyundai Motor America in California City, CA	500/50	0	0	0	0	0	n/a	n/a	50/50/30	0	n/a
Apr-90	CALTRANS, San Bernardino County, CA	Relocation of desert tortoises from right-of-way expansion zone for Hwy 58 in San Bernardino County, CA	150/15	0	0/5	5	0	0	n/a	n/a	150/15/5	0	n/a
Mar-Apr 2002	Enviroplus Consulting, Ridgecrest, CA	Wildlife Biologist, Conducted clearance surveys along a 32-mile gas line corridor from Adelanto to Kramer Jct., CA, Species of concern: Desert tortoise, Burrowing owl, Mojave ground squirrel, Joshua tree and all cacti species.	500/50	120	0/5	0	0	0	n/a	n/a	n/a	n/a	n/a
1992-95	CALTRANS, San Bernardino, CA	On call biologist to conduct desert tortoise clearance surveys prior to small highway improvement projects in San Bernardino County, CA	300/30	0	0	0	0	0	n/a	n/a	n/a	n/a	n/a
PRESENCE / ABSENCE SURVEY													
Apr-May-10	Western EcoSystems Technology, Inc, Cheyenne, WY	Supervised crew of 5 biologist to conduct DT surveys on 3000 acres for Bent Tree wind energy development, Mojave, CA			0/2						350/35/5		
Apr-09	CH2MHILL, Sacramento, CA	Supervised crew of 15 biologist to conduct DT surveys on 4 square miles and 11 miles of transmission corridor for Rice Solar Energy Project, Rice, CA			0/3						140/14/15		
Aug-07	AES SeaWest, Inc.	Wildlife Biologist, Conducted desert tortoise survey for seismic refraction study on Daggett Ridge near Barstow, CA			0/7								
May-07	Hillcrest Development, Reno NV	Wildlife Biologist, Conducted desert tortoise and Mojave ground squirrel presence/ absence surveys on 69 acre parcel in Barstow, CA			0								

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Sep-06	William Vanherweg, Morro Bay, CA.	Wildlife Biologist, Coordinated, supervised, and conducted desert tortoise presence/absence survey on a 1000 acre parcel near North Edwards, CA.			0/3						100/10/3		
May-06	Caltrans, San Bernardino County, CA	Wildlife Biologist, Conducted desert tortoise presence/absence surveys for proposed I-15 Mojave River Overpass Expansion, Victorville, CA			0								
Apr-03	Bill Vanherweg, Bakersfield, CA	Wildlife Biologist, Supervised crew of 15 biologist conducting presence/absence surveys for desert tortoises on a proposed vehicle test track facility for Hyundai Motor America in California City, CA			0						140/14/30		
May-02	Enviroplus Consulting, Ridgecrest, CA	Wildlife Biologist, Conducted presence/absence surveys for desert tortoises on a proposed housing development in the Indio Hills, Riverside, Co.			0								
Jun-01	Endangered Species Recovery Program, Calif. State Univ., Stanislaus, Stanislaus County, CA	Conducted desert tortoise surveys along proposed expansion of Hwy 395 near Olancha, CA			0								
Jan-99	Circle Mountain Biology, Wrightwood, CA	Desert tortoise survey along proposed water line for water bank development, San Bernardino County, CA			0/1								
Jun-98	Dames and Moore, Tucson, AZ	Desert tortoise survey for proposed power plant gas pipeline, Bullhead City, AZ			0								
Sep-97	BBJ Mining Co., San Juan Capistrano, CA	Desert tortoise survey at proposed mine site, Death Valley National Park, CA			0								
Jun-93	City of Victorville, Victorville, CA	Desert tortoise survey for proposed road improvements in Victorville, CA			0								

Project Dates	Project Contact Information	Project Description/Name	Conduct Clearance Surveys (Hrs/Days)	Excavate DT burrows (No.)	Locate DT No. < 100mm ≥ 100mm	Handled for Relocation DTs (No.)	Excavate, and relocate DT nests (No.)	Construct Artificial Burrows (No.)	Monitor project equipment and activities (Hrs/days)	Oversee project compliance (Hrs/days)	Supervise DT field staff (Hrs/Days) and No. staff supervised	DT fence Installation and inspection (Hrs/Days)	Present DT Awareness Training (No.)
Jun-93	MHA Environmental Consulting, San Mateo, CA	Desert tortoise survey at proposed meter station on the Mojave natural gas line, San Bernardino County, CA			0								
Feb-93	Ogden Environmental Services, San Diego, CA	Desert tortoise survey for proposed sewage line & electric power line, Marine Corps Air Ground Combat Center, Twentynine Palms, CA			2								
Jan-93	LSA Associates, Inc., Point Richmond, CA	Desert tortoise survey along a proposed 31 mile natural gas line corridor in Riverside and Imperial Counties, CA			3						150/15/5		
Apr-91	Chemgold, Inc., Yuma, CA	Biological assessment on proposed leach pad site at the Picacho mine, Yuma, AZ			0								
Mar-91	FMC Gold Company, Reno, NV	Biological assessment on proposed mine exploration site, San Bernardino County, CA			3								
1990-1995	Small private developers in San Bernardino County, CA	Surveys for desert tortoises and Mojave ground squirrels for 65 private urban development projects in the West Mojave desert, San Bernardino County, CA			0								
Dec-90	Owl Rock Co., Arcadia, CA	Desert tortoise survey on proposed 40 acre quarry expansion site, Barstow, CA			1								
Oct-90	City of Ridgecrest, Ridgecrest, CA	Desert tortoise survey for proposed golf course, Ridgecrest, CA			1								
Oct-90	Environmental Solutions, Irvine, CA	Biological assessment at the American Mine near Amboy, CA			0								
Oct-90	Gold Fields Mining Co., Lakewood, CO	Biological assessment on proposed mine exploration site, Barstow, CA			3								
Sep-90	Pacific Agriculture Holdings, Inc., Fresno, CA	Desert tortoise survey on 8,320 acres for proposed agricultural development, San Bernardino County, CA			1								

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Apr-90	Southwest Earth Resources, Houston, TX	Biological assessment on proposed mine exploration site, Halloran Springs, CA			5						40/4/2		
Mar-90	Rand Mining Co., Randsburg, CA	Biological assessment on proposed leach pad site at the Randsburg gold mine, San Bernardino County, CA			1								
Mar-90	Pacific Passage, Inc., Palm Springs, CA	Biological assessment for proposed 1500 acre wind energy conversion facility, Cabazon, CA			1								
Jan-Feb 1990	MHA Environmental Consulting, San Mateo, CA	Desert tortoise survey along a proposed 300 mile natural gas line corridor, San Bernardino County, CA			1/10								
May-89	MB Gilbert Associates, Long Beach, CA	Desert tortoise survey for proposed building expansion site at Fort Irwin Goldstone Complex, CA			0								
DENSITY ESTIMATE TRANSECTS													
Oct-08	CH2M Hill, Sacramento, CA	Wildlife Biologist, Conducted 24 desert tortoise density estimate transects on the proposed Primm Solar Generating Project in Ivanpah Valley, Clark County, Nevada	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a
Jun-08	CH2M Hill, Sacramento, CA	Wildlife Biologist, Conducted 20 desert tortoise density estimate transects on a proposed 3,500 acre solar site on Mormon Mesa in Nevada.. Additionally, 3.5 miles of a proposed water and gas tie-in line and 6.4 miles of proposed access road were surveyed out to 100 feet on each side. Overton, NV	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a
Jul-Aug 2001	U.S.D.I. Bureau of Land Management, Barstow, CA	Biologist, conducted 200 of 1500 desert tortoise density estimate transects throughout the West Mojave Desert to establish baseline data for developing a West Mojave Management plan. San Bernardino Co., CA	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a
Mar-00	Death Valley National Park, Death Valley, CA	Conducted density estimate transects for potential desert tortoise habitat and desert tortoise population distribution in Death Valley National Park, CA	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a

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Jul-Sep 1999	US Geological Service, Biological Resource Division, Riverside, CA	Conducted 250 desert tortoise density estimate transects throughout the west Mojave desert to establish baseline data for consideration of Fort Irwin Training Center expansion, San Bernardino, CA	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a
Feb-99	Death Valley National Park, Death Valley, CA	Survey for potential desert tortoise habitat and desert tortoise population distribution in Death Valley National Park, CA	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a
Aug-Sep 1998	US Geological Service, Biological Resource Division, Riverside, CA	Conducted 350 desert tortoise density estimate transects throughout the west Mojave desert to establish baseline data for the west Mojave management plan, San Bernardino, CA	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a
Oct-Nov 1996	Death Valley National Park, Death Valley, CA	Park wide survey using density estimate transects for potential desert tortoise habitat and desert tortoise population distribution in Death Valley National Park, CA	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a
Aug-94	Dames and Moore, Tucson, AZ	Tested "zippen" style transects for estimating tortoise densities at Luke Air Force base in Southern Arizona.	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a
Jul-91	Bureau of Land Management, Riverside, CA	Conducted 270 desert tortoise density estimate transects in the East Mojave desert, San Bernardino County, CA	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a
Dec 1990-Jan 1991	McClenahan & Hopkins Associates, San Mateo, CA	Conducted 370 desert tortoise density estimate transects on the Naval Air Weapons Station, China Lake, Kern and San Bernardino Counties, CA	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a
Dec-90	US Air Force, Edwards Air Force Base, CA	Conducted 30 desert tortoise density estimation transects within the blast zone of proposed rocket engine test firing site on Edwards AFB, CA	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a
Aug-90	U.S Army Corp of Engineers, Los Angeles, CA	Conducted 150 desert tortoise density estimate transects on the Fort Irwin National Training Center proposed annex area, San Bernardino County, CA	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a
Nov-89	Chambers Group, Inc., Santa Ana, CA	Conducted 75 desert tortoise density estimate transects in the West Mojave desert, San Bernardino County, CA	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a
DEMOGRAPHIC STUDY													

Project Dates	Project Contact Information	Project Description/Name	Conduct Clearance Surveys (Hrs/Days)	Excavate DT burrows (No.)	Locate DT No. < 100mm ≥ 100mm	Handled for Relocation DTs (No.)	Excavate, and relocate DT nests (No.)	Construct Artificial Burrows (No.)	Monitor project equipment and activities (Hrs/days)	Oversee project compliance (Hrs/days)	Supervise DT field staff (Hrs/Days) and No. staff supervised	DT fence Installation and inspection (Hrs/Days)	Present DT Awareness Training (No.)
Oct-01	Center for Sustainable Environments, Northern Arizona University, Flagstaff, AZ	Trained Indigenous Group on Desert Tortoise Resource Management and Handling Techniques, Established Six Permanent Study Areas for Ongoing study area on Tiburon Island, Gulf of California. Sonora, Mexico	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a
Apr-May 2001	Charis Inc., Barstow, CA	Desert tortoise demographic and health study at six 1-km2 study sites located within the proposed expansion area of Fort Irwin NTC. Marked, measured and weighed all desert tortoises encountered.	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a
Mar-Jul 1997	US Geological Service, Biological Resource Division, Riverside, CA	Field supervisor for desert tortoise demographic and health study at three sites at Fort Irwin National Training Center, CA. Trained crews on survey and handling procedures for desert tortoises.	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a
Sep-96	University of Arizona, Tucson, AZ	Desert tortoise demographic study at Oregon Pipe National Monument, AZ. Marked, measured and weighed all desert tortoises encountered.	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a
Mar-Jun 1996	National Biological Service, Riverside, CA	Field supervisor for desert tortoise demographic and health study at two sites at Fort Irwin National Training Center, CA. Trained crews on survey and handling procedures for desert tortoises.	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a
Apr-Jun 1995	National Biological Service, Riverside, CA	Desert tortoise demographic and health study, Upper Ward Valley site, San Bernardino County, CA. Marked, measured and weighed all desert tortoises encountered.	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a
Apr-Jun 1994	National Biological Service, Riverside, CA	Desert tortoise demographic and health study, Goffs site, San Bernardino County, CA. Marked, measured and weighed all desert tortoises encountered.	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a
Jul-Sep 1993	Arizona Game and Fish Dept., Phoenix, AZ	Desert tortoise demographic and health study, Granite Hills site, Yavapai County, AZ. Marked, measured and weighed all desert tortoises encountered.	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a
Jul-Sep 1992	Arizona Game and Fish Dept., Phoenix, AZ	Desert tortoise demographic and health study, Bonanza Wash site, Yavapai County, AZ. Marked, measured and weighed all desert tortoises encountered.	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a

Project Dates	Project Contact Information	Project Description/Name	Conduct Clearance Surveys (Hrs/Days)	Excavate DT burrows (No.)	Locate DT No. < 100mm ≥ 100mm	Handled for Relocation DTs (No.)	Excavate, and relocate DT nests (No.)	Construct Artificial Burrows (No.)	Monitor project equipment and activities (Hrs/days)	Oversee project compliance (Hrs/days)	Supervise DT field staff (Hrs/Days) and No. staff supervised	DT fence Installation and inspection (Hrs/Days)	Present DT Awareness Training (No.)
Apr-Jun 1992	Bureau of Land Management, Riverside, CA	Desert tortoise demographic and health study, Chuckwalla Bench site, Riverside County, CA. Marked, measured and weighed all desert tortoises encountered.	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a
Aug-Oct 1991	Arizona Game and Fish Dept., Phoenix, AZ	Desert tortoise demographic and health study, Hualapai Mnts site, Yavapai County, AZ. Marked, measured and weighed all desert tortoises encountered.	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a
Mar-May 1989	Bureau of Land Management, Riverside, CA	Desert tortoise demographic and health study, Desert Tortoise Natural Area, Kern County, CA. Marked, measured and weighed all desert tortoises encountered.	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a

Past Associates:

Mercy Vaughn	179 Niblick Rd., PMB 272, Paso Robles, CA 93446	928-380-5507	manydogs10@aol.com
Edward LaRue	PO Box 3197, Wrightwood, CA 92397	760-964-0012	ed.larue@verizon.net
Gilbert Goodlett	1660 West Franklin Avenue, Ridgecrest, CA 93555	760-954-4265	torthunter@aol.com
Paul Frank	PO Box 71, Moab, UT 84532	801-910-4359	paulfrank@frontiernet.net
Rachel Woodard	1539 N China Lake Blvd #613 Ridgecrest, CA 93555	760-954-0645	rachwoodard@earthlink.net
Alice E. Karl, Ph.D.	P.O. Box 74006, Davis, CA 95617	530-304-4121	heliophile@mindspring.com
Peter Woodman	PO Box 1210, Inyokern, CA 93527	760-377-3466	Kivabio@aol.com
William Vanherweg	1020 O'Connor Way, San Luis Obispo, CA 93405	805-839-0375	bvan53@gmail.com

Summary of experience:

Total time spent for all desert tortoise-related field activities (referenced above):
Specify total number of hours: >20,000 hours
OR Total number of 8-hour days:_____

Total number of miles/kilometers walked conducting survey transects: > 12,000 miles

Total number of wild, free-ranging desert tortoises you personally handled:

<100 mm: 100+

>100 mm: 3000+

Additional supervisory experience other than with desert tortoise work

Project	Hours	Staff (No.)
Managed environmental and cultural monitoring program and crew of up to 30 monitors for the installation of a fiber optic line from Montana De Oro State Park to San Luis Obispo in San Luis Obispo County, CA	2000	30
Managed crew collecting base line biological data for mitigation planning of proposed hydro dam in the central Sierra Nevada Mountains	2000	5-10
Managed crew surveying for Mojave Monkey Flower near Barstow, CA	50	4

I certify that the information submitted in this form is complete and accurate to the best of my knowledge and belief.

I understand that any false statement herein may subject me to the criminal penalties of 18 U.S.C. Ch.47, Sec. 1001.

Signed: **Date:** October 15, 2010

22461 Lombardi
Laguna Hills, CA 92653
(714) 394-1563
kellyherbinson@gmail.com

KELLY HERBINSON

EDUCATION

Master of Fine Arts (MFA) (2011) University of Wyoming, Laramie, Wyoming
Creative Writing: Non-Fiction

Master of Science (MS) (2009) San Francisco State University, San Francisco, California
Biology: Ecology and Systematics
Thesis: Climate and Cooperation: Nesting Strategies of the California Seed-Harvesting Ant, "*Pogonomyrmex californicus*"
Recipient of the Distinguished Master's Thesis Award 2009

Bachelor of Science (BS) (2001) University of California, San Diego, La Jolla, California
Biology: Ecology, Behavior and Evolution
Minor: Critical Gender Studies
Completed Tropical Ecology Semester Abroad in Costa Rica (Fall 2000)

SPECIAL TRAINING

Workshops

Fall 2003 Desert Tortoise Handling Workshop
Fall 2007 Ant Course: Workshop on ant taxonomy, ecology and specimen collection curation.
Fall 2008 Workshop on Species Distribution Modeling (GIS) Methods for Conservation Biologists

Graduate Level Course Work

Entomology, Insect Taxonomy, Systematic Biology, Conservation Ecology, Intro to Geographic Information Systems (GIS), GIS for Environmental Analysis, Statistics, Non-Fiction Writing

Computer Program Proficiency

Adobe Creative Suite (Photoshop, InDesign, Illustrator), Microsoft Office (Word, Excel, Publisher, PowerPoint), Geographic Information Systems (GIS: ArcView, ArcMap, ArcGIS), DreamWeaver (Web Development), Public Interactive (Web Development)

WORK EXPERIENCE

May 2011 – Present Contracting Biologist/Biological Monitor on the Ivanpah Solar Electric Generating Sytem (ISEGS) Sundance Biology, Paso Robles, CA

Work as a biologist focused on desert tortoise monitoring associated with the installation of a solar generating system in the Ivanpah Valley. Tasks include conducting desert tortoise clearance surveys, searching for desert tortoise sign, inventory of birds, plants and reptiles associated with site, monitoring construction equipment, and writing environmental documents.

Sept. 2009- May 2011 Graduate Assistant, University of Wyoming, Department of the Environment and Natural Resources (ENR), Laramie, WY

Aug. 2010 – May 2011 Develop and teach an upper division undergraduate seminar on Endangered Species. My course is taught from an interdisciplinary perspective and includes lessons about the Endangered Species Act (ESA), biology and ecology, environmental economics, cultural values of species, and political and international endangered species issues.

Sept. 2009-May 2010 Worked as a curriculum consultant helping the ENR school develop a new curriculum that effectively integrates courses from both the humanities and sciences, with the goal of an interdisciplinary education for both graduate and undergraduate students. I lead faculty, students and administrators in curriculum discussions, conducted interviews and wrote a final report on the consensus.

Nov. 2006 – Dec. 2008 Graduate Assistant to Entomology and Education, California Academy of Sciences, San Francisco, CA

Served as an assistant to both the Entomology and Education Departments at San Francisco's natural history museum, aquarium and planetarium, the California Academy of Sciences.

Created a series of innovative, inquiry-based educational activities designed to teach general science concepts to grades 2-8 through the lens of sustainability, specifically regarding waste and natural resources. All activities were created for use in educator workshops on waste and sustainability.

Managed citizen science project the "Bay Area Ant Survey" (BAAS). I taught classes (grades K-12) and teacher workshops about the ecological importance of ants and how to collect and identify ants of the Bay Area, and led collecting trips for local ants. I identified, geocoded, databased and mapped (GIS) all incoming specimens, as well as curated a collection of local ant specimens. I maintained the BAAS website, created maps of ant locations using GIS and assisted in grant-writing to continue support for the BAAS.

Worked as an assistant to Dr. Brian Fisher in his work describing and cataloguing the ant fauna of Madagascar. Took DNA samples and measurements from over 1000 ants, databased measurement data and created graphical analyses of ant morphometrics, and pinned and curated hundreds of ants. Revised the ant genus *Aphaenogaster* for Madagascar. Conducted taxonomic, morphometric and DNA analyses on over 800 ant specimens, described three new species, created a dichotomous key

and completed a manuscript for publication, “A taxonomic revision of Malagasy Aphaenogaster ants.”

Oct. 2002 – June 2009 (Seasonally) Desert Tortoise Biologist, Contracting Consultant

Served as a biological consultant for the federally threatened desert tortoise (*Gopherus agassizzi*). Handled and processed over 350 tortoises.

Line Distance Transects (2003-2005, 2008-2009): Supervised and coordinated a 15-person field crew conducting line distance abundance transects in the Mojave Desert for the Fish and Wildlife Service. Transects were completed in conjunction with the Desert Tortoise Recovery Plan. Coordinated with FWS personnel as well as officials at various military bases and national parks located in the desert tortoise habitat range (Spring 2009), conducted line distance transects as part of the field crew (Spring 2003-2005). Served as data manager-- ran QA/QC scripts, organized and maintained large databases, worked with FWS personnel to deliver and manage database (2005, 2008-2009).

General research (2003-2008): Conducted behavioral research (recorded movement and feeding, mating and combative habits at focal site outside of Baker, Ca.), radio telemetry (at focal sites for behavioral and health research and at Fort Irwin for translocation project), blood sampling/health assessments (assisted in blood sampling, independently conducted epidemiological assessments of desert tortoise mostly for Dr. Kristin Berry in focal sites across the Mojave.)

Construction Monitoring (2002-2005): Worked as a construction monitor on the Kern River Pipeline installation (2002-2003), PG&E pipeline installation (2004), and Union Pacific Railroad expansion (2005). Monitored major construction equipment and educated construction workers about desert tortoise conservation. Worked in compliance with the Biological Opinion (BO) and NEPA requirements. Conducted pre-construction clearance surveys, monitored heavy equipment, educated construction workers. After construction was completed, I surveyed the project site for an assessment of the overall footprint and conducted surveys for Environmental Impact Assessments (EIA).

General Surveys (2005, 2009): Conducted 100% clearance surveys for tortoises for the Hyundai test track installation (2005) and for a solar plant proposal outside of Jean, Nevada (2009).

Mar. - May 2006 Botanical Field Technician, Natural Resource Consultants (NRC), Laguna Beach, Ca.

Conducted botanical surveys on Tejon Ranch near Lebec, Ca. Sampled plants in one meter by one meter randomly placed plots. Keyed plants and grasses to species, recorded and proofed data.

May 2004 – Aug. 2004 Biological Technician, Bureau of Reclamation, Simms, Montana

Conducted research on the effects of irrigation diversions on fish populations in the Sun River. Collected all fish entering an irrigation diversion on the Sun River using seine nets and then measured and identified each to species. Maintained a database of weather observations, water temperatures and fish data to be used in a final report.

May 2002 – Aug. 2002 Biological Technician GS-04, Fish and Wildlife Service, Great Falls, Montana

Served as a biological technician and Conservation Corps leader for the Benton Lake Wildlife Refuge. Participated in migratory bird surveys, bird banding, and plant surveys. Managed several maintenance projects including removal and construction of barbed wire fences and repairing wooden board walks. Supervised two high school Montana Conservation Corps students in all tasks listed above. Taught general biological concepts and outdoor skills to students.

Jan.-May 2001 Teaching Assistant, University of California at San Diego Biology Dept., La Jolla, California

Served as a teaching assistant for the upper division biology course, "Conservation and the Human Predicament." Taught an independent section (25 students) of the course entitled "Cross-cultural perspectives of nature." Assigned readings, developed assignments and exams, graded papers and exams, guided students through a critical analysis of nature in terms of culture.

VOLUNTEER WORK

California Academy of Sciences (CAS) Night Life 2009 Worked with poet Genine Lentine to design a creative exhibition on ants for CAS Night Life- an after-hours event in the natural history museum featuring food, music and entertainment. I created a slide show of personal ads for ant species designed to communicate the diversity of ants to the public in a humorous and unique way. In addition I spent the evening acting as an "Ant Therapist," and had one-on-one conversations with museum patrons about their life problems, offering advice from the perspective of an ant and highlighting the wisdom they have accrued over millions of years of evolution.

First 5, December 2008: Led a group of 25 children aged 3-5 on an insect collecting field trip for the "First 5" program, a non-profit devoted to exposing children under five years old to science.

Expanding Your Horizons, October 2007: Spoke to 60 female middle school students about ants and being an entomologist. Expanding Your Horizons is a program dedicated to exposing young girls to careers in math and science.

Mexican Desert Tortoise Research, November 2005: Participated in 10-day volunteer expedition to Sonora, Mexico for desert tortoise research. I helped determine the tortoise's southern distribution boundary, performed health assessments on tortoises, established relationships with landowners and trained Mexican biologists in desert tortoise handling and conservation.

AWARDS

Southern California Edison Community College Scholarship (1996)
Southern California Edison University Scholarship (1998)
California Academy of Sciences Graduate Fellowship (2006-2008)
Honorable Mention, Student Paper Competition (2009) Wildlife Society, Western Section
Distinguished Master's Student Award (2009) San Francisco State University
University of Wyoming School of Arts and Sciences Summer Independent Study Award (2010)
University of Wyoming Haub School of the Environment Grant (2010)

Dick and Lynne Cheney International Study Abroad Grant (2010)

AFFILIATIONS

Entomological Society of America
Pacific Coast Entomological Society
Desert Tortoise Council
The Wildlife Society- Western Section

SPEAKING ENGAGEMENTS

Pacific Coast Entomological Society Meeting, UC Berkeley, California, February 20, 2009, "Climate and Cooperation: Nesting Strategies of the California Seed-Harvesting Ant, "*Pogonomyrmex californicus*"

The Wildlife Society (Western Section) Conference. Sacramento, California, January 21, 2009, "Climate and Cooperation: Nesting Strategies of the California Seed-Harvesting Ant, "*Pogonomyrmex californicus*"

CREATIVE PUBLICATIONS

Herbinson, K. 2010. Natural Selection. Creative Non-Fiction, Issue #40.

DESERT TORTOISE AUTHORIZED BIOLOGIST REQUEST FORM

This form should be used to provide your qualifications to agency officials if you wish to undertake the duties of an authorized biologist with regard to desert tortoises during construction or other projects authorized under Sections 7 (Biological Opinions) or 10(a)(1)(B) (i.e., Habitat Conservation Plans) of the Endangered Species Act.

(If you seek approval to attach/remove/insert any devices or equipment to/into desert tortoises, withdraw blood, or conduct other procedures on desert tortoises, a recovery permit or similar authorization may be required. Application for a recovery permit requires completion of Form 3-200-55, which can be downloaded at http://www.fws.gov/forms/3-200-55.pdf.)

1. Contact Information:

Name	Kelly Herbinson
Address	22461 Lombardi
City, State, Zip Code	Laguna Hills CA 92653
Phone Number(s)	714-394-1563
Email Address	kellyherbinson@gmail.com

2. Date: 5 June 2011

3. Areas in which authorization is requested (check all that apply):

☒San Bernardino, Kern, Inyo and Los Angeles Counties, California (Ventura office)
x Riverside, San Diego, and Imperial Counties, California (Carlsbad office)
☐Nevada ☐Utah ☐Arizona

4. Please provide information on the project:

USFWS Biological Opinion or HCP No. When Applicable		**Date:**	15 October 2010
Project Name	Solar Power Generating Facility		
Federal Agency	Bureau of Land Management		
Proponent or Contractor			

5. If you hold, or have held, any relevant state or federal wildlife permits provide the following:

Species	Dates	State (specify) or Federal Permit Number	Authorized Activities
Reptiles including *Gopherus agasizzii*	11/18/04 – 11/18/06	#SC-007661	Tortoise handling under appropriate permits, specimen collection

6. Education: Provide up to three schools, listing most recent first:

Institution	Dates attended	Major/Minor	Degree received
University of Wyoming	08/09 – 05/11	Creative Writing	MFA
San Francisco State University	08/06 – 05/09	Ecology and Systematics	MS
UC San Diego	08/98 – 05/01	Ecology, Behavior and Evolution	BS

7. Desert Tortoise Training:

Name/Type of Training	Dates (From/To)	Location	Instructor/Sponsor
1. Desert Tortoise Handling Workshop	10/03-10/03	Ridgecrest, CA	Desert Tortoise Council
2.			
3.			
4.			

8. Experience – Include only those positions relevant to the requested work with desert tortoises. Distinguish between wild Mojave desert tortoise and other experience. Include only your experience, not information for the project you worked on (e.g., if 100 tortoises were handled on a project and you handled 5 of those tortoises, include only those 5. List most recent experience first. Handling a Mojave desert tortoise must be authorized by a Biological Opinion or other permit and reported to the USFWS. Information proved in this section will be used by the USFWS to track the numbers of tortoises affected by previous projects (baseline). **Be sure to include a project supervisor or other contact that can verify your skills and experience in relation to your job performance.** Attach additional sheets as necessary.

Experience by project and activity:

Project Name, Job Title, Dates	Project Contact name, phone no., & Email address		Conduct Clearance Surveys (Hrs/Days)	Excavate DT burrows (No.)	Locate DT No. < 100mm ≥ 100mm	Handled for Relocation DTs (No.)	Excavate, and relocate DT nests (No.)

1. Ivanpah Solar Energy Generating System, Biological Monitor, 05/10 - Present	Peter Woodman, 760-861-3961, kivabio@aol.com	200 hours		5 / 10	(Associated with blood draw: 35)	
1. Line Distance Transects, Crew Leader, 03/09-06/09	Peter Woodman, 760-861-3961, kivabio@aol.com	(walk LDS transects) 40 days		5 / 30		
2. Solar Installation Clearance Surveys, Crew Leader, 06/10-06/10	Peter Woodman, 760-861-3961, kivabio@aol.com	160 hours		2 / 20		
3. Union Pacific Railroad Expansion, Biological Monitor, 05/06 – 07/06	Rachel Woodard, 760-954-0645, rachwoodard@earthlink.net	360 hours				
4. Line Distance Transects, Crew Member, Spring 03-05	Peter Woodman, 760-861-3961, kivabio@aol.com	(walk LDS transects) 100 days		20 / 110		
5. Desert Tortoise Health Assessment Study, Field Technician, Spring/Fall 04, 05	Rachel Woodard, 760-954-0645, rachwoodard@earthlink.net			10 / 120		
6. Ft. Irwin Desert Tortoise Behavioral Study, Field Technician, 06-09 04, 05	Kristin Berry, (951) 697-5361, kristin_berry@usgs.gov			/ 40		
7. Hyundai Test Track Installation, Field Technician, 09/05	Mercy Vaughn, (928) 380-5507, manydogs10@aol.com	120 hours	20			
8. Kern River Pipeline Installation, Biological Monitor, 10/02 – 01/03	Peter Woodman, 760-861-3961, kivabio@aol.com	300 hours	15	/ 20		
10.						

Experience by project and activity (continued): Each project number should correspond with the project listed on the previous page

Project Number (Corresponds to previous page)		**Construct Artificial Burrows (No.)**	**Monitor project equipment and activities (Hrs/Days)**	**Oversee project compliance (Hrs/Days)**	**Supervise DT field staff (Hrs/Days) and No. staff supervised**	**DT fence Installation and Inspection (Hrs/Days)**	**Present DT Awareness Training (No.)**
1.					30 days / 14 people		
2.					160 hrs / 5 people		
3.			360 hrs				10 times
4.							
5.							
6.							
7.							
8.			500 hrs				5 times
9.							
10.							

Summary of experience:

Total time spent for all desert tortoise-related field activities (referenced above):

OR Specify total number of hours: / Total number of 8-hour days: 3300 hours

Total number of miles/kilometers walked conducting survey transects:

3800 miles

Total number of wild, free-ranging desert tortoises you personally handled:

<100 mm: 40

≥100 mm: 350

Additional supervisory experience other than with desert tortoise work:

Project	Hours	Staff (No.)
Crew Leader, Montana Conservation Corps (On Benton Lake NWR), 05/02-09/02	640	
University of Wyoming Graduate Student Teacher (Seminar on Endangered Species)	100	

I certify that the information submitted in this form is complete and accurate to the best of my knowledge and belief.

I understand that any false statement herein may subject me to the criminal penalties of 18 U.S.C. Ch.47, Sec. 1001.

Signed: ***Kelly Herbinson*** **Date:** **December 28, 2010**

STEPHEN BOLAND REFFERENCES

Mercy Vaughn	179 Niblick Rd., PMB 272, Paso Robles, CA 93446	928-380-5507	manydogs10@aol.com
Edward LaRue	PO Box 3197, Wrightwood, CA 92397	760-964-0012	ed.larue@verizon.net
Paul Frank	PO Box 71, Moab, UT 84532	801-910-4359	paulfrank@frontiernet.net
Rachel Woodard	1539 N China Lake Blvd #613 Ridgecrest, CA 93555	760-954-0645	rachwoodard@earthlink.net
Alice E. Karl, Ph.D.	P.O. Box 74006, Davis, CA 95617	530-304-4121	heliophile@mindspring.com
Peter Woodman	PO Box 1210, Inyokern, CA 93527	760-377-3466	Kivabio@aol.com
William Vanherweg	1020 O'Connor Way, San Luis Obispo, CA 93405	805-839-0375	bvan53@gmail.com

MERCY VAUGHN REFERENCES

Edward LaRue	PO Box 3197, Wrightwood, CA 92397	760-964-0012	ed.larue@verizon.net
Paul Frank	PO Box 71, Moab, UT 84532	801-910-4359	paulfrank@frontiernet.net
Jacquelyn Smith	1628 E Southern Ave #9-322, Tempe, AZ 85282	480-363-4918	desertbiogirl@gmail.com
Alice E. Karl, Ph.D.	P.O. Box 74006, Davis, CA 95617	530-304-4121	heliophile@mindspring.com
Peter Woodman	PO Box 1210, Inyokern, CA 93527	760-377-3466	Kivabio@aol.com
Stephen Boland	179 Niblick Rd., PMB 272, Paso Robles, CA 93446	928-380-8850	spboland@aol.com
William Vanherweg	1020 O'Connor Way, San Luis Obispo, CA 93405	805-839-0375	bvan53@gmail.com

KELLY HERBINSON REFERENCES

Peter Woodman	PO Box 1210, Inyokern, CA 93527	760-377-3466	Kivabio@aol.com
Paul Frank	PO Box 71, Moab, UT 84532	801-910-4359	paulfrank@frontiernet.net
Rachel Woodard	1539 N China Lake Blvd #613 Ridgecrest, CA 93555	760-954-0645	rachwoodard@earthlink.net
Mercy Vaughn	179 Niblick Rd., PMB 272, Paso Robles, CA 93446	928-380-5507	manydogs10@aol.com
Stephen Boland	179 Niblick Rd., PMB 272, Paso Robles, CA 93446	928-380-8850	spboland@aol.com
Jacquelyn Smith	1628 E Southern Ave #9-322, Tempe, AZ 85282	480-363-4918	desertbiogirl@gmail.com

Bryan M. Reiley
1712 Merrill Cv., Jonesboro, AR 72401
Tel: 760-515-0272
Email: bryan.reiley@gmail.com

EDUCATION

Master of Science, Wildlife Biology, Arkansas State University, Jonesboro, Arkansas
March 2011

Bachelor of Science, Wildlife and Fisheries Biology, The University of Tennessee, Knoxville, TN 1999

PROFESSIONAL EXPERIENCE

Masters Candidate, April 2008-Present
Arkansas State University, Jonesboro, Arkansas; graduate student working on a project determining what impact localized flooding had on Swainson's Warblers in the White River National Wildlife Refuge in east-central Arkansas. Project included study design, proposal writing, public presentations of scientific findings, survivorship analysis (Program MARK), use of GIS software, mist-netting birds, resighting color banded birds, data analysis (SAS), project planning, budget planning and implementation, and subordinate management. Permitted bird bander. At the end of each field season I analyzed my data and wrote a narrative report of the findings of my biological survey data, which was submitted to the United State Fish and Wildlife Service.

As part of my field research and lab activities I was exposed to many bird species and field survey techniques, equipment, and procedures including: Rocket netting wood ducks, banding and sexing wood ducks, target and passive mist netting songbirds and owls, trapping raptors using various techniques, sexing and aging bird species using the Pyle guide, sampling birds using point counts, and participating in Christmas Bird Counts and Breeding Bird Surveys (USGS).

During my time as a Master's candidate in my first year I worked for the ASU Biology Department teaching labs in biology, A&P 1(anatomy and physiology), and Wildlife Management in order to receive a stipend. In my second year of graduate school I received a 1 yr. National Science Foundation (NSF) Assistantship as part of the nationally recognized GK12 Program. The GK12 program places graduate students into classrooms of local low-income school districts as resident scientists. As a resident scientist I put together weekly lesson plans and taught lessons related to my research and related curriculum in an eighth and tenth grade classroom in the Nettleton School district.

Seasonal Biologist 2003 – 2008. Kiva Biological Consulting. Ft.Irwin Translocation Project, Ft.Irwin, CA; duties included leading crews doing protocol surveys, federally permitted to place and remove transmitters on tortoises, daily and monthly radio telemetry of transmittered tortoises as part of a large scale translocation on a military reservation of the federally threatened desert tortoise.

Arizona Game and Fish Commission contracted through Kiva Biological Consulting, northwest Arizona; duties included conducting daily surveys for desert tortoise and other vertebrate species, health assessments, collecting blood samples, maintaining database, writing the summary report on five desert tortoise mark-recapture plots in the Sonoran Desert of northwestern Arizona.

United States Fish and Wildlife Desert Tortoise Line Distance Sampling Mojave Desert, California; duties included field sampling of federally threatened desert tortoise populations, collecting blood samples, orienteering to remote field locations, hiking more than 8 miles in extreme heat using the line distance transect method throughout the Mojave desert to establish baseline data on tortoise densities for the United States Fish and Wildlife Service.

Biological Technician, June and October- November 2007
Contracted by U.S.G.S.through Kemp Anderson; duties included conducting health assessments, collecting blood and nasal lavage samples, using radio telemetry to track tortoises, taking detailed photographs, coordinating sample animals, conducting quality control on all data collected as part of a large scale translocation on a military reservation (Ft.Irwin) of the federally threatened desert tortoise.

Biologist, November 2005 to August 2006, Jones and Stokes Corporation, Las Vegas, Nevada; duties included implementing federal mitigation measures regarding special status species (desert tortoise, breeding birds, Las Vegas bear poppy, and sticky ringstem), provided onsite guidance to construction personnel to avoid take of special status species, training of construction personnel, management of biological staff, maintaining project database on a 48-mile transmission line construction project on federal lands.

Fisheries Observer, December 2003 to March 2004, NWO contractor for National Marine Fisheries Service, Bering Sea, Alaska; duties included collecting species composition, total catch estimates, accurate identification of North Pacific groundfish species, accurate identification of marine mammals and rare seabird species, submitted time sensitive data remotely, accountable for data accuracy and collection methods on commercial fishing vessels in extremely harsh sea conditions using random sampling techniques.

Staff Biologist, March 2001 to October 2003, Foster Wheeler Environmental Corporation, Atlanta, Georgia; duties included assisting in federal permit applications for energy projects, assisting in proposal preparation, communications with the United Fish and Wildlife service, National Marine Fisheries Service, and Georgia Department of Natural Resources regarding species impacts, conducting wetland surveys, invertebrate sampling, water quality sampling, biological surveys for federal and state listed species including: desert tortoise, red cockaded woodpecker, burrowing owl, Southwestern willow flycatcher, and bald eagle.

Biological Field Technician-Crew Lead, May 1999 to August 1999
Idaho Department of Fish and Game, Bonners Ferry, Idaho; duties included project management, employee direction, maintaining Aldrich snare trap lines in remote locations, use of culvert traps, sedation of bears, collection of blood, tooth, and tissue samples, aerial and ground telemetry to monitor the federally threatened Selkirk grizzly bear population. Daily use of a 4X4 in extremely difficult terrain including snow storms and heavy rainfall.

Biological Field Technician-Crew Lead, Summer 1997 and Summer 1998,University of Tennessee, Great Smoky Mountains National Park, North Carolina; duties included project management, employee direction, maintaining Aldrich snare trap lines, sedation of bears, collection of blood, tooth, and tissue samples for an ongoing black bear population monitoring effort.

PUBLICATIONS

ANICH, N.A. AND B. M. REILEY. 2010. Effects of a Flood on Foraging Ecology and Population Dynamics of Swainson's Warblers. Wilson Journal of Ornithology 122: 165 – 168.

PUBLIC PRESENTATIONS

Flood Effects on Swainson's Warblers in Bottomland Hardwood Forest in Eastern Arkansas. American Ornithologists' Union Meeting. San Diego, CA. 10 February 2010, with J.C. Bednarz.

Above Ground Foraging and Occupancy by Swainson's Warblers in Flooded Habitat. Southeast Partners in Flight Meeting. Columbia, SC. 26 March 2009, with J. C. Bednarz and N. A. Anich.

Proper Desert Tortoise Surveying and Handling Techniques. Desert Tortoise Council Handling Workshop. Ridgecrest, CA. October 2005,2006, and 2007.

OTHER SELECTED TRAINING AND QUALIFICATIONS

California Department of Fish and Game Scientific Collectors permit
Extensive use of US Army Corp of Engineers wetland delineation techniques
USFWS desert tortoise blood sampling training (March 2004)
Extensive experience with radio telemetry equipment
Extensive experience using GPS units for mapping and data collection
Extensive experience using Microsoft Office and Arc GIS
Idaho Fish and Game Shotgun training
Extensive use of firearms

ORGANIZATIONS
The Wildlife Society
Wilson Ornithological Society
American Ornithological Union
Cooper Ornithological Society
Association of Field Ornithologists

REFERENCES

Thomas J. Benson
Illinois Natural History Survey
515-314-5468
tjbenson@illinois.edu

Peter Woodman – Owner
Kiva Biological Consulting
kivabio@aol.com
(760) 861-3961

Kemp Anderson- Tortoise Biologist
kempanderson@netzero.com
(562) 243-9896

Joel Davis – Discipline Lead
Tetra Tech EC, Inc. (formerly Foster Wheeler Environmental Corp.)
(770) 825-7134

DESERT TORTOISE AUTHORIZED BIOLOGIST REQUEST FORM

This form should be used to provide your qualifications to agency officials if you wish to undertake the duties of an authorized biologist with regard to desert tortoises during construction or other projects authorized under Sections 7 (Biological Opinions) or 10(a)(1)(B) (i.e., Habitat Conservation Plans) of the Endangered Species Act.

(If you seek approval to attach/remove/insert any devices or equipment to/into desert tortoises, withdraw blood, or conduct other procedures on desert tortoises, a recovery permit or similar authorization may be required. Application for a recovery permit requires completion of Form 3-200-55, which can be downloaded at http://www.fws.gov/forms/3-200-55.pdf.)

1. Contact Information:

Name	Bryan Reiley
Address	PO Box 104
City, State, Zip Code	Leadville, CO 80461
Phone Number(s)	760-515-0272
Email Address	bryan.reiley@gmail.com

2. Date: 11 November 2010

3. Areas in which authorization is requested (check all that apply):

☒San Bernardino, Kern, Inyo and Los Angeles Counties, California (Ventura office)
x Riverside, San Diego, and Imperial Counties, California (Carlsbad office)
☐Nevada ☐Utah ☐Arizona

4. Please provide information on the project:

USFWS Biological Opinion or HCP No. When Applicable		**Date:**	15 October 2010
Project Name	Solar Power Generating Facility		
Federal Agency	Bureau of Land Management		
Proponent or Contractor			

5. If you hold, or have held, any relevant state or federal wildlife permits provide the following:

Species	Dates	State (specify) or Federal Permit Number	Authorized Activities
Desert Tortoise	March 15, 2004 – current date	1-8-03-F-48	Handle, place transmitters, remove transmitters, draw blood, collect carcasses, conduct health assesments

6. Education: Provide up to three schools, listing most recent first:

Institution	Dates attended	Major/Minor	Degree received
Arkansas State University	4/08 – 5/11	Wildlife Ecology	MS
University of Tennessee	9/96 – 12/99	Wildlife and Fisheries Science	BS

Name/Type of Training	Dates (From/To)	Location	Instructor/Sponsor
1. Desert Tortoise Council Training	10/03 – 10/07	Ridgecrest, CA	Various (Alice Karl, Rachel Woodard, Paul Frank, Peter Woodman)
2. Line Distance Sampling Training	4/03,4/04,4/05	Las Vegas, NV	Phillip Medica, Steve Korn, Ron Marlow
3. Transmitter Attachment/Removal Training	10/06	Fort Irwin, CA	Peter Woodman and Liz Smith
4.Sub-Carapacial Blood Sample Training	8/07	Phoenix,AZ	Christina Jones-AZGFD
5.Desert Tortoise X-ray Training	7/09	Ft.Irwin, CA	Amanda Scheib

7. Desert Tortoise Training:

8. Experience – Include only those positions relevant to the requested work with desert tortoises. Distinguish between wild Mojave desert tortoise and other experience. Include only your experience, not information for the project you worked on (e.g., if 100 tortoises were handled on a project and you handled 5 of those tortoises, include only those 5. List most recent experience first. Handling a Mojave desert tortoise must be authorized by a Biological Opinion or other permit and reported to the USFWS. Information proved in this section will be used by the USFWS to track the numbers of tortoises affected by previous projects (baseline). **Be sure to include a project supervisor or other contact that can verify your skills and experience in relation to your job performance.** Attach additional sheets as necessary.

Experience by project and activity:

Project Name, Job Title, Dates	Project Contact name, phone no., & Email address	Conduct Clearance Surveys (Hrs/Days)	Excavate DT burrows (No.)	Locate DT No. < 100mm ≥ 100mm	Handled for Relocation DTs (No.)	Excavate, and relocate DT nests (No.)
1. Fort Irwin Translocation Project 9/06 -7/10	Peter Woodman kivabio@aol.com 760-861-3961	1200hrs/>120 days	>50	>40 / >150	> 75	0
2. ADFG Desert Tortoise Monitoring plots: Summers of 03',04',05',06' **Sonoran Desert Tortoises**	Peter Woodman kivabio@aol.com 760-861-3961	1500hrs/>150 days surveying population study plots	0	>30 / >150	All handled but not for relocation	0
3. USFWS Line Distance Desert Tortoise Sampling 4/03-6/03,4/04-6/04,4/05-6/05	Peter Woodman kivabio@aol.com 760-861-3961	1800hrs/180 days of line distance transect surveys	0	> 15 / >125	All handled but not for relocation	0
4. Kern River Pipeline Project 10/02-4/03	Peter Woodman kivabio@aol.com 760-861-3961	1500hrs/150 days	>15	5 / >40	2	0
5. Las Vegas 48 mile Transmission Line Project	Jon P Martin (360) 607-2843	1500hrs/150 days	>40	>25 / >50	15	2
6.						
7.						
8.						
9.						
10.						

<u>Experience by project and activity (continued)</u>: Each project number should correspond with the project listed on the previous page

Project Number (Corresponds to previous page)	**Construct Artificial Burrows (No.)**	**Monitor project equipment and activities (Hrs/Days)**	**Oversee project compliance (Hrs/Days)**	**Supervise DT field staff (Hrs/Days) and No. staff supervised**	**DT fence Installation and Inspection (Hrs/Days)**	**Present DT Awareness Training (No.)**
1.	0	0			100hrs/10 days	
2.	0	0	0	0	0	0
3.	0	0	0	0	0	0
4.	15	1500 hrs/150 days	1500hrs/150days	0	12hrs/1day	>35
5.	15	1500hrs/150 days	1500 hrs/150 days	1500hrs/150days 5 people	0	>50
6.						
7.						
8.						
9.						
10.						

Summary of experience:

Total time spent for all desert tortoise-related field activities (referenced above):

Specify total number of hours:
OR Total number of 8-hour days: 7500 hrs/750 days

Total number of miles/kilometers walked conducting survey transects:

More than 300 miles

Total number of wild, free-ranging desert tortoises you personally handled:

<100 mm: Approx. 115

≥100 mm: Approx. 412

Additional supervisory experience other than with desert tortoise work:

Project	Hours	Staff (No.)
Master's Project	300 hours	4

I certify that the information submitted in this form is complete and accurate to the best of my knowledge and belief.

I understand that any false statement herein may subject me to the criminal penalties of 18 U.S.C. Ch.47, Sec. 1001.

Signed: _____ Date: _1/25/11____

Thomas G. Jackson, Jr.
40585 Sierra Drive
Three Rivers, CA 93271
Home PH (559) 561-4340
Cell PH (251) 605-3322
jacksontg@hotmail.com

Education

Auburn University, Auburn, AL	Wildlife Science	B.S.	2003
Auburn University, Auburn, AL	Forestry	B.S.	2003
University of South Alabama, Mobile, AL	Biology	M.S.	2009

Publications

Jackson Jr., T.G. and J. Smolinsky. 2011. *Pantherophis spiloides* (Gray Rat Snake: Arboreal Male Combat). Herpetological Review 42(2): 300-301.

Jackson Jr., T.G. and J.E. Loo. 2009. *Terrapene carolina major* (Gulf Coast Box Turtle: Swimming). Herpetological Review 40(3): 338.

Jackson Jr., T.G. and J.R. Lee. 2007. *Elaphe guttata* (Corn Snake: Prey/Predator Weight Ratio). Herpetological Review 38(1): 88-89.

Jackson Jr., T.G., D.H. Nelson, and A.B. Morris. In Review. A phylogenetic appraisal of the endangered Alabama Red-bellied Cooter (*Pseudemys alabamensis* Baur). Southeastern Naturalist.

Hieb, E.E., **Jackson, Jr. T.G.**, Nelson, D.H., and A.B. Morris. In Review. Characterization of eight polymorphic microsatellite loci for the endangered Alabama red-bellied turtle (*Pseudemys alabamensis*; Emydidae). Conservation Genetics Resources.

Work Experience

Biologist/Herpetologist, Self-employed *Three Rivers, CA* *03/09-Present*

- Conduct health assessments for translocation of Mojave Desert Tortoises
- Collect blood samples, oral swabs, and nasal lavages for disease assessment of Mojave Desert Tortoises
- Lead monitor on Brightsource Ivanpah solar project
- Survey crew lead on Brightsource Ivanpah solar project
- Collected demographic, behavioral and health data for Mojave Desert Tortoises
- Federal permits to transmitter and x-ray Mojave Desert Tortoises
- Used radio-telemetry to track and relocate Mojave Desert Tortoises
- Conducted presence/absence surveys for Mojave Desert Tortoises
- Conducted presence/absence surveys for burrowing owls and American badger

Biologist II, Southern Ecosystem Research *Wilmer, AL* *09/06-11/06*

- Biological monitoring for endangered species on natural gas pipeline replacement project
- Trained construction personnel on endangered species avoidance and federal regulations for Williams Pipeline Company

Biological Field Technician, The Nature Conservancy *Camp Shelby, MS* *01/05-08/06*

- Administered Oxytocin injections to induce labor on state endangered gopher tortoises (*Gopherus polyphemus*)
- Extracted blood from gopher tortoises to test stress hormone levels and for Upper Respiratory Tract Disease Syndrome (URTDS)
- Administered injections of Cortisol (ACTH) to gopher tortoises to evaluate the effects of stress levels vs. habitat quality
- Assisted in implantation of radio transmitters on black pine snakes (*Pituophis melanoleucus lodingi*)
- Conducted research using radio telemetry on black pine snakes and gopher tortoises
- Monitored traps, collected data and marked reptiles (including venomous snakes), amphibians, and mammals
- Constructed and installed drift fences, pitfall traps and aquatic traps for trapping herpetofauna
- Acquired S130 and S190 Wildland Firefighter certification

Biologist I, Southern Ecosystems Research *Camp Shelby, MS* *04/04-11/04*

- Conducted extensive surveys for the federally threatened gopher tortoise
- Examined burrows (>5000) with a remote video system to determine occupancy status

Wildlife Biological Technician (GS-5), USDA Forest Service *Prather, CA* *06/03-11/03*

- Conducted audio broadcast surveys for northern goshawks (*Accipiter gentiles*), great gray owls (*Strix nebulosa*), spotted owls (*Strix occidentalis*), and willow flycatchers (*Empidonax alnorum*)
- Performed backcountry wilderness surveys up to 6 days
- Served as crew leader for surveys
- Field tested GIS habitat models for northern goshawks (*Accipiter gentiles*) and great gray owls (*Strix nebulosa*)

Volunteer Experience

Southeastern Raptor Rehabilitation Center, *Auburn University Veterinary School* *08/02-05/03*

- Assisted in surgery and rehabilitation of raptors
- Administered medication and managed diet of raptors
- Assisted in banding and release of raptors

References

Peter Woodman
Kiva Biological Consulting
P.O. Box 1210
Inyokern, CA 93527
(760) 861-3961
kivabio@aol.com

Dr. David Nelson
Associate Professor/Curator: Vertebrate Natural History Museum
University of South Alabama, Department of Biology
Mobile, AL 36688
(251) 460-6331
dnelson@jaguar1.usouthal.edu

James R. Lee
Biologist, The Nature Conservancy
CSJFTC-ENV; building 622
Camp Shelby, MS 39407
601-558-2797 (office)
jlee@tnc.org

DESERT TORTOISE AUTHORIZED BIOLOGIST REQUEST FORM

This form should be used to provide your qualifications to agency officials if you wish to undertake the duties of an authorized biologist with regard to desert tortoises during construction or other projects authorized under Sections 7 (Biological Opinions) or 10(a)(1)(B) (i.e., Habitat Conservation Plans) of the Endangered Species Act.

(If you seek approval to attach/remove/insert any devices or equipment to/into desert tortoises, withdraw blood, or conduct other procedures on desert tortoises, a recovery permit or similar authorization may be required. Application for a recovery permit requires completion of Form 3-200-55, which can be downloaded at http://www.fws.gov/forms/3-200-55.pdf.)

1. Contact Information:

Name	Thomas G. Jackson, Jr.
Address	40585 Sierra Drive
City, State, Zip Code	Three Rivers, CA 93271
Phone Number(s)	(251) 605-3322 cell (559) 561-4340 home
Email Address	jacksontg@hotmail.com

2. Date: 12/30/2010

3. Areas in which authorization is requested (check all that apply):

X San Bernardino, Kern, Inyo and Los Angeles Counties, California (Ventura office)
X Riverside, San Diego, and Imperial Counties, California (Carlsbad office)
☐ Nevada ☐ Utah ☐ Arizona

4. Please provide information on the project:

USFWS Biological Opinion or HCP No. When Applicable		**Date:**	Winter 2010/Spring 2011
Project Name	Solar Power Generating Facility		
Federal Agency	Bureau of Land Management		
Proponent or Contractor			

5. If you hold, or have held, any relevant state or federal wildlife permits provide the following:

Species	Dates	State (specify) or Federal Permit Number	Authorized Activities
Goperus polyphemus	2005-2006	Mississippi	Collect, handle, extract blood, transmitter
Pseudemys alabamensis	2008-2009	Mississippi, Alabama	Collect, extract blood and tissue samples

6. Education: Provide up to three schools, listing most recent first:

Institution	Dates attended	Major/Minor	Degree received
University of South Alabama	08/06 to 05/09	Biology	Master of Science
Auburn University	08/99 to 05/03	Wildlife Science	Bachelors of Science
Auburn University	08/99 to 05/03	Forestry	Bachelors of Science

7. Desert Tortoise Training:

Name/Type of Training	Dates (From/To)	Location	Instructor/Sponsor
1. Classes Desert Tortoise Health Assessment	March 14-16, 2011	Desert Tortoise Conservation Center; Las Vegas, NV	Nadine Lamberski, DVM Jay Johnson, DVM Paula Kahn, Ph.D.
2. Field training			
3. Translocation Brightsource Ivanpah Solar Electric Generating System	Fall 2010-present	Ivanpah Valley, CA	
4.			

8. Experience – Include only those positions relevant to the requested work with desert tortoises. Distinguish between wild Mojave desert tortoise and other experience. Include only your experience, not information for the project you worked on (e.g., if 100 tortoises were handled on a project and you handled 5 of those tortoises, include only those 5. List most recent experience first. Handling a Mojave desert tortoise must be authorized by a Biological Opinion or other permit and reported to the USFWS. Information proved in this section will be used by the USFWS to track the numbers of tortoises affected by previous projects (baseline). **Be sure to include a project supervisor or other contact that can verify your skills and experience in relation to your job performance.** Attach additional sheets as necessary.

Experience by project and activity:

Project Name, Job Title, Dates	Project Contact name, phone no., & Email address	Conduct Clearance Surveys (Hrs/Days)	Excavate DT burrows (No.)	Locate DT No. < 100mm / ≥ 100mm	Handled for Relocation DTs (No.)	Excavate, and relocate DT nests (No.)
1. BrightSource ISEGS, Biological Lead Monitor/ Survey Crew Lead, Oct. 2010- Nov. 2010	Ryan Young (949) 887-0859 ryanryoung@yahoo.com	131 hrs/12 days	57	3 / 29	3	0
2. 29 Palms MCAGCC, Biologist, Sept. 2010	Pete Woodman (760) 861-3961 kivabio@aol.com	0	0	0 / 9	0	0
3. Ft. Irwin Southern Expansion Area, Biologist, Sept. 2010	Pete Woodman (760) 861-3961 kivabio@aol.com	0	0	0 / 53	0	0
4. 1st Solar, Biologist, May 2010	Kathy Simon (909) 289-4649 kathy@ironwoodconsultinginc.com	0	0	0 / 2	0	0
5. Calico Solar, Biologist, April-May 2010	William Boarman (619) 861-9450 conservation-science@cox.net	0	0	0 / 27	0	0
6. Ft. Irwin Southern and Western Expansion, Biologist, March-April 2010	Pete Woodman (760) 861-3961 kivabio@aol.com	0	3	0 / 54	54	0
7. Desert Sunlight Solar, Biologist, Oct-Nov. 2009	Kathy Simon (909) 289-4649 kathy@ironwoodconsultinginc.com	0	0	0 / 2	0	0
8. Ft. Irwin Western Expansion Translocation Area, Biologist, Oct. 2009	Kemp Anderson (562) 243-9896 kempanderson@netzero.net	0	0	0 / 9	0	0
9. Ft. Irwin Western Expansion Area, Biologist, Sept. - Oct. 2009	Pete Woodman (760) 861-3961 kivabio@aol.com	0	0	4 / 26	30	0

10. Ft. Irwin Western Expansion Translocation Area, Biologist, May-June 2009	Kemp Anderson (562) 243-9896 kempanderson@netzero.net	0	0	0 / 6	0	0

Experience by project and activity:

Project Name, Job Title, Dates	Project Contact name, phone no., & Email address	Conduct Clearance Surveys (Hrs/Days)	Excavate DT burrows (No.)	Locate DT No. < 100mm / ≥ 100mm	Handled for Relocation DTs (No.)	Excavate, and relocate DT nests (No.)
11. CPC Proper, Biologist, May 2009	Mercy Vaughn (928) 380-5507 manydogs10@aol.com	0	0	0 / 11	0	0
12. Hyundai Project, Biologist, April-May 2009	Mercy Vaughn (928) 380-5507 manydogs10@aol.com	112 hrs/14 days	0	0 / 0	0	0
13. Ft. Irwin Southern Expansion Area, Biologist, April 2009	Pete Woodman (760) 861-3961 kivabio@aol.com	0	0	0 /	0	0
14. Florida Gas Pipeline, Biological Lead Monitor, Sept.-Oct. 2006 ***Gopherus polyphemus***	Ed Wester (334) 332-6861 edwester@charter.net	0	0	0 / 3	0	0
15. The Nature Conservancy, Biological Field Technician, Jan. 2005- Aug. 2006 ***Gopherus polymphemus***	Matt Hinderliter (601) 558-2931 mhinderliter@tnc.org	0	3	7 / >100	1	0
16. Southern Ecosystems Research, Biologist I, Apr. 2004-Nov.2005, ***Gopherus polymphemus***	Ed Wester (334) 332-6861 edwester@charter.net	0	0	24 / >200	0	0
				/		

<u>Experience by project and activity (continued)</u>: Each project number should correspond with the project listed on the previous page

Project Number (Corresponds to previous page)	**Construct Artificial Burrows (No.)**	**Monitor project equipment and activities (Hrs/Days)**	**Oversee project compliance (Hrs/Days)**	**Supervise DT field staff (Hrs/Days) and No. staff supervised**	**DT fence Installation and Inspection (Hrs/Days)**	**Present DT Awareness Training (No.)**
1.	12	450 hrs/120 days	0	368 hrs/ 35 days / 12	450 hrs/120 days	0
2.	0	0	0	0 / 0	0	0
3.	0	0	0	0 / 0	0	0
4.	0	0	0	0 / 0	0	0
5.	0	0	0	0 / 0	0	0
6.	0	0	0	0 / 0	0	0
7.	0	0	0	0 / 0	0	0
8.	0	0	0	0 / 0	0	0

9.	0	0	0	350 hrs/ 35 days / 6	0	0
10.	0	0	0	0 / 0	0	0

<u>Experience by project and activity (continued)</u>: Each project number should correspond with the project listed on the previous page

Project Number (Corresponds to previous page)	**Construct Artificial Burrows (No.)**	**Monitor project equipment and activities (Hrs/Days)**	**Oversee project compliance (Hrs/Days)**	**Supervise DT field staff (Hrs/Days) and No. staff supervised**	**DT fence Installation and Inspection (Hrs/Days)**	**Present DT Awareness Training (No.)**
11.	0	0	0	0 / 0	0	0
12.	0	0	0	0 / 0	0	0
13.	0	0	0	0 / 0	0	0
14.	0	330 hrs/27 days	0	0 / 0	0	37
15.	0	0	0	4,160 hrs/ 2 years / 2	0	0
16.	0	0	0	0 / 0	0	0

Summary of experience:

Total time spent for all desert tortoise-related field activities (referenced above):

Specify total number of hours:
OR Total number of 8-hour days: 387 days

Total number of miles/kilometers walked conducting survey transects:

3010 KM

Total number of wild, free-ranging desert tortoises you personally handled:

<100 mm: 27

≥100 mm: 346

Additional supervisory experience other than with desert tortoise work:

Project	Hours	Staff (No.)
See above		

I certify that the information submitted in this form is complete and accurate to the best of my knowledge and belief.

I understand that any false statement herein may subject me to the criminal penalties of 18 U.S.C. Ch.47, Sec. 1001.

Signed: Thomas G. Jackson, Jr. **Date:** 5/24/2011

SYCAMORE ENVIRONMENTAL CONSULTANTS, INC.
6355 Riverside Blvd., Suite C, Sacramento, CA 95831
916/ 427-0703 Fax: 916/ 427-2175

RESUME

R. JOHN LITTLE, Ph.D.
Botanist/ Project Manager

EDUCATION

Claremont Graduate School, Claremont, CA	Ph.D. Botany, 1980
California State University, Fullerton, CA	M.A. Biology, 1977
University of Utah, Salt Lake City, UT	B.S. Botany, 1968

CERTIFICATION/ PERMITS: Wetlands Delineation; Certified Arborist WE-1057A; California Department of Fish and Game Scientific Collecting Permit #801049-03; DFG State Designated Endangered, Threatened and Rare Plants Collecting Voucher Permit #2081(a)-10-19-V; Rail Road Safety Training.

EXPERIENCE

1991-Present	Sycamore Environmental Consultants, Inc., President (Botany, Wildlife Biology, Wetlands, Habitat Restoration)
1980-1991	Envirosphere Company, Director of Environmental Services and Supervising Botanist
1976-1980	Independent, part-time biological consulting for various firms and agencies, concurrent with Ph.D. program
1977-1980	Lecturer and Instructor of Botany and Biology, concurrent with Ph.D. program
1977-1980	Ph.D. Graduate Studies, Claremont Graduate School, Claremont, CA
1975-1977	M.A. Graduate Studies, California State University, Fullerton, CA
1972-1975	Self-employed
1968-1972	U.S. Navy, Commissioned Officer

PROFESSIONAL AFFILIATIONS

American Society of Plant Taxonomists	Ecological Society of America
California Botanical Society	California Invasive Plant Council
California Native Grass Association	International Society of Arboriculture
California Native Plant Society	Society for Ecological Restoration, California

SELECTED PROJECT EXPERIENCE

Botanical Experience – Desert and Other Arid Areas

Southwest Wind Energy Project, Kern Co. Conducted botanical surveys, mapped rare plants, and collected morphological data on putative rare cacti hybrids on 3,000+ acre site in creosote bush scrub and juniper/ Joshua tree woodland habitats. Garcia & Associates.

NextLight Silver State Solar Project, Clark Co., Nevada. Lead botanist and conducted botanical surveys and plot-based sampling for estimation of cacti and yucca populations on over 3,800 acres with 3 other Sycamore Environmental botanists. Detected 2 special-status species.

Rice Airfield Solar Energy Project, Riverside, Co. Lead botanist and conducted field surveys for special-status plant species on 2,400 acres of desert land and 10 miles of transmission line for a solar project located in the Colorado (Sonoran) Desert in southeast CA. CH2MHill, Sacramento, CA.

TGP Alta Wind Center – Sun Creek, Kern Co. Lead botanist and conducted floristic botanical survey and desert biological community mapping with 2 other Sycamore Environmental botanists on over 1,300 acres. Detected 1 special-status plant species.

Edison Mission Energy Project, Kern Co. Lead botanist and conducted field surveys for special-status plant species on 849 acres of desert land and 11 miles of transmission line for a solar project in the Mojave Desert. CH2MHill, Sacramento, CA.

Edison Mission Energy Project, Kern Co. Prepared habitat assessment report special-status plant species on 160 acres of desert land for a solar project in the Mojave Desert in southeast CA. CH2M Hill, Sacramento, CA.

Edison Mission Energy Project, Kern Co. Prepared habitat assessment report special-status plant species on 260 acres of desert land for a solar project in the Mojave Desert in southeast CA. CH2M Hill, Sacramento, CA.

Edison Mission Energy Project, Kern Co. Prepared habitat assessment report special-status plant species on 322 acres of desert land for a solar project in the Mojave Desert in southeast CA. CH2M Hill, Sacramento, CA.

Edison Mission Energy Project, Los Angeles Co. Lead botanist and conducted field surveys for special-status plant species on 1,010 acres of desert land and two, 11 mile long transmission line routes for a solar project in the Mojave Desert. CH2MHill, Sacramento, CA.

Edison Mission Energy Project, Los Angeles Co. Lead botanist for preparation of a habitat assessment report for special-status plant species on 8,103 acres of desert land for a solar project in the Mojave Desert in southeast CA. CH2M Hill, Sacramento, CA.

Edison Mission Energy Project, San Bernardino Co. Lead botanist and conducted botanical field surveys for special-status plant species on 160 acres of desert land for a solar project in the Mojave Desert in southeast CA. CH2M Hill, Sacramento, CA.

Edison Mission Energy Project, San Bernardino Co. Lead botanist for preparation of a habitat assessment report for special-status plant species on 922 acres of desert land for a solar project in the Mojave Desert in southeast CA. CH2M Hill, Sacramento, CA.

Edison Mission Energy Project, San Bernardino Co. Lead botanist for preparation of a habitat assessment report for special-status plant species on 640 acres of desert land for a solar project in the Mojave Desert in southeast CA. CH2M Hill, Sacramento, CA.

Ak-Chin Indian Reservation AZ, Water Supply Project EIS. Conducted botanical surveys for T/E species, mapping of desert vegetation, and analyses of wetland and riparian vegetation; prepared mitigation plans (with Ebasco). Evaluated environmental impacts and mitigation measures from construction of water wells, pipelines, and canals in three desert valleys on over 123,000 acres. U.S. Bureau of Indian Affairs, Phoenix, AZ.

Dissertation Topic: Floral mimicry between two desert annuals, *Mohavea confertiflora* (Scrophulariaceae) and *Mentzelia involucrata* (Loasaceae). Involved two years of research at six desert study sites, four in Riverside Co. and one in Imperial Co. CA, and one in Kofa Mountains, AZ.

Tenneco Oil Company, Los Angeles Co., CA. Conducted botanical surveys for threatened or endangered species on 300 acres of chaparral and coastal sage scrub plant communities for 8 miles of proposed transmission lines and 2 miles of gas pipeline routes.

Ft. Apache Freeway EIS. Technical lead (with Ebasco) for botanical, wetland, and T/E species evaluations for a new highway project in Arizona. U.S. Bureau of Indian Affairs, Phoenix, AZ.

Federal Aviation Administration, NM. EIS. Responsible for all biological and agricultural impact analyses associated with construction and operation of a new airport in Ruidoso, NM.

Biological Surveys. Responsible for evaluation of biological resources in a 200 acre desert site in Coachella Valley, CA. Surveys conducted for special-status species including the federal threatened Coachella Valley fringe-toed lizard (*Uma inornata*).

Forest Management Plan EA, San Carlos Indian Reservation, AZ. Lead biologist for a team of terrestrial, forestry, aquatic, and wildlife biologists for Environmental Assessment relative to development of Forest Management Plan. Responsible for vegetation, wildlife and aquatic resources. Bureau of Indian Affairs, San Carlos, AZ.

U.S. Bureau of Land Management EA, for Newmont Gold, Elko, NV. Conducted special-status plant surveys east of Elko, NV on 960 acres of BLM land.

Research Papers and Books

Little, R.J. and L. E. McKinney. 2010. Four nomenclatural changes in *Viola* (Violaceae). J. Bot. Res. Inst. Texas 4: 225--226.

Little, R.J. 2010. *Viola howellii* A. Gray (Violaceae). Noteworthy collection, California. Madroño 57: 209, 211.

Little, R.J. 2002. Violaceae. Family treatment contribution for The Jepson Desert Manual: Violaceae. University of California Press, Berkeley, CA.

Little, R.J. 2001. Violaceae. Vascular plants of Arizona: J of the Arizona-Nevada Academy of Science 33: 73--82.

Little, R.J. 1996. Nomenclatural correction in *Viola* (Violaceae). Phytologia 80:295.

Little, R.J. 1993. Violaceae. In: The Jepson manual: Higher plants of California, ed. J. Hickman. U.C. Press, Berk. CA.

Little, R.J. 1993. Frankeniaceae. *In* The Jepson manual: Higher plants of California, ed. J. Hickman. University of California Press, Berkeley, CA.

Little, R.J. 1992. Nomenclatural changes in California *Viola* (Violaceae). Phytologia 72:77-78.

Little, R.J. and L. McKinney. 1992. A nomenclatural change in *Viola* (Violaceae). Phytologia. Vol. 72:79.

Little, R.J. 1990. A Study of the pollination biology and breeding system of *Silene Invisa*. Report prepared under contract to U.S. Forest Service, Tahoe National Forest, Nevada Ranger District, Nevada City, CA.

Little, R.J. 1990. An eighty-year index to Madroño (1916-1996), a West American Journal of Botany. Sycamore Press, Sacramento, CA.

Little, R.J. 1985. A preliminary evaluation of infraspecific taxa in *Mentzelia involucrata* (Loasaceae). American Journal of Botany 72:961.

Little, R.J. 1985. Breeding system and floral utilization by solitary bees in *Mentzelia involucrata* ssp. *megalantha* (Loasaceae). American Journal of Botany 72:857-858.

Little, R.J. 1983. A review of food deception mimicry with comments on floral mutualisms. Chapter 14. In: Handbook of Experimental Pollination Biology. New York: Van Nostrand Reinhold.

Little, R.J. 1983. Pollination biology of *Mohavea confertiflora* (Scrophulariaceae), a desert ephemeral. Proceedings of the AAAS, Pacific Division, 64th Annual Meeting, Utah State University.

Jones, C. E. and R. J. Little, eds. 1983. Handbook of Experimental Pollination Biology. Van Nostrand Reinhold, New York, NY. 558 pp.

Little, R.J. 1981. Adventitious rooting in coastal sage scrub dominants. Madrono 28:96-97.

Little, R.J. 1981. Floral mimicry between two desert annuals, *Mohavea confertiflora* (Scrophulariaceae) and *Mentzelia involucrata* (Loasaceae). Dissertation Abstracts, Vol. 41, No. 8.

Little, R.J. 1980. Floral mimicry between two desert annuals, Mohavea confertiflora (Scrophulariaceae) and Mentzelia involucrata (Loasaceae). Unpublished dissertation, Claremont Graduate School, Claremont, California.

Little, R.J. 1980. Rare plants of Orange County, California, including a range extension. Crossosoma 5:6-7.

Little, R.J. and C. E. Jones, eds. 1980. A Dictionary of Botany. Van Nostrand Reinhold, New York, NY. 400 pp.

Little, R.J. 1978. A flora of Starr Ranch. Masters Abstracts 16(1).

Jones, C. E., L. Colin, T. Ericson, and R.J. Little. 1979. *Physalis lobata* Torr. (Solanaceae). A new record for California. Madrono 26:101.

Little, R.J. In press. Violaceae. In: B. G. Baldwin et al. (eds.). Jepson Manual II: Vascular Plants of California. Univ. of California Press, Berkeley.

Little, R.J. In press. Violaceae. In: K. D. Heil, S. L. O'Kane Jr., L. M. Reeves, & A. Clifford (eds.). Flora of the Four Corners Region: Vascular Plants of the San Juan River Drainage, Arizona, Colorado, New Mexico, and Utah. Missouri Botanical Garden Press, St. Louis.

Little, R.J. In review. *Hybanthus* treatment in Violaceae. Genus treatment contribution for *Flora of North America Project*.

Little, R.J. & L. McKinney. In review. Violaceae. Family treatment contribution for *Flora of North America Project*.

SYCAMORE ENVIRONMENTAL CONSULTANTS, INC.

6355 Riverside Blvd., Suite C, Sacramento, CA 95831
916/ 427-0703 Fax 916/ 427-2175

RESUME

MICHAEL J. BOWER, M.S.
Botanist/ Biologist

Six years botanical experience in diverse plant communities throughout California. Conducts floristic botanical surveys, rare plant surveys, noxious weed and invasive plant surveys, plant community mapping, wetland delineations, and surveys for special-status wildlife. Prepares documents in support of CEQA/NEPA projects; documents project resources, identifies impacts, and recommends mitigation measures. Serves as technical report writer. Teaches at public plant identification workshops; conducts research on the ecology of invasive plants.

EDUCATION:

University of California, Davis	M.S. Ecology, 2009
Saint Mary's College of California	B.S. Environmental Science, 2002

CERTIFICATION / PERMITS/ TRAINING:

- California Department of Fish & Game Rare, Threatened and Endangered Plant Voucher Collecting Permit (#2081(a)-09-14-V)
- Ecological Society of America (ESA) Certified Ecologist (pending)
- Society for Wetland Scientist (SWS) Professional Wetland Scientist (pending)
- California Rapid Assessment Method (CRAM) Trained Practitioner for Riverine and Wet Meadow Systems

RICE SOLAR ENERGY PROJECT (RSEP), PROJECT EXPERIENCE

- Conducted floristic botanical surveys of RSEP main plant site, 10-mile long transmission line corridor, substation/ switching station, and adjacent areas in March and June of 2009 and in October 2010 with Sycamore Environmental botanists, Dr. John Little, Adam Forbes, M.S. and Charles Hughes, M.S.
- Assisted with mapping of all channel features on the main plant site as part of a jurisdictional wetland delineation in February 2010.
- Logged approximately 160 hours surveying the site and keying/ researching plants from the site.
- Researched weeds and invasive plants with potential to occur on-site and prepared draft weed management plan. Assisted with biology/ botany-related CEC data request responses.

RECENT BOTANICAL EXPERIENCE

2011 **Southwest Wind Energy Project, Kern Co.** **Garcia & Associates**

Conducted botanical survey, mapped rare plants, and collected morphological data on putative rare cacti hybrids on 3,000+ acre site in creosote bush scrub and juniper/ Joshua tree woodland habitats.

2011 **Lake 29 Expressway Biological Studies, Lake Co.** **CH2M Hill**

Conducted floristic botanical survey and mapped rare plants with 3 other botanists in chaparral, oak woodland, grassland, freshwater marsh, and vernal pool habitats. Detected 4 special-status plant species.

2010 **NextLight Silver State Solar Project, Clark Co., Nevada** **CH2M Hill**

Conducted floristic botanical survey and plot-based sampling for estimation of cacti and yucca populations on over 3,800 acres with 3 other Sycamore Environmental botanists. Detected 2 special-status species.

2010 **TGP Alta Wind Center – Sun Creek, Kern Co.** **CH2M Hill**

Conducted floristic botanical survey and desert biological community mapping with 2 other Sycamore Environmental botanists on over 1,300 acres. Detected 1 special-status plant species.

2010 **Next Era Wind Botanical Survey, Contra Costa Co.** **CH2M Hill**

Conducted floristic botanical survey and biological community mapping with 3 other Sycamore Environmental botanists on over 900 acres. Detected several special-status plant species.

2010 **Ocotillo Express Wind Project, Imperial Co.** **Helix Env. Planning**

Assisted Helix botanists with ± 9,000 ac floristic botanical survey during spring and fall surveys in various desert habitats. Detected numerous special-status plant species.

2009-2010 **Rice Solar Energy Botanical Survey, Riverside Co.** **CH2M Hill**

Conducted floristic botanical survey, mapped rare plants, and completed jurisdictional delineation on ± 3,000 acres in creosote bush scrub habitat with 3 other Sycamore Environmental botanists. Prepared weed management plan consistent with Bureau of Land Management procedures.

2009-2010 **Alpine Meadows Rd. Bridge over Truckee River, Placer Co.** **Placer Co.**

Conducted floristic botanical survey, wetland delineation, vegetation community mapping, and general biological surveys. Detected 1 special-status plant species. Prepared Natural Environment Study.

2009-2010 **Bunker Hill Bridge Replacement at Rancheria Crk, Amador Co.** **Amador Co.**

Conducted floristic botanical survey and rare plant survey in riparian, oak woodland, and grassland habitats.

2009 **Arcata Vegetation Surveys, Humboldt Co.** **Direct Project, Inc.**

Conducted vegetation surveys using stratified plot sampling on retired rangeland, former sand dunes, willow riparian, and salt and freshwater marshes as part of a jurisdictional wetland delineation for Caltrans.

2009 **Grayson Road Bridge at Laird Slough, Stanislaus Co.** **Stanislaus Co.**

Conducted general biological survey, botanical survey and documented results in Natural Environment Study update letter. Conducted preconstruction surveys and documented results in letter.

2009 **Business Drive, El Dorado Co.** **Helen Graham Trust**

Conducted floristic botanical survey in blue oak woodland and chaparral. Mapped a new population of federally threatened Layne's butterweed (*Packera layneae*). Prepared Botanical Survey Report.

2008-2011 **Revegetation Services for Blue Mountain, Tuolumne Co.** **Blue Mtn. Minerals**

Conducted noxious weed surveys and monitoring; prescribed remedial weed control measures. Conducted revegetation monitoring, evaluated performance of revegetation test plots, and prepared annual reports.

2008-2009 **Gordon Valley Road Bridge Replacement, Solano Co.** **Solano Co.**

Conducted floristic botanical survey, rare plant survey, and assisted with arborist survey. Conducted wetland delineation. Documented results in report and proposed avoidance and mitigation measures.

PUBLICATIONS / THESIS:

Bower, M.J., M. Hostler, E. Gottschalk-Fisher, and D. Sykes. 2010. Ceanothus – "See I know this!" plant identification workshops from the California Field Botanist Association. Cal-IPC News 17(4):9.

Bower, M.J. 2009. Predicting Invasiveness of Woody Angiosperms in Mediterranean Climates: The use of germination characteristics as predictors and the special case of Chinese tallowtree. Masters Thesis. University of California, Davis, CA.

Bower, M.J., C.E. Aslan, and M. Rejmànek. 2009. Invasion potential of Chinese tallow (*Triadica sebifera*) in California's Central Valley. Invasive Plant Science and Management 2:386-395.

Bower, M.J. and C.E. Aslan. 2008. Scenic streets and tainted tributaries: Invasion potential of Chinese tallow in California. Cal-IPC News 16(2):4-5, 11.

Bower, M.J., J.P. Sexton, and V. Carne-Cavagnaro. 2006. Agricultural invaders, pests, and diseases in California's changing climate. Section 7 *In* Cavagnaro, T.R., L.E. Jackson, K.M. Scow, eds. *Climate change: Challenges and solutions for California agricultural landscapes*. California CEC-500-2005-189-SF.

Appendix C
Biological Opinion

To be provided in August 2011.

Appendix D
Wildlife Observation Form

WILDLIFE OBSERVATION FORM

To Record Animals Found In The RSEP Area

To be filled out by personell who find active nest sites and burrows, dens, and dead or injured wildlife, or other biological resources during daily construction activities.

Name of employee:

Date:

Location of observation:

Wildlife species:

Condition of wildlife: ☐ Alive ☐ Dead

Possible cause of injury or death:

Where is the animal currently?

Is the resource in danger of project (or other) impacts?

Comments:

Please contact the Designated Biologist for questions and to report any wildlife, nest,or den in the project area that could be disturbed. The Designated Biologist will advise personnel on measures required by California Department of Fish and Game (CDFG) and United States Fish and Wildlife Service (USFWS) to protect fish, wildlife and vegetation from construction impacts.

DESIGNATED BIOLOGISTS

Jim Marble: Cell (775) 764-0353 Office (714) 435-6208 x36208
Mercy Vaughn: Office (928) 380-5507
Stephen Boland: Office (928) 380-8850
Kelly Herbinson: Office (714) 394-1563
Bryan Reiley: Office (760) 515-0272
Thomas Jackson: Cell (251) 605-3322 Home (559) 561-4340

Appendix E
Noncompliance Resolution Report

Rice Solar Energy Project
DAILY ENVIRONMENTAL MONITORING LOG

Date:____/_____/__Monitor(s): _____
Weather: _____ Page ___ of ___

A	Follow-Up Required? **Y / N**	**Subject:** Earthwork Erosion Control Revegetation Other
Follow-up date: / /		Construction Activities:
Photos? **Y / N**		
Roll: Frame(s):		Observation Summary:
Location:		
Additional Notes or Sketch:		

B	Follow-Up Required? **Y / N**	**Subject:** Earthwork Erosion Control Revegetation Other
Follow-up date: / /		Construction Activities:
Photos? **Y / N**		
Roll: Frame(s):		Observation Summary:
Location:		
Additional Notes or Sketch:		

C	Follow-Up Required? **Y / N**	**Subject:** Earthwork Erosion Control Revegetation Other
Follow-up date: / /		Construction Activities:
Photos? **Y / N**		
Roll: Frame(s):		Observation Summary:
Site Location:		
Additional Notes or Sketch:		

Rice Solar Energy Project
PRE-ACTIVITY SURVEY FORM

Instructions: Fill out this form within 24 hours of completing the pre-activity survey. Maintain completed forms in the Designated Biologist's office.

Date: _____ Name: _____

General Location: _____

Description of Proposed Activity:[1] _____

Habitat Description and Sensitive Plant Species:[2] _____

Presence of Sensitive Wildlife Species:[3] _____

Avoidance Measures:[4] _____

Comments:[5] _____

Notes:
[1]= Include type and purpose of construction activity.
[2] = Identify habitat types, sensitive plant species
[3] = List the sensitive wildlife species present on the site and the number of sightings or sign that lead to the determination of their presence.
[4] = List the avoidance measures that will be implemented during construction activities, whether construction monitoring will be necessary (include brief summary of manpower requirements for monitoring), whether species trapping and holding or trapping and immediate release efforts will be conducted, and any other pertinent information. Include locations of avoidance areas, excavated dens, etc. on map.
[5] = Include any other information of importance. Also use this section to request specific instructions or information from the permitting agencies.

Rice Solar Energy Project
NON-COMPLIANCE RESOLUTION REPORT

❑ **NON-COMPLIANCE REPORT** ❑ **RESOLUTION REPORT**

Date of Report: / / _____ Date/time of non-compliance violation: / / **AM / PM**

Non-Compliance Report Date: / / _____ Date Time

Monitoring Log Attached? **Y / N** General location of non-compliance: _____

Location Designation: _____ Layout(s): _____

Designated Monitor: _____

Level of Violation:

❑ **Level 1** Violations that do not result in significant impacts but require corrective action

❑ **Level 2** Violations that place environmental resources at an unnecessary risk and require immediate corrective action

Compliance Specification(s): _____

❑ **Level 3** Actual or imminent danger to environmental resources from a specific construction task or piece of equipment. Requires immediate corrective action.

Summary of Violation and Details of Corrective Action Required: _____

Notifications:

CPM:	Date: / /	Time:	AM/PM
Project:	Date: / /	Time:	AM/PM
Owner:	Date: / /	Time:	AM/PM

Appendix F
Worker Environmental Awareness Program (WEAP) Handbook

To be provided in August 2011

Appendix G
Weed Management Plan

To be provided in August 2011

Appendix H
Desert Tortoise Translocation Plan

To be provided in August 2011

Appendix I
Raven Management Plan

To be provided in August 2011

Appendix J
Revegetation Plan

To be provided in August 2011

Appendix K
Evaporation Pond Design, Monitoring, and Management Plan

To be provided in August 2011.