DOCKETED

Docket Number:	07-AFC-05C
Project Title:	Ivanpah Solar Electric Generating System (Compliance)
TN #:	202660
Document Title:	Construction Termination Report
Description:	N/A
Filer:	Karen Mitchell
Organization:	Ellison, Schneider & Harris L.L.P.
Submitter Role:	Applicant Representative
Submission Date:	7/1/2014 12:07:42 PM
Docketed Date:	7/1/2014

CH2MHILL® TRANSMITTAL

To: California Energy Commission

From: John L. Carrier, J.D.

Attn: Joseph Douglas

Date: June 30, 2014

Re: Ivanpah SEGS Construction Termination Report (BIO-7, BIO-11 and BIO-16)

We Are Sending You:	**Method of shipment:**	
☒ Attached	☐ Under separate cover via	
☐ Documents	☐ Copies	
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Quantity	Description
1	Hard copy of the Construction Termination Report
1	Electronic copy on CD-ROM

If the material received is not as listed, please notify us at once.

Remarks:

Copy To:

Mike Ahrens/BLM
Jeff Harris/ESH
Project Site

Ivanpah Solar Electric Generating System
California Energy Commission (07-AFC-5C)
Bureau of Land Management
(CACA-48668, 49502, 49503, and 49504)
Condition of Certification BIO-7, 11 and 16

Construction Termination Report

October 8, 2010 – May 31, 2014
Reporting Period

Submitted
June 30, 2014

energyservices an NRG service
On behalf of Solar Partners I, II, and VIII LLC

Prepared by: Designated Biologists,
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SECTION 1

Introduction

This Construction Termination Report is provided to the California Energy Commission (CEC) in compliance with Conditions of Certification (COC) BIO-7, BIO-11, and BIO-16 as required by the Ivanpah Solar Electric Generating System Commission Decision (07-AFC-5C). These COCs also require the submittal of this report to the Bureau of Land Management (BLM).

On December 30, 2013, Ivanpah 1 commenced commercial operations. On December 31, 2013, Ivanpah 2 and 3 commenced commercial operations. As a result of the commencement of commercial operations, the management of the environmental compliance at the facility was transferred to NRG Energy Services, the operator of the facility.

From January 2014 through May 31, 2014, monthly compliance reports were submitted to comply with the CEC COCs as minor construction items not related to commercial operations were completed. Installation of all permanent equipment and structures was completed on May 31, 2014. As per COMPLIANCE-7, construction is now complete and monthly compliance reports are no longer required. However, CEC COCs BIO-7, BIO-11 and BIO-16 require the submittal of a Construction Termination Report. An Annual Report will be submitted in January of 2015, in accordance with COMPLIANCE-7.

This report is organized in order of the COC requirements. This report summarizes the requirements from BIO-7, BIO-11 and BIO-16. It also provides the required data regarding the disturbance areas at the facility, the Biological Resources Mitigation and Monitoring Plan (BRMIMP) data, and requirements for burrowing owls. For each COC, a summary is provided of the mitigation measures used during construction and of the mitigation items, as required by BIO-7. In some cases, the COCs require a separate report be prepared at the end of construction. Those detailed reports will be provided separately according to the requirements of their specific COC. The exception is BIO-16, Burrowing Owl Mitigation and Monitoring Plan. Since no burrowing owls were relocated from the site, this report serves at the BIO-16 construction termination report.

SECTION 2

Construction Termination Report Requirements

COC BIO-7, Biological Resources Mitigation Implementation and Monitoring Plan (BRMIMP), has two separate requirements for this report. The first, described in Measure 8, is to document the final disturbance of the project via aerial photography and to provide a final accounting of the before and after acreages to determine whether additional habitat compensation is required. BIO-7's verification section also requires this report to identify items in the BRMIMP that have been completed, summarize all modifications to the mitigation measures, and identify which mitigation and monitoring items have been completed and those that are ongoing. In conjunction with the inventory requirement of items completed, BIO-11 requires a description of how each of the BRMIMP measures was completed.

Similarly, BIO-11, Impact Avoidance and Minimization Measures, requires:

> All mitigation measures and their implementation methods shall be included in the BRMIMP… Within 30 days after completion of project construction, the project owner shall provide to BLM's Authorized Officer and the CPM, for review and approval, a written construction termination report identifying how measures have been completed.

These requirements are addressed in this report. Section 3 addresses the disturbance areas and Section 4 addresses the mitigation measure requirements. To facilitate review, Section 4 follows the general order of the BRMIMP's table of contents.

COC BIO-16, Burrowing Owl Mitigation and Monitoring Plan, requires that a written construction termination report be prepared identifying how burrowing owl relocation and monitoring measures were completed. Since the Burrowing Owl Mitigation and Monitoring Plan was also included in the BRMIMP, it is included in this document. However, because it requires its own construction termination report, it is provided as Section 5 of this document.

SECTION 3

Disturbance Areas (BIO-7)

The first requirement of BIO-7, providing the area of disturbance, was completed as part of satisfying the requirements of BIO-17, Desert Tortoise Compensatory Mitigation. BIO-17 required mitigation lands to be based on the actual disturbance area of the facility. The facility disturbance area was verified once the project's complete disturbance footprint was achieved. The disturbance area was verified by aerial photography and also was measured by global positioning methods by ground-based observers. These measurements were provided to the CEC and California Department of Fish and Wildlife (CDFW) as verification of the acreage for mitigation to complete the SB-34 Land Bank process. A copy of the documentation previously provided and the acceptance of the CEC and CDFW is provided in Appendix A. As demonstrated by these measurements, and acceptance by the CEC and CDFW, no additional mitigation acreage is required for the project.

In addition to this documentation of the acreage, aerial photographs will be used to document the disturbance area prior to mobilization (pre-construction) and subsequent to the project completion (post-construction). As required by BIO-22, this "final accounting" will be provided within 90 days after the completion of all project-related ground disturbance.

SECTION 4

BRMIMP Requirements

This section addresses the items requested in the BIO-7 verification section. It addresses the following three requirements:

1. Identify which items of the BRMIMP have been completed,
2. Summarize of all modifications to mitigation measures made during the project's site mobilization, ground disturbance, grading, and construction phases, and
3. Identify which mitigation and monitoring items are ongoing.

The areas addressed in this section follow the order of the BRMIMP table of contents, sections 5 through 15, with the exception that the burrowing owl construction termination report (required by BIO-16) is presented in Section 5.

Appendix B contains the BRMIMP tracking table showing the current implementation status of each mitigation measure.

4.1 Worker Environmental Awareness Program

4.1.1 Items Completed

The Worker Environmental Awareness Program (WEAP), was implemented throughout the construction period. Workers onsite for long periods went through retraining annually. Training records were maintained and provided as part of the monthly compliance reports (MCRs).

4.1.2 Modifications to Mitigation Measures

No modifications were made to this mitigation measure.

4.1.3 Mitigation and Monitoring Items Still Ongoing

As required by BIO-6, WEAP training will continue during operations.

4.2 Desert Tortoise Minimization and Avoidance Measures

4.2.1 Items Completed

BIO-7 requires the project to comply with the United State Fish and Wildlife Service (USFWS) Biological Opinion. The USFWS Biological Opinion sets forth 17 general protective measures required during construction, operation, maintenance, and decommissioning activities to minimize adverse effects to desert tortoises (pages 8 to 10 of the Biological Opinion). In addition, the Biological Opinion also describes measures for fencing and clearance surveys, translocation, and monitoring, along with 26 specific protective measures (pages 17 to 21 of the Biological Opinion) required to be implemented during desert tortoise clearance and translocation activities. In addition, BIO-10 provides specific notification

requirements with respect to desert tortoise. Each of the protective measures and the notification requirements are addressed below.

4.2.1.1 17 General Protective Measures

1. All biologists working at ISEGS are approved by the regulatory agencies as either an authorized biologist or a desert tortoise monitor before beginning plant or wildlife surveys and/or monitoring. Each biologist is equipped with the Conditions of Certification and Biological Opinion to ensure conformance with construction, operation, or maintenance activities that may result in the take of the desert tortoise.
2. The credentials of all individuals seeking approval as authorized biologists were provided as required.
3. A field contact representative was designated who oversaw compliance with protective measures during construction and will continue to oversee these activities during operation, maintenance, and decommissioning activities that may result in injury or mortality of desert tortoises. If the field contact representative, authorized biologist, or desert tortoise monitor identifies a violation of the desert tortoise protective measures, they can halt work until the violation is corrected.
4. All individuals approved to capture and handle desert tortoises did so in compliance with the most up-to date guidance from the USFWS.
5. The project team and the designated biologists developed a Worker Environmental Awareness Program (WEAP). The WEAP incorporated desert tortoise life history and threats, legal protections and penalties, reporting requirements, types of construction activities that may affect the desert tortoise, and the required desert tortoise protective measures.
6. Prior to construction in all areas, desert tortoise clearance surveys were conducted and tortoises were removed from these areas in compliance with the methodologies set forth in the Biological Opinion. Installation of tortoise exclusion fencing around the Construction Logistics Area (CLA), Colosseum Road, power block 2 and associated access road, and Ivanpah 1 was completed in October 2010. In June 2011, the Ivanpah 2 power block desert tortoise exclusion fence was enlarged and the access road and the Ivanpah 3 power block were fenced with desert tortoise exclusion fencing. Installation of all tortoise exclusion perimeter fencing was completed in July 2011. Final tortoise clearance surveys were completed in fall 2011.
7. Authorized biologists performed clearance surveys for desert tortoises prior to the start of work in areas outside of the main project sites and CLA (e.g., gas distribution line, utility right-of way, etc.) immediately prior to the onset of construction or maintenance activities.
8. An appropriate number of authorized biologists and desert tortoise monitors were employed to monitor construction and maintenance activities that occurred outside of fenced areas. Prior to the start of work in unfenced areas biologists flagged all desert tortoise burrows to ensure avoidance by all construction workers.

9. All construction activities, project vehicles, and equipment on the plant site were within the areas that had been fenced with desert tortoise exclusion fencing and cleared. All work areas were confined to the smallest practical area, considering topography, placement of facilities, location of burrows, public health and safety, and other limiting factors. Previously disturbed areas were used in all feasible cases.

10. There has been no expansion of activities into areas outside of the areas considered in the Biological Opinion.

11. For all activities conducted outside of a cleared, fenced area, a biological monitor was provided to clear the area of desert tortoises. During operations, a biological monitor will be present (as per the requirements) during operation and maintenance activities.

12. During operation and maintenance activities at the completed project site, all vehicle parking, material stockpiles, and construction-related materials were confined to the permanently fenced project sites and CLA.

13. The egress for ISEGS project access has been and will continue to be Colosseum Road for construction, operation, maintenance, and decommissioning of the facility. As part of the WEAP, all workers were provided with specific instructions regarding the use of Colosseum Road for egress on- and offsite. In addition, Colosseum Road was marked as a travel route. Colosseum Road was fenced and cleared of tortoises in October 2010. All roads onsite are clearly marked with a speed limit of either 10, 20 or 30 miles per hour.

14. All site visitors and workers were made of aware of the firearms restrictions through worker and visitor orientations.

15. Any work occurring outside of the cleared, fenced site boundary during construction was accompanied by a biological monitor. Project personnel were directed to inform biological monitors when they encountered a tortoise. The monitor was instructed to seek direction from the designated biologist. As part of the WEAP training all workers are asked to check under vehicles or equipment before moving them to avoid collision with a desert tortoise.

16. During construction, trenches, bores, and other excavations were routinely checked at least twice a day, morning and evening, for trapped wildlife, and a biological monitor checked trenches for wildlife immediately prior to backfilling. Trenches were generally cut with safety ramps that served construction workers as well as wildlife. Outside of cleared project areas, trenches were inspected more frequently. Smaller excavations were fully enclosed with ¼ inch "pearl weave," a fine and flexible mesh, attached vertically to t-posts at least 24 inches above ground, and buried at least 12 inches with dirt to prevent wildlife access. In addition, tortoises observed along the natural gas pipeline were monitored throughout the day using telemetry equipment; at least one tortoise walked around the end of the trench.

17. Pipes and conduit used outside cleared areas to construct the natural gas pipeline and the 115-kV transmission line between the east and west sides of the CLA (Commons East and West) were stored 8 inches above ground, capped, and inspected by a biologist prior to commencement of daily work, and before being moved and backfilled.

4.2.1.2 26 Specific Protective Measures

1. Interstate 15 (I-15) desert tortoise exclusion fence between Yates Well Road and Nipton Road was installed in October 2011. The Yates Well Road desert tortoise exclusion fence was installed in May 2012. Construction of culverts along Colosseum Road began on June 24, 2014. The translocation of tortoises that only needed to be moved a short distance occurred during the spring of 2012. See mitigation modification in Section 4.2.2 for more information.
2. In April 2012, the recipient site used for outside-home-range translocations was fenced with desert tortoise exclusion fencing. This fence ties into I-15 fencing. Tortoise density surveys were conducted in October 2011 in the recipient area adjacent to I-15 to ensure that densities were not exceeded.
3. All permanent desert tortoise exclusion fencing was designed in accordance with the most up-to-date USFWS guidance.
4. All within-home-range recipient sites were large enough to accommodate a post-translocation density of less than 21 desert tortoises larger than 160 millimeters per square mile.
5. Clearance surveys were conducted according to the USFWS Desert Tortoise Field Manual. As per the manual, clearance of fenced areas began with an initial pass to excavate all potential tortoise burrows, including rodent holes. The initial pass did not count as an official survey pass. At least two consecutive clearance survey passes were required after the initial pass. The fenced area was not cleared until two consecutive clearance survey passes were completed without finding a desert tortoise.
6. Authorized biologists performed clearance surveys and other activities that required the handling of desert tortoises. Biological monitors always worked under the direct supervision of an authorized biologist.
7. Health assessments for tortoises were conducted as per the requirements, including blood collection and ELISA testing, from a sufficient number of individuals within the recipient site and control site to detect a population disease prevalence of 15 percent.
8. All project tortoises continue to receive health assessments and blood draw twice a year between May 15 and October 31 from a permitted biologist per the Effectiveness Monitoring Program (EMP).
9. USFWS-authorized individuals that have experience in collecting blood for ELISA testing and identifying the clinical signs of upper respiratory tract disease, herpes virus, and cutaneous dyskeratosis conducted the required health assessments. The qualifications of these individuals and the USFWS health certification letter of each authorized biologist was submitted as per the requirements.
10. All desert tortoise plasma samples were sent to the University of Florida for ELISA testing.
11. Any tortoise found on the project between October 2010 and December 31, 2013 was taken to the quarantine pens. A health assessment was conducted and blood samples collected for ELISA testing. Some desert tortoises were moved a short distance out of

harm's way along the project perimeter fencing or other linear facilities during construction.

12. All desert tortoises moved a short distance out of harm's way along a linear project feature were assessed for clinical signs of disease, fitted with a transmitter, and monitored to determine movement patterns until fence installation was complete.

13. Biological monitors patrolled the fences to ensure desert tortoises were not pacing the fence and succumbing to heat-related illnesses between the summer of 2011 and end of clearance surveys in September 2011.

14. Desert tortoise clearance surveys occurred between April 1 to May 31 and September 1 to October 15. Per the 2010 Biological Opinion. The fall clearance survey window was extended until October 31 in 2010 since all tortoises discovered were placed in the quarantine pens. See Section 4.2.2 for mitigation modifications for clearance surveys that occurred outside the designed timeframe.

15. All clearance surveys activities took place while the ambient air temperature was between 65 and 95 degrees Fahrenheit. Translocation activities did not occur when the ambient air temperature was above 95 degrees Fahrenheit or was likely to exceed 95 degrees Fahrenheit before completion of handling or processing. In addition, translocation activities did not occur when the ambient air temperature was below 65 degrees Fahrenheit or was anticipated to go below 50 degrees Fahrenheit during the week after release. Ambient air temperature was measured in the shade, protected from wind, at a height of 2 inches above the ground surface.

16. All tortoises that were encountered on the project site were assessed for clinical signs of disease using the description of clinical signs of disease described in the available scientific literature.

17. Disposition plans were developed for each tortoise cleared from the project site for translocation. The plans articulated the proposed release site of each desert tortoise and the complete health assessment for each individual. This information was submitted to the appropriate agencies for approval.

18. Any tortoise that showed clinical signs of disease or positive ELISA-test results was placed into a quarantine pen and was not released into the recipient site until authorized by USFWS.

19. No desert tortoises were released and will not be released into recipient sites during drought years. See mitigation modification in Section 4.2.2.

20. Desert tortoises were released into recipient sites when temperatures ranged between 65 and 85 degrees Fahrenheit and when temperatures were not likely to exceed 90 degrees Fahrenheit within 3 hours of release or 95 degrees within one week of release. In addition, release did not occur if forecasted daily low temperatures were lower than 50 degrees Fahrenheit for one week post-release.

21. Pre-selected release points were selected for each individual desert tortoise within the respective recipient sites. Each individual was transported to the release points in clean, ventilated containers. If containers were re-used, they were disinfected using trifectant.

22. All desert tortoises were hydrated when scheduled for translocation and as per guidance within 12 hours prior to release. All desert tortoises released into the recipient site were released at unoccupied shelter sites.

23. Following clearance surveys of desert tortoises from the fenced project site an authorized biologist was onsite during initial clearing and grading to move any desert tortoises missed during the initial clearance surveys. If a tortoise was displaying clinical signs of disease, USFWS was contacted to determine the appropriate disposition of the tortoise.

24. Information was collected on each desert tortoise encountered and translocated from the site. Information included date, encounter location, location detail (burrow, in open, under shrub), health assessment and blood work, ELISA results, any injuries, unique markings, whether the animal voided, and release location.

25. The following schedule was used for monitoring all tortoises after translocation into recipient site: (1) once within 24 hours of release, (2) once a day for 7 days (3) twice weekly for the second week following release, and then (4) once a week from March through November, and (5) once every other week from November through February. All transmittered tortoises in the recipient and control populations are tracked according to the following frequency: (1) once a week from March through November and (2) once every other week from November through February.

26. If a desert tortoise within the project site exhibited fence line pacing and seemed to be in distress due to adverse conditions, biologists immediately moved it to the within-home-range recipient site in accordance with the translocation strategy defined in the Biological Opinion.

4.2.1.3 Additional Measures in COC BIO-8 and BIO-10

Many, but not all, of desert tortoise avoidance and minimization measures in the Biological Opinion and Translocation Plan encompass COCs BIO-8 Desert Tortoise Clearance Surveys and Fencing and BIO-10 Desert Tortoise Compliance Verification. Therefore, these measures are specifically addressed below.

4.2.1.3.1 Desert Tortoise Clearance Surveys and Fencing

Per BIO-8, the following information was collected on any desert tortoise handled within the project boundaries:

- Encounter date and location
- Ambient air temperature
- Health assessment (general condition of tortoise, gender, carapace length, diagnostic markings, injuries)
- Whether the tortoise voided its bladder
- Digital photographs of carapace, plastron, face, left and right side of face, and any abnormalities

The results of the desert tortoise clearance surveys were reported in the MCRs.

4.2.1.4 Desert Tortoise Compliance Verification

The following information was derived from the requirements of BIO-10.

1. The designated biologist notified BLM's Authorized Officer and the CPM and at least 14 calendar days before initiating vegetation salvage or ground-disturbing activities.
2. The designated biologist notified BLM's Authorized Officer and the CPM in writing if the project owner was 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.
3. The designated biologist remained onsite daily while vegetation salvage, grubbing, grading and heliostat installation activities were taking place to avoid or minimize take of listed species, to check for compliance with all impact avoidance and minimization measures, and to check all exclusion zones to ensure that signs, stakes, and fencing were intact and that human activities were restricted in these protective zones.
4. Biological monitors maintained and checked desert tortoise exclusion fences on a daily basis during construction to ensure the integrity of the fence was maintained. The Designated Biologist was onsite to monitor construction and determine fence placement during fence installation.
5. Compliance inspections were conducted at a minimum of once per month after clearing, grubbing, grading, and heliostat installation activities were completed. A monthly compliance report was sent to BLM's Authorized Officer and the CPM during construction.
6. The designated biologist no later than January 31 of every year the ISEGS facility remains in operation, provides BLM's Authorized Officer and the CPM an annual Listed Species Status Report, which includes, at a minimum: (1) a general description of the status of the project site and construction activities, including actual or projected completion dates, if known; (2) a copy of the table in the BRMIMP with notes showing the current implementation status of each mitigation measure; and (3) an assessment of the effectiveness of each completed or partially completed mitigation measure in minimizing and compensating for project impacts.
7. All observations of listed species and their sign during project activities have been reported in the monthly compliance reports submitted to BLM's Authorized Officer and the CPM.
8. In January 2014 a Final Listed Species Mitigation Report was submitted to BLM's Authorized Officer and the CPM.
9. All injured or dead listed wildlife species have initiated notification to BLM's Authorized Officer, the CPM, CDFG and USFWS immediately or no later than noon on the business day following the event if it occurs outside normal business hours so that the agencies can determine what further actions, if any, are required to protect the listed animal.
10. No desert tortoises were injured as a direct result of project-related construction activities. However, all desert tortoise fatalities during construction initiated a written report with date and time of discovery, location, and circumstances of the incident

which was submitted to BLM's Authorized Officer, the CPM, and USFWS within 24 hours of the incident.

4.2.2 Modifications to Mitigation Measures

Clearance surveys were required to be conducted only during the spring (April 1 to May 31) and fall (September 1 to October 15). However, the surveys could be extended outside of this window, should the USFWS provide an extension. The USFWS provided two extensions for surveying beyond October 31. The 2010 fall clearance surveys were approved for completion on November 4, 2010. However, on March 22, 2012 the USFWS issued an amendment to the Biological Opinion that restricted the release of desert tortoises into recipient sites during drought years. The amendment allows short-distance translocation to occur during drought years.

4.2.3 Mitigation and Monitoring Items Still Ongoing

All of the minimization measures in the Biological Opinion are ongoing throughout operations, maintenance, and decommissioning activities.

As required by BIO-10, The project owner shall provide Energy Commission and BLM representatives with reasonable access to the project site and mitigation lands under the control of the project owner and shall otherwise fully cooperate with the Energy Commission's and BLM's efforts to verify the project owner's compliance with, or the effectiveness of, mitigation measures set forth in the conditions of certification.

BIO-10 also requires the Designated Biologist shall do all of the following during operations: No later than January 31 of every year the ISEGS facility remains in operation, provide BLM's Authorized Officer and the CPM an annual Listed Species Status Report, which shall include, at a minimum: 1) a general description of the status of the project site and construction activities, including actual or projected completion dates, if known; 2) a copy of the table in the BRMIMP with notes showing the current implementation status of each mitigation measure; and 3) an assessment of the effectiveness of each completed or partially completed mitigation measure in minimizing and compensating for project impacts.

BIO-10 also requires the project owners during operations to immediately notify BLM's Authorized Officer and the CPM 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.

4.3 Desert Tortoise Translocation Plan

The Desert Tortoise Translocation plan as described in BI0-9 was incorporated into the site BRMIMP as required by BIO-7. This section provides a summary of what items have been completed, a summary of all modifications to mitigation measures or best management practices made during the project's construction phase, and which items are still ongoing for this portion of the BRMIMP.

4.3.1 Items Completed

- The project owners installed exclusion fencing around the boundary of Ivanpah 1, 2 and 3, the CLA, and along Colosseum Road.
- The project owners installed desert tortoise guards at gated entries to prevent desert tortoises from gaining entry to the project site.
- Within 24 hours prior to the initiation of construction of the desert tortoise-exclusion fence, the Designated Biologist conducted two complete desert tortoise clearance surveys of the fence line segment and associated disturbance right-of-way that were fenced that day.
- Following construction of the desert tortoise exclusion fence around a given portion of the ISEGS project site, the Designated Biologist performed clearance surveys in accordance with the Translocation Plan, Biological Opinion, and USFWS guidelines.
- An authorized biologist or biological monitor was onsite during installation of any temporary exclusion fence.
- Undisturbed areas outside the temporary exclusion fence were designated Environmentally Sensitive Areas. All construction activities were confined within the fenced project impact area. Equipment or construction personnel were not allowed within the Environmentally Sensitive Areas. The integrity of all temporary desert tortoise fencing within the work area was inspected daily. Prior to the start of work each day the authorized biologist or biological monitor rechecked the construction area to ensure that it was clear of tortoises.
- Prior to performing onsite work, all personnel involved in the construction project participated in WEAP training. A list of those undergoing training was include in the MCRs.
- Open trenches, auger holes, or other excavations were inspected by an authorized biologist before backfilling. For open trenches located outside of fenced areas, earthen escape ramps were maintained at intervals of no greater than 0.25 mile. The open trenches were inspected at least twice a day by an authorized biologist or biological monitor. Other excavations outside the fenced areas that remained open overnight were covered to prevent them from becoming traps.
- Project personnel checked under parked vehicles and equipment for desert tortoises before operation.
- At water and garbage/trash sources, measures were implemented by the authorized biologist to preclude access by common ravens (*Corvus corax*) and other tortoise predators.
- When a desert tortoise was found either dead, injured, or entrapped, the contractor was required to immediately notify a biological monitor so that the permitting agencies could be notified.
- No desert tortoises were found injured during the course of construction as a direct result of construction activities. However, when a desert tortoise fatality occurred

during the course of construction the permitting agencies were notified. The designated or authorized biologist documented its death and collected the carcass.

- The Designated Biologist performed disease testing of individuals that it cleared and quarantined from the project site.
- All desert tortoises received health assessments, including blood collection and disease testing in accordance with USFWS's translocation guidance.
- The Designated Biologist captured and retained gravid females found on the project site at the quarantine facility to capture their eggs, so that this reproductive output would not be lost.
- Following receipt of ELISA test results and USFWS approval of the recipient sites, the individuals were translocated according to the procedures set forth in the Translocation Plan.
- The Designated Biologist designed and implemented a monitoring study to determine how effective the shade structures, mister systems (if deployed), and burrows in holding pens are in providing refuge from high temperatures.
- To minimize adverse effects to the desert tortoise, the project owners implemented protective measures when implementing clearance surveys and desert tortoise translocation, as set forth in the Translocation Plan.
- All healthy desert tortoises were translocated to approved translocation areas.
- The project owners fenced a portion of the recipient site adjacent to I-15 for a distance of 1 kilometer (the I-15 pen).
- The Designated Biologist did not release individuals into the recipient sites until the project owner had completed fencing of I-15 from Yates Well Road to Nipton Road, completed all surveys recommended by the USFWS's translocation guidance (i.e., density estimation, disease prevalence, etc.), and received approval for release from the BLM and the USFWS.
- Tortoise excavation, handling, artificial burrow construction, egg handling and other procedures followed those described in the Desert Tortoise Field Manual.
- The project owners have been monitoring desert tortoises cleared from the ISEGS project site in accordance with the USFWS's current translocation guidance or more recent update.
- The Designated Biologist attached transmitters to all desert tortoises released into the recipient sites and to an equal number of resident desert tortoises to replicate the translocated tortoises that are resident to the recipient site to facilitate monitoring.
- The Designated Biologist also attached transmitters to and monitored desert tortoises in a population that serves as a control group for translocation monitoring.
- During current and future monitoring, the Designated Biologist will work with researchers to investigate the drivers of post-translocation survival.

- To minimize adverse effects to the desert tortoise, the project owners have implemented all 26 of the protective measures set forth in Section 2.7.1, Revised Monitoring Requirements, of the latest version (5.1) of the Translocation Plan.

4.3.2 Modifications to Mitigation Measures

The translocation plan calls for translocations to take place in the fall (October 1-5) and in the spring (March 25 to April 15) to avoid extremely high thermal conditions. During the spring of 2012, the regulatory agencies extended the translocation window to April 30. During the fall of 2012, the regulatory agencies extended the translocation window to include the last week of September.

4.3.3 Mitigation and Monitoring Items Still Ongoing

- The I-15 pen will remain fenced for a period of approximately 10 years.
- The project owners will continue to monitor desert tortoises cleared from the ISEGS project site in accordance with the USFWS's current translocation guidance or more recent update. The current guidance recommends 5 years of post-release monitoring, but this term may increase in subsequent updates to the guidance. Based on the delayed translocation strategy for some individuals, monitoring would last for a minimum of 10 years following the initial translocation release.
- During monitoring, the Designated Biologist will investigate the drivers of post-translocation survival.

4.4 Impact Avoidance and Minimization Measures

4.4.1 Items Completed

As per the BRMIMP (BIO-11), the project was required to avoid and minimize impacts for specific activities. In addition, the project was also required monitor certain activities to assist in this effort. How each of these specific measures was accomplished is briefly described below.

4.4.1.1 Limit Disturbance Areas

Within the ISEGS project boundary, areas to be disturbed were delineated with stakes and flagging prior to ground-disturbing activities. Biological monitors confirmed with the project owner's compliance officer approval for grubbing prior to proceeding with and monitoring ground disturbance activities. On more than one occasion, permission to grub was not granted, and construction activities were confined to areas slated for long-term disturbance. Examples included requests to grub deeper into the solar field, beyond the first ring road to expand staging areas (denied), and the request to widen the right-of-way for gas line construction larger than 50 feet to expedite construction logistics (denied). Vegetation and soils outside of flagged areas were not disturbed, leaving substantial areas of undisturbed vegetation within the CLA.

4.4.1.2 Minimize Road Impacts

New roads and road improvements within the ISEGS project boundary (e.g., Colosseum Road, CLA, and access roads) were first surveyed and flagged, then tortoise exclusion fencing was installed on the perimeter of the road right-of-way so it could be cleared of desert tortoises in accordance with project permits. Prior to desert tortoise clearance surveys, all vehicle travel was escorted and monitored. Vehicles were constrained by the fence and monitors ensured they met the requirement to stay on disturbed areas. To accommodate passing and turning around, areas were cleared and flagged for these purposes and monitors supervised the activity.

4.4.1.3 Minimize Traffic Impacts

The project owner, as part of the worker safety training provided specific instructions regarding the use of existing designated travel routes. All travel routes were clearly marked. Workers deviating from existing designated travel routes or travelling in excess of the designated speeds were dismissed.

4.4.1.4 Monitor during Construction

From October 7, 2010 through May 31, 2014, at least one biological monitor was at the construction site every day, including weekends. In 2011, during the height of ground-disturbing activities, as many as 45 biological monitors in one day accompanied equipment, vehicles, and construction workers to prevent injury to wildlife and other protected resources. The Designated Biologist was onsite during the construction 4-day work week, and was typically onsite at least one or two weekend days. The Designated Biologist was available by cell phone when offsite to respond as needed.

Biologists conducted preconstruction surveys for burrowing owl, badger, and nesting birds prior to initial ground-disturbing activities for all project-related work.

Biological monitors walked immediately ahead of equipment during all grubbing, grading, and mowing activities, whether inside or outside areas fenced and cleared for desert tortoise. Typically, three monitors searched in front of a "blade," "dozer," or "paddlewheel," and two monitors searched in front of each "mower." In addition, a monitor would often walk behind the equipment looking for injured or displaced wildlife. Monitors accompanied all fence construction crews as well as drilling and pylon insertion equipment, searching in front of and around the area where this equipment was working. During "Heliostat Ground Disturbance" activities, monitors worked with crews clearing vegetation and ground interference (if it met specific criteria that made minor ground disturbance outside of washes permissible). Biological monitors and construction personnel found 14 small juvenile tortoises while conducting construction work in cleared areas from 2010 to 2013. In addition, active bird nests, active mammal dens, snakes, lizards, tarantulas, juvenile rabbits, kangaroo rats, special-status plants, and a few cultural artifacts were protected from harm.

Working outside of fenced and cleared areas on project-related work such as gas line construction and the installation of the long-distance translocation pen, an additional biological monitor would typically carry a tracking receiver to locate and monitor

transmittered tortoises in the vicinity while others worked directly with vehicles and equipment.

Trenches and other excavations were monitored at least twice daily and prior to backfill, whether inside or outside of the project fence line, to search for trapped wildlife.

All project-related work conducted outside of the project fence line was escorted by biological monitors, even if ground disturbance was not part of the activity.

4.4.1.5 Minimize Impacts of Transmission/Pipeline Alignments, Roads, Staging Areas

Staging areas for construction on the plant site were within the areas that had been fenced with desert tortoise exclusion fencing and cleared. These areas were generally concentrated rather than dispersed, with the primary staging areas located in the eastern portion of the CLA, and within the three grubbed and graded power blocks and their adjoining inner solar field. For areas outside of the plant site, such as the natural gas pipeline, staging areas were confined within narrow graded rights-of-way and materials were carefully sited to minimize impacts to native vegetation and sensitive biological resources while allowing strategic vehicle passage. Vehicles working at the far end of the right-of-way would enter the area first. Vehicles working in the middle would enter next in the same order as their position working along the line. Workers knew that vehicles at the far end of the line would not be able to exit until the end of the day. If there was not enough room for a vehicle to turn around, it was escorted driving in reverse by a biological monitor.

In a similar fashion, areas for transmission/pipeline and roads were marked and disturbance was confined to the marked corridors.

4.4.1.6 Avoid Use of Toxic Substances

The project did not use any soil bonding or weighting agents on unpaved surfaces. Dust control measures consisted of the application of water only.

4.4.1.7 Minimize Lighting Impacts

Lighting designs and subsequent installations were primarily downcast to avoid the side casting of light toward wildlife habitat. Lighting was installed only as required for safety purposes per safety requirements.

4.4.1.8 Badger Surveys

Preconstruction surveys for badger dens were done concurrently with desert tortoise clearance surveys inside of project fence lines, and concurrently with burrowing owl surveys within 500 feet of the project perimeter or linear facilities. No active badger dens were identified. During desert tortoise clearances all burrows, whether mammal or tortoise, were fully excavated and backfilled by hand. No badgers were encountered during burrow excavation activities.

4.4.1.9 Gila Monster Surveys

No Gila monsters were encountered during clearance surveys or construction.

4.4.1.10 Avoid Vehicle Impacts to Desert Tortoise

Except for work on the gas line, the Long-Distance Translocation Pen ("I-15 Pen"), and offsite mitigation fences, parking, and storage occurred with the area enclosed by desert tortoise exclusion fencing. WEAP training and biological monitors taught workers to routinely inspect the ground beneath vehicles for the presence of wildlife prior to moving the vehicle. Outside of fenced areas, biological monitors were responsible to search under all vehicles in their group of equipment. Monitors escorted all vehicles traveling on offsite roads. These protective measures generally worked well; adult and juvenile tortoises, snakes, lizards, and small mammals were found under vehicles, and allowed to move or, if necessary, moved out of harm's way per applicable protocols.

4.4.1.11 Avoid Wildlife Pitfalls

4.4.1.11.1 Backfill Trenches

Trenches, bores, and other excavations were routinely checked at least twice a day, morning and evening, for trapped wildlife, and a biological monitor checked trenches for wildlife immediately prior to backfilling. Trenches were generally cut with safety ramps that served construction workers as well as wildlife. Outside of cleared project areas, trenches were inspected more frequently. Smaller excavations were fully enclosed with ¼ inch "pearl weave," a fine and flexible mesh, attached vertically to t-posts at least 24 inches above ground, and buried at least 12 inches with dirt to prevent wildlife access. In addition, tortoises on the natural gas pipeline were monitored throughout the day using telemetry equipment.

4.4.1.11.2 Avoid Entrapment of Desert Tortoise

Most pipe, culvert, and similar materials were not brought onsite until after the tortoise exclusion fence was constructed and the clearance surveys had been completed. Pipes and conduit used outside cleared areas to construct the natural gas pipeline and the 115-kV transmission line between Commons East and West were stored 8 inches above ground, capped, and inspected by a biologist prior to commencement of daily work, and before being moved and backfilled

4.4.1.11.3 Cap Heliostat Holes

Biological monitors working with the drilling equipment inspected pre-drilled locations to ensure that entrapment potential did not occur. Drilling was done in such a way as to loosen dirt, but not leave a hole. Heliostat pylons were then driven into the loosened dirt. Pylons themselves had holes on the top until the mirror was installed. Many of these holes were covered by plastic caps that came with the pylons, though some caps were broken and no longer usable. After the mirrors were installed, several hundred pylons remained uncapped. Biological monitors covered uncapped pylons with tin pie pans secured by rocks. Pylons capped using this method are located on the exterior of the solar field. These temporary caps are working well, preventing entrapment until mirrors are installed in the future.

4.4.1.12 Minimize Standing Water

Biological monitors reported unacceptable incidents of standing water to the project owner for action as necessary.

4.4.1.13 Dispose of Road-killed Animals

Carcasses of small mammals (rabbits and rodents) and reptiles found in the project area and along access roads were removed by biological monitors as soon as they were detected and disposed of in covered containers so that they were not accessible to ravens or other scavengers.

4.4.1.14 Recording Bird Carcasses

During construction, consistent with drafts of the Avian and Bat Monitoring and Management Plan, bird carcasses found onsite were photographed and the location recorded, whether in the solar fields or elsewhere. The Designated Biologist maintained a database of the date, bird species, location data, and potential cause of death. In 2013, this database evolved into the USFWS SPUT (Special Purpose Utility Permit) report. After November 2013, the implementation of the approved Avian and Bat Monitoring and Management Plan (Revision 12) became the responsibility of H.T. Harvey and Associates as primary investigator. As such, they continue to maintain the database and report findings to the Designated Biologist and project owner. Reports are regularly provided to CFWS and USFWS consistent with SPUT Permit requirements.

4.4.1.15 Minimize Spills of Hazardous Materials

All vehicles were routinely inspected and maintained in accordance with servicing specifications. In addition a Construction Waste Management Plan was prepared in accordance with WASTE-3. The construction contractor followed the terms of the plan in addition to maintaining all vehicles. All spills were reported according to applicable county, state and federal requirements.

4.4.1.16 Worker Guidelines

All workers and visitors to the site were provided a basic orientation that included specific instruction on placement of trash in accordance with CEC COCs. In addition, workers were provided additional instruction in the worker orientations. All workers were informed as part of the worker training of the requirement that pets were not allowed onsite nor were wildlife to be fed. All site visitors and workers were made aware of the firearms restrictions through worker and visitor orientations. Any workers violating any of the above policies were required to leave the site and/or were dismissed.

4.4.1.17 Monitor Ground-disturbing Activities Prior to Site Mobilization

Prior to initial ground disturbance for fence construction in early October 2010, surveyors were accompanied by a biological monitor while conducting surveys. No sensitive species were harmed or harassed during this effort. Following the surveys on October 7, 2010, biological monitors were present and in front of fence installation crews who began ground clearance and grubbing for desert tortoise exclusion fencing and permanent security fencing. Also, during winter 2010 and early spring 2011, biological monitors accompanied engineers conducting geotechnical testing in what would become units 2 and 3. Several observations of desert tortoise were made, but the testing impacted none.

4.4.2 Modifications to Mitigation Measures

No modifications were made to these measures.

4.4.3 Mitigation and Monitoring Items Still Ongoing

4.4.3.1 Minimize Traffic Impacts

Vehicular traffic during project operations shall continue to 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 shall not exceed 20 miles per hour within the project area, on maintenance roads for linear facilities, or on access roads to the ISEGS site.

4.5 Preconstruction Nest Surveys

Pre-construction nest surveys, required by BIO-15, were incorporated into the BRMIMP as required by BIO-7. This section provides a summary of what items have been completed, a summary of all modifications to mitigation measures or best management practices made during the project's construction phase, and which items are still outstanding.

4.5.1 Items Completed

- Preconstruction nest surveys were conducted in 2011 through 2014, when construction activities occurred from February 1 through August 31.
- The Designated Biologist or biological monitor that conducted the surveys was an experienced bird surveyor familiar with standard nest-locating techniques.
- Nesting surveys were performed in accordance with the procedures set forth in BIO-15.
- All active nests detected during the survey were buffered and monitored until nestlings dispersed.
- All active nests were reported in the MCRs.

4.5.2 Modifications to Mitigation Measures

No modifications were made to these mitigation measures.

4.5.3 Mitigation and Monitoring Items Still Ongoing

No mitigation and monitoring item rare required during operations under this portion of the BRMIMP

4.6 Raven Management

The Raven Management plan as described in BIO-12 was incorporated into the site BRMIMP as required by BIO-7. This section provides a summary of what items have been completed, a summary of all modifications to mitigation measures or best management practices made during the project's construction phase, and which items are still outstanding. A more detailed post-construction raven management report will be provided under separate cover within 60 days of completion of construction, as required by BIO-12.

4.6.1 Items Completed

- The project contributed $105 per acre for each of the 3,582 acres associated with the project site ($376,110) to CDFW.
- Garbage associated with the project during construction was contained in secure receptacles to prevent the introduction of food resources for ravens, coyotes, and other predators.
- The WEAP program informed construction personnel that they were prohibited from intentionally feeding ravens.
- The project site and access road were monitored daily by the biological monitor(s) during construction for road kill.
- Site personnel were instructed to report all observations of road kill to the ISEGS Compliance Manager; carcasses were removed and disposed of immediately.
- To discourage tortoises and other animals from crossing over the road, and thereby decreasing the potential of tortoise and other small animal road kill, fencing was installed along Colosseum Road from the existing paved road (near the golf club) to the project site.
- The solar facility was surrounded by a security fence that was designed and maintained to exclude coyotes and foxes from entering the site and exposing garbage for raven access.
- Project entry gates were automated to open and close for individual vehicles during facility construction.
- During construction, water was used in a manner that did not result in standing water.
- Water for facility use and fire prevention was stored onsite in closed water tanks.
- Water used for vegetation restoration and for the nursery operation was trucked in from other sources and manually administered. Water delivered via truck was regularly checked to prevent leaks and standing water.
- No stormwater or other detention basins were used in the project design.
- Perch- and nest-discouraging features were not installed on the project's transmission towers.
- All new electrical transmission lines associated with ISEGS were designed in a manner that would reduce the likelihood of nesting by common ravens.
- The project owner relied on biologists from BLM or other resource agencies and/or a BLM-approved biologist to conduct or direct any raven nest disturbance or removal during the breeding season.
- The project owner contacted BLM when raven nests were found in any of the structures associated with the ISEGS.
- The project owner focused on limiting raven attractants rather than hazing.

- Electrical transmission lines and poles were constructed according to the most recent "raptor-friendly" guidelines and were not designed to specifically accommodate nesting or perching.
- The ISEGS facilities were monitored to identify frequently used perching locations for common ravens.
- The project owner consulted with the CPM, BLM, and USFWS prior to implementing adaptive management changes. In October 2012, revision 4 of the Raven Management Plan was approved by all agencies.
- Raven point counts are conducted twice a month, year round.
- Juvenile tortoise carcass surveys are conducted March through June under identified or potentials nest and roost sites.
- Raven surveys occur twice weekly during the peak of tortoise breeding season and the peak raven breeding, nesting, and fledgling season (March to June), and six days a month for the remainder of the year (July to February).
- Relevant incidental observations were included in the annual monitoring reports.
- Observations of raven predation of juvenile tortoises (including sign) and occupied raven nests were reported to the designated contacts at BLM, CDFW, and USFWS by an electronic mail message within 24 hours of the observation.
- The project owner submitted annual monitoring reports to CDFW, BLM, and USFWS.
- The project owner will submit annual monitoring reports to CDFG, BLM, and USFWS no later than December 31 of each raven management year. If, after 2 years of reporting following the operation of all three facilities, the agencies determine that the raven management program is effective, and ravens are not adversely affecting the local tortoise population because of ISEGS operation, then the raven surveys and reporting schedule will be phased out.

4.6.2 Modifications to Mitigation Measures

No modifications were made to the approved mitigation measures.

4.6.3 Mitigation and Monitoring Items Still Ongoing

- Garbage associated with the project during operations will be contained in secure receptacles to prevent the introduction of food resources for ravens, coyotes, and other predators.
- The WEAP program will continue to inform operation personnel that they are prohibited from intentionally feeding ravens.
- During operation, the site and access road will be monitored by the biological monitor(s) during the raven management survey visits.
- Project entry gates are automated to open and close for individual vehicles during facility operation.

- During operation, maintenance, and decommissioning, water will be used in a manner that does not result in standing water.
- Water for facility use and fire prevention will continue to be stored onsite in closed water tanks. Water used for operations will be processed in a closed onsite wastewater treatment system and recycled for facility use.
- Water used for vegetation restoration and for the nursery operation will continue to be trucked in from other sources and manually administered. Water delivered via truck will be regularly checked to prevent leaks and standing water.
- Operational monitoring will be directed at identifying and addressing raven nest and perching issues on a case-by-case basis.
- Elevated structures including utility poles will be removed from the ISEGS site when decommissioned and dormant.
- The ISEGS facilities will continue to be monitored to identify frequently used perching locations for common ravens.
- The minimum 2-year monitoring period will be re-initiated following the implementation of any adaptive management changes.
- Raven surveys will continue to occur twice weekly during the peak of tortoise breeding season and the peak raven breeding, nesting, and fledgling season (March to June) and six times a month for the remainder of the year (July to February) for a minimum of 2 years following completion of construction.
- Raven point counts will continue to occur twice a month, year round for at least the first 2 years of operation.
- Juvenile tortoise carcass surveys will continue to occur March through June under identified or potentials nest and roost sites.
- Observations of raven predation of juvenile tortoises (including sign) and occupied raven nests will be reported to the designated contacts at BLM, CDFW, and USFWS by an electronic mail message within 24 hours of the observation.

4.7 Weed Management

The BRMIMP incorporates the Weed Management Plan (WMP) as required by BIO-13. As required by BIO-7, this section provides a summary of what items in the WMP have been completed, a summary of all modifications to mitigation measures or best management practices made during the project's construction phase, and which items are still outstanding. A more detailed report of the implementation of the WMP through the completion of construction (i.e., the Post-construction Weed Management Report) is provided under separate cover as required by BIO-13.

4.7.1 Items Completed

During ISEGS construction, the following the WMP items were completed, as necessary:

- Project disturbance was limited to the minimal area required to perform work. Project personnel were also limited to defined access routes, with limited equipment access throughout the solar fields to install heliostats.
- The mandatory WEAP training provided weed identification and impacts of noxious weeds on agriculture, livestock, wildlife, and fire hazard. WEAP attendance sheets were provided in the MCRs.
- Bechtel (the EPC contractor) used only weed-free products for sediment control.
- Weed monitoring and control efforts ensured early detection and eradication of weeds. Vehicle wash and inspection station were maintained throughout construction. The undercarriage inspection reports were included in the MCRs.
- Control methods were limited to manual removal and no herbicide application was necessary during construction.
- Weed management followed federal and state laws and regulations as well as applicable conservation and management plans.

4.7.2 Modifications to Mitigation Measures

The only modification to the mitigation measures during construction was the adaptive management alignment of the monitoring guidance between the Biological Opinion and the WMP. However, the result of monitoring and control never ceased to follow BIO-13, Mitigation Measure 4 "Monitoring and rapid implementation of control measures to ensure early detection and eradication for weed invasions."

4.7.3 Mitigation and Monitoring Items Still Ongoing

The remaining short-term disturbance areas in the CLA will be restored in 2014 as an operations task. Short-term disturbance revegetation and monitoring will follow WMP and Closure, Revegetation and Rehabilitation Plan specifications.

The project will follow the Biological Opinion guidance that recommends weed monitoring continue for 10 years after completion of construction, instead of the 7 years proposed in the WMP. Construction was determined to be substantially complete on May 31, 2014; therefore, the noxious weed-monitoring period will continue through May 31, 2024. Hence, weed monitoring and removal, as necessary, will continue into the immediate future in accordance with the WMP.

4.8 Closure, Revegetation, and Rehabilitation

The Closure, Revegetation, and Rehabilitation Plan (Revegetation Plan) as described in BIO-14 was incorporated into the site BRMIMP as required by BIO-7. This section provides a summary of what items in the Revegetation Plan have been completed, a summary of all modifications to mitigation measures or best management practices made during the project's construction phase, and which items are still ongoing. The comprehensive results

of the BIO-14 Revegetation Plan (called the Post-Construction Closure, Revegetation, and Rehabilitation Report) mitigation measures are provided under separate cover.

4.8.1 Items Completed

During ISEGS construction, the following the BIO-14 and Revegetation Plan items were completed:

- Revision 4 of the Closure, Revegetation, and Rehabilitation Plan met the requirements of BIO-14 Measures 1 (Plan Purpose), 2 (Standards/Monitoring), 3 (Baseline Surveys), 6 (Succulent Salvage), and 10 (Final Closure Plan).
- Vegetation clearing and mowing was conducted throughout the site in accordance with the low-impact design and in accordance with Revegetation Plan specifications (BIO-14 Measures 4 and 5).
- Project disturbance was limited to the minimal area required to perform work. The project's low-impact design left vegetation intact within the solar fields and roads were crushed, not graded, to leave natural grades in place.
- Bechtel (the EPC contractor) implemented the construction Stormwater Pollution Prevention Plan.

4.8.2 Modifications to Mitigation Measures

Several modifications to the Revegetation Plan's mitigation measures were made in accordance with the Adaptive Management guidelines. They are summarized below, and described in greater detail in the Post-Construction Closure, Revegetation, and Rehabilitation Report.

- Short-term, long-term, and permanent disturbance areas were modified from the Revegetation Plan's assumptions, and are less than the total disturbance acreage anticipated by the Right-of-Way Grant, and Commission Decision. This includes changes such as but not limited to: the Heliostat Assembly Building area in Common East changed from long-term to permanent disturbance, the northern portion of the natural gas pipeline increased the construction corridor width from 37 to 50 feet, and the addition of the I-15 recipient site (I-15 pen) as part of mitigation required by the Biological Opinion.
- Actual succulent salvage was modified during construction to account for field availability (BIO-14 Measure 6). Target salvage numbers of two succulent species were not met due to cryptic nature or too few were present within the project boundary. This deficit was made up for by increased salvage of other succulents, which resulted in exceeding the overall Revegetation Plan's target salvage goals.
- Soil rehabilitation protocol was completed as part of Revision 4 with the exceptions of topsoil application, seed farming, mycorrhizal inoculation, and biological crust collection (BIO-14 Measure 8).
- Due to constraints with mowing equipment, chipped vegetation was not collected as mulch for use in revegetation.
- The technique for washing heliostats is still being modified, but the overall water usage will be lower than the estimates provided in the original plan.

4.8.3 Mitigation and Monitoring Items Still Ongoing

This section focuses on the ongoing construction-related BIO-14 measures and all tasks related to decommissioning are assumed to be required when the project is closed. Many of the Plan's elements are ongoing because they are intended to be implemented during operations and/or decommissioning (see Table 1 of the Post-Construction Closure, Revegetation, and Rehabilitation Report for details).

- Weed control within the solar fields was and will continue to be conducted in accordance with BIO-13 Weed Plan requirements (BIO-14, Measure 9).
- Long-term soil stockpiles will be redistributed to be no higher than 6 feet (BIO-14, Measure 11a).
- Seed collection and use for revegetation efforts was and will continue to be implemented in accordance with the Revegetation Plan requirements (BIO-14, Measure 7 and 11 b).
- Concrete pads were and will continue to be removed to a minimum depth of 6 feet (BIO-14 Measure 11c).
- Succulents were and will continue to only be used for revegetation and landscaping and will not be sold by the project owner (BIO-14 Measure 11d).
- The remaining short-term disturbance areas in the CLA will be restored in 2014 under operations management.
- Short-term disturbance revegetation and monitoring did and will follow Revegetation Plan specifications.
- The Stakeholders' Management Board that implements the revegetation Adaptive Management Plan will be formed. In lieu of a board, modifications to the Revegetation Plan were reported to applicable agencies were submitted in MCRs or annual reports.
- To the best of our knowledge, were are not aware if baseline soil condition surveys were performed. We are trying to confirm this with the EPC contractor.

4.9 Special-status Plant Impact Avoidance and Minimization

This Special-status Plant Impact Avoidance and Minimization section is based on the requirements for BIO-18, which was incorporated into the BRMIMP. As required by BIO-7, this section provides a summary of what items have been completed, a summary of all modifications to mitigation measures or best management practices made during the project's construction phase, and which items are still ongoing.

4.9.1 Completed Items

COC BIO-18 (Measures 1 through 11) pertains to special-status plant impact avoidance and protection. The BIO-18 measures are listed in Table 4-1. These measures were required to be incorporated into the BRMIMP as part of BIO-7 and therefore are reported on in this document. A discussion of completed items is included in the text following the table.

TABLE 4-1
Summary of COC BIO-18 Compliance Measures Completed and In Progress

No.	COC BIO-18 Measure	In Compliance?	Task Complete?
1	Onsite Plant Avoidance/Minimization Areas	Yes	Yes
2	Protection Goals	Yes	Ongoing.
3	Identify and Establish SSPPAs	Yes	Yes
4	Protection of Adjacent Occurrences	Yes	Ongoing.
5	Develop and Implement a Special-status Plant Protection and Monitoring Plan	Yes	Yes
6	Develop Special-status Plant Remedial Action Plan	Yes	Yes
7	Seed Collection	Yes	Yes
8	Gas Pipeline Revegetation and Monitoring	Yes	Ongoing.
9	Surveys on Acquired and Public Lands	Yes	Yes
10	Security for Implementation of Plans	Yes	Yes
11	Acquire Offsite Occurrence of Mojave Milkweed or Adjacent Land	Yes	Yes

Source: COC BIO-18

The following steps and procedures were performed during construction between 2010 through 2014:

- Removal of 476 acres of habitat supporting special-status plants from the project footprint and establishing three special-status plant mitigation areas
- Preparation of the *Ivanpah SEGS Special-status Plant Protection and Monitoring Plan* (Revision 1) (Revised Protection Plan)
- Preparation of the *Ivanpah SEGS Special-status Plant Remedial Action Plan* (Remedial Action Plan)
- Development of a Seed Collection Plan for special-status plants. Appendix B of the Remedial Action Plan describes seed collection procedures for common species as well as special-status plants.
- Preparation of the *Closure, Revegetation, and Rehabilitation Plan for the Ivanpah Solar Electric Generating System (Revision 4)*. This plan includes the Gas Pipeline Revegetation and Monitoring Plan required by BIO-18.
- Implementation of special-status plant protection goals of 75 percent and salvage and replanting of Parish's club-cholla, as described in Section 5.2.1.4 of the Revised Protection Plan.
- The identification and establishment of Special-status Plant Protection Areas (SSPPA) were established within the solar field and within the three mitigation areas

- Exclusionary fencing "halos" was installed around selected localities of special-status plants throughout Ivanpah 1, 2 and 3. The exclusionary fences "halos" and the mitigation areas are collectively referred to as SSPPAs.
- Salvage and relocation of the special-status plant localities listed in Table 5-1 in the Revised Protection Plan
- Special-status plant revegetation within the natural gas line corridor as described in the 2013 Annual Monitoring Report
- Maintenance, including irrigation, of salvaged special-status plants within the Rare Plant Transplantation Area (RPTA-1)
- Designation of special-status plant localities within the 250-foot buffer as Environmentally Sensitive Areas (ESA)
- Completion of focused surveys for Mojave milkweed and Rusby's desert mallow on public lands
- Security for the implementation of plans
- Acquisition of offsite Mojave milkweed lands

The following summarizes how the project met the required special-status plant protection goals:

- In 2013, the 75 percent protection goal was achieved by protecting a total of 222 special-status plant localities (containing 301 plants) in the "halos" and the mitigation areas. The 75 percent protection goal was also met in 2010 and 2012.
- Parish's club-cholla not protected within mitigation areas were salvaged and replanted in the RPTA-1. Substantial numbers of special-status plants were salvaged exceeding the Revised Protection Plan salvage goals. As of the end of 2013, a total of 444 Mojave milkweed, desert pincushion, Parish's club-cholla, and Rusby's desert mallow had been salvaged from the solar field or impacted areas and transplanted into the RPTA-1.
- In addition to the plants salvaged and replanted in the RPTA-1, 430 desert pincushion in excess of the protection goals were salvaged during construction and replanted into the Common Succulent Transplant Area (CSTA). Plants remaining in the RPTA-1 and CSTA, will be used for revegetation of short-term disturbance areas, the gas line corridor, or remain onsite for remedial measures, should any be needed. Potential remedial measures are described in the Remedial Action Plan.
- Nine-awned pappus grass was not protected in the solar field with exclusionary fences due to the species ecology. Results of fall 2011 surveys for nine-awned pappus grass demonstrated that this species successfully re-established from the seed bank and no further projection measures for this species were needed.
- BIO-18 requires the re-establishment of special-status plants within the gas line corridor. In fall 2012, 41 special-status plants (20 desert pincushion, 20 Mojave milkweed, and 1 Parish's club-cholla) were transplanted into the gas line corridor. In 2013, one Mojave milkweed and one Rusby's desert mallow were transplanted into the upper part of the gas line.

- Between June and December 2013, special-status plant seed was hand-broadcasted in several locations within the gas line and three short-term disturbance areas near the CLA. Mojave milkweed was broadcast seeded in 24 locations, desert pincushion seed was placed into 16 areas, nine-awned pappus grass was seeded in 20 locations, and Rusby's desert mallow seed was sown into 21 locations.

4.9.2 Modification to Mitigation Measures

No modifications to BIO-18 were needed; therefore, none were performed.

4.9.3 Mitigation and Monitoring Items Still Ongoing

- No additional work on BIO-18 measures 1, 3, 5, 6, 7, 9, 10, and 11 is required to bring the project into compliance with BIO-18. The project is in compliance with COC BIO-18 measures 2, 4, and 8, but they are ongoing because these measures have long-term monitoring components, and they will be completed during operation over a several-year timeframe.
- Longer-term elements of BIO-18 such as plant survivorship monitoring within the SSPPAs (including the mitigation areas) and monitoring special-status re-establishment along the natural gas line corridor will be conducted following construction over a 10-year timeframe, as described in the Revised Protection Plan.
- Plant survivorship monitoring in the solar field and mitigation areas and natural gas line special-status plant re-establishment monitoring will be performed in the fall of 2014.
- Annual monitoring reports will be provided by January 31 of each calendar year within the 10-year monitoring timeframe.
- An as-built report is required as described in by the Revised Protection Plan. The BIO-18 as-built report will be included in the 2014 Annual Monitoring Report.

SECTION 5

Burrowing Owl Mitigation and Monitoring Plan

COC BIO-16 requires the implementation of a Burrowing Owl Mitigation and Monitoring Plan (BOMMP) and the subsequent reporting of results as part of the Construction Termination Report. As part of the BIO-16's verification language states the following:

> Within 30 days after completion of owl relocation and monitoring, and the start of ground disturbance or at least 90 days prior to the sale of power, the project owner shall provide to the CDFG and CPM a written construction termination report identifying how measures have been completed.

Since no burrowing owls needed to be relocated or monitored during construction, a report was not required after owl relocation or prior to the sale of power. However, this Construction Termination Report provides documentation as per the requirements of BIO-16. Since relocations were not conducted, a separate report will not be prepared. This report satisfies the construction termination reporting requirements of BIO-16.

5.1 Required Measures for Burrowing Owls

BIO-16 requires that preconstruction surveys, monitoring, setbacks, and relocation are to occur for burrowing owls encountered on the site during construction. The specific language of each of these measures are provided below and a brief description of the methods of compliance is also reported.

5.1.1 Preconstruction Surveys

"Complete a preconstruction survey for burrowing owls for any areas subject to disturbance from construction prior to the start of initial ground disturbance activities. If burrowing owls are present within 500 feet of the project site or linear facilities, then the CDFG burrowing owl guidelines (1995) shall be implemented;"

5.1.1.1 Preconstruction Survey Methods

Surveys were completed concurrently with breeding bird surveys from February 1 through August 31 each year prior to any ground disturbance. No breeding burrowing owls were observed. Incidental observations were made both inside and outside the project boundaries by biologists.

5.1.2 Monitor Burrowing Owl Pairs

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

5.1.2.1 Monitoring Methods

No burrowing owl pairs were detected within 500 feet of active construction.

5.1.3 Establish 500-foot Setback

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

5.1.3.1 Setback Establishment

No active burrows required a 500-foot setback.

5.1.4 Passively Relocate

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

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

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

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

5.1.4.1 Passive Relocation Measures

No burrowing owls were passively relocated.

5.1.5 Submit Burrowing Owl Mitigation and Monitoring Plan

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

5.1.5.1 Plan Submission

The Burrowing Owl Mitigation and Monitoring Plan (Revision 2) was submitted October 7, 2010**.** This report also serves as the construction termination report for BIO-16.

Appendix A
Documentation of Disturbance Area

CH2M HILL
2485 Village View Dr.
Suite 350
Henderson, NV
89074
Tel 702.369.6175
Fax 702.369.1107

May 16, 2012

Marc Sydnor
Director–Environmental Affairs
BrightSource Energy, Inc.
1999 Harrison Street
Suite 2150
Oakland, CA 94612

Subject: Ivanpah Solar Electric Generating System Mitigation Requirements

Dear Mr. Sydnor:

At the request of BrightSource Energy, Inc. (BSE), CH2M HILL conducted a survey and audit of the acreage occupied by the Ivanpah Solar Electric Generating System (ISEGS) project. CH2M HILL has acted as a third party consultant for BSE on the ISEGS project since 2007. The results of our findings are summarized below.

The total acreage forecast to be occupied by the facility was 3,582 acres in the CEC's Final Decision document. Subsequent to the Final Decision, minor modifications of the area occupied by the project resulted from alterations to the specific arrangement of the infrastructure in the Construction Logistics Area (CLA). These modifications reduced the overall acreage necessary for the ISEGS facility. Specifically, the acreage as determined in the legal description for the CLA was revised to a total of 3,471.36 acres. Therefore, the project footprint was reduced by 110.64 acres compared to the forecast in the CEC's Final Decision Document, Condition BIO-17.

On January 11, 2011, Solar Partners widened Collosseum Road, added several small areas within the CLA, and rerouted the natural gas pipeline north of the Ivanpah 3 project. These construction activities were calculated to increase the overall project footprint primarily within the CLA by approximately 12.31 acres. On February 21, 2011, Solar Partners utilized 18.08 acres of land for transplanting common succulent plants. Finally, Solar Partners occupied an additional 5.386 acres on May 7, 2012 as part of the installation of desert tortoise fencing along Yates Well Road and Silverton Road. A total of approximately 35.78 acres of land was added to the facility footprint. The facility now occupies the final footprint.

Figure 1 (attached) shows the original project footprint. The project footprint shown in Figures 2a and 2b is the measured actual final construction project footprint that includes the recent construction within the CLA. Figure 2a shows Ivanpah 1, 2, and 3; the rerouting of the natural gas pipeline; and the widening of Collosseum Road. Figure 2b shows the actual construction project footprint of the CLA.

The actual construction project footprint of the CLA was determined by CH2M HILL staff through measurement and mapping of geospatial coordinates using a handheld Trimble GeoExplorer XH© while walking a constant pace along the exterior of the desert tortoise fence on March 30, 2012. The CLA exterior desert tortoise fence encloses the areas where construction has been performed and encompasses the total area of disturbance. The acreage for the CLA presented in Figure 2b includes the gas line and Collosseum Road area of disturbance. The construction or actual project footprint for the gas line, Collosseum Road, and Ivanpah 1, 2, and 3 was determined based on 2012 aerial imagery and construction drawings provided by Bechtel.

Figures 3 and 3a show the differences between the project footprint used to calculate the CEC's forecasted disturbance and the actual construction project footprint. The comparison in Figure 3 shows no difference in the boundaries of the disturbed area for Ivanpah 1, 2, and 3. However, as shown in Figure 3a, there are areas within the CLA that have not been used for construction purposes. Table 1 provides a summary of the CEC's projected footprint and the actual construction project footprint. The value of the CEC Final Decision Area is approximately 87.57 acres less than forecast.

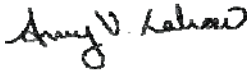
Table 1
Project Footprint
Comparison of Project Footprint for Mitigation Costs

Location	CEC Final Decision (acres)	Actual Area (acres)
Ivanpah I	914	913.49
Ivanpah 2	1097	1096.65
Ivanpah 3	1227	1227.04
CLA	344	257.25
TOTAL	3582	3494.43
Change in Permitted Project Footprint	-87.57	NA

CH2M HILL appreciates your continued business. Please feel free to contact me at 702-953-1208 if you have any further questions.

Sincerely,

CH2M HILL



Amy Lahav
Deputy Project Manager

c: Doug Davis

KERN RIVER GASLINE

Ivanpah 3

CEC: 1227.04 acres

Ivanpah 2

CEC: 1097 acres

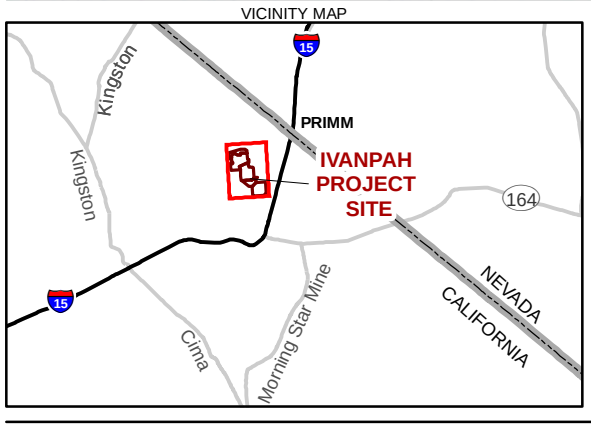
Construction Logistics Area

CEC: 344 acres

Ivanpah 1

CEC: 914 acres

VICINITY MAP



LEGEND

- Kern River Gasline

ISEGS Planned Disturbance Areas

- Ivanpah 1
- Ivanpah 2
- Ivanpah 3
- Roadway
- Gas line ROW (50ft)

Acreages based on VTN plans, 2010

N

0 1,000 2,000

Feet

FIGURE 1
Planned Disturbance Areas in ISEGS
Ivanpah Solar Electric Generating System

CH2MHILL

SAC \\ZION\SACGIS\PROJ\352897_IVANPAH\MAPFILES\2012_IVANPAH\ISEGS_IMPACTS_DESIGNS\FINAL_MAPS\FIGURE1_PLANNED_DISTURBANCE_ISEGS.MXD SSCOPES 5/15/2012 10:39:09 AM

KERN RIVER GASLINE

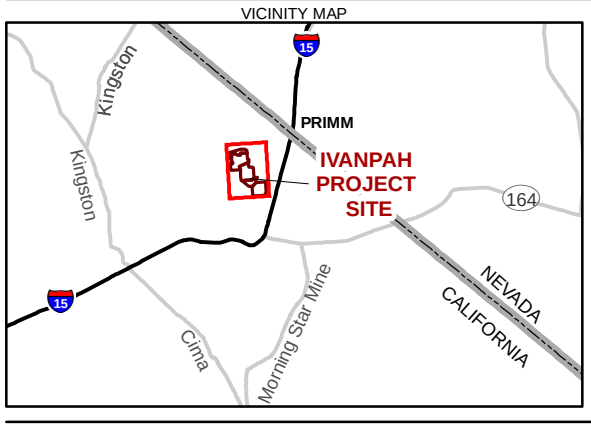
Ivanpah 3
1227.04 acres

Ivanpah 2
1096.65 acres

See Figure 2b for
Construction Logistics Area
Disturbance Detail

Ivanpah 1
913.5 acres

VICINITY MAP



LEGEND

- Kern River Gasline

ISEGS Actual Disturbance Areas

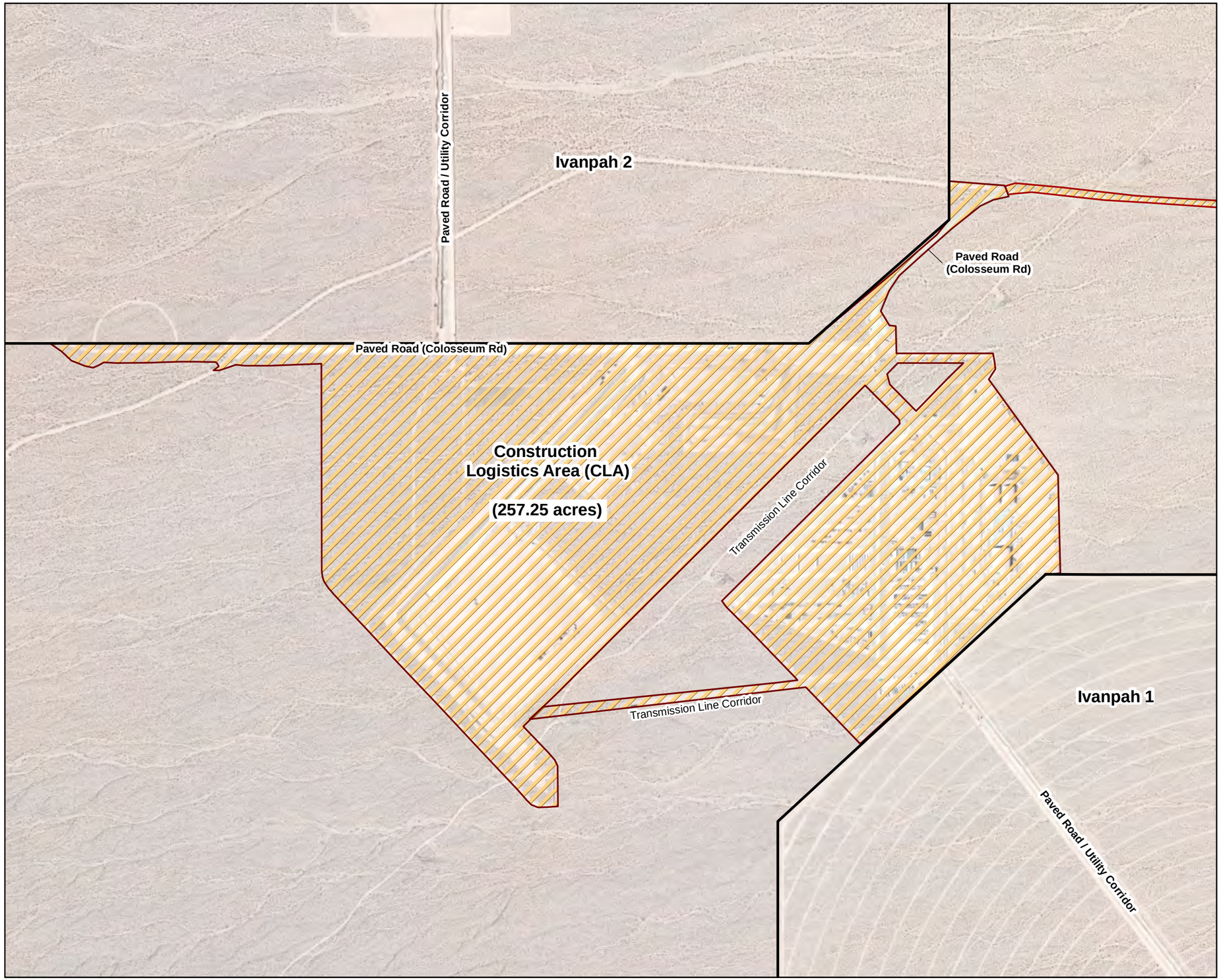
- Ivanpah 1
- Ivanpah 2
- Ivanpah 3
- Construction Logistics Area (CLA)
- Roadway
- Gas line ROW (50ft)

N

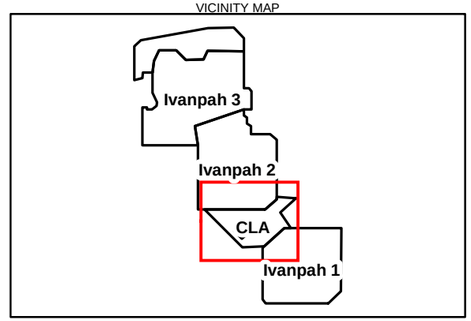
0 1,000 2,000
Feet

FIGURE 2a
Actual Disturbance Areas in ISEGS
Ivanpah Solar Electric Generating System

CH2MHILL



VICINITY MAP



LEGEND

- Actual Disturbance Area
- Project Site

N

0 350 700
Feet

FIGURE 2b
Construction Logistics Area
Actual Disturbance Areas
Ivanpah Solar Electric Generating System

KERN RIVER GASLINE

Planned Gas Line

Actual Gas Line

Ivanpah 3

Planned:
CEC: 1227 acres

Actual:
1227.04 acres

Ivanpah 2

Planned:
CEC: 1097 acres

Actual:
1096.65 acres

Colosseum Rd

Construction Logistics Area

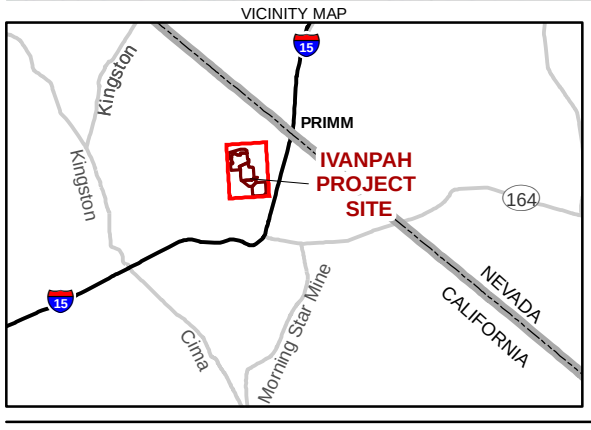
See Figure 3b for detail and acreages

Ivanpah 1

Planned:
CEC: 914 acres

Actual:
913.49 acres

VICINITY MAP



LEGEND

- Kern River Gasline

ISEGS Planned Disturbance Areas

- Ivanpah 1
- Ivanpah 2
- Ivanpah 3
- Construction Logistics Area (CLA)
- Roadway
- Actual Gas line ROW (50ft)
- Planned Gas line ROW (50ft)

Acreages based on VTN plans, 2010

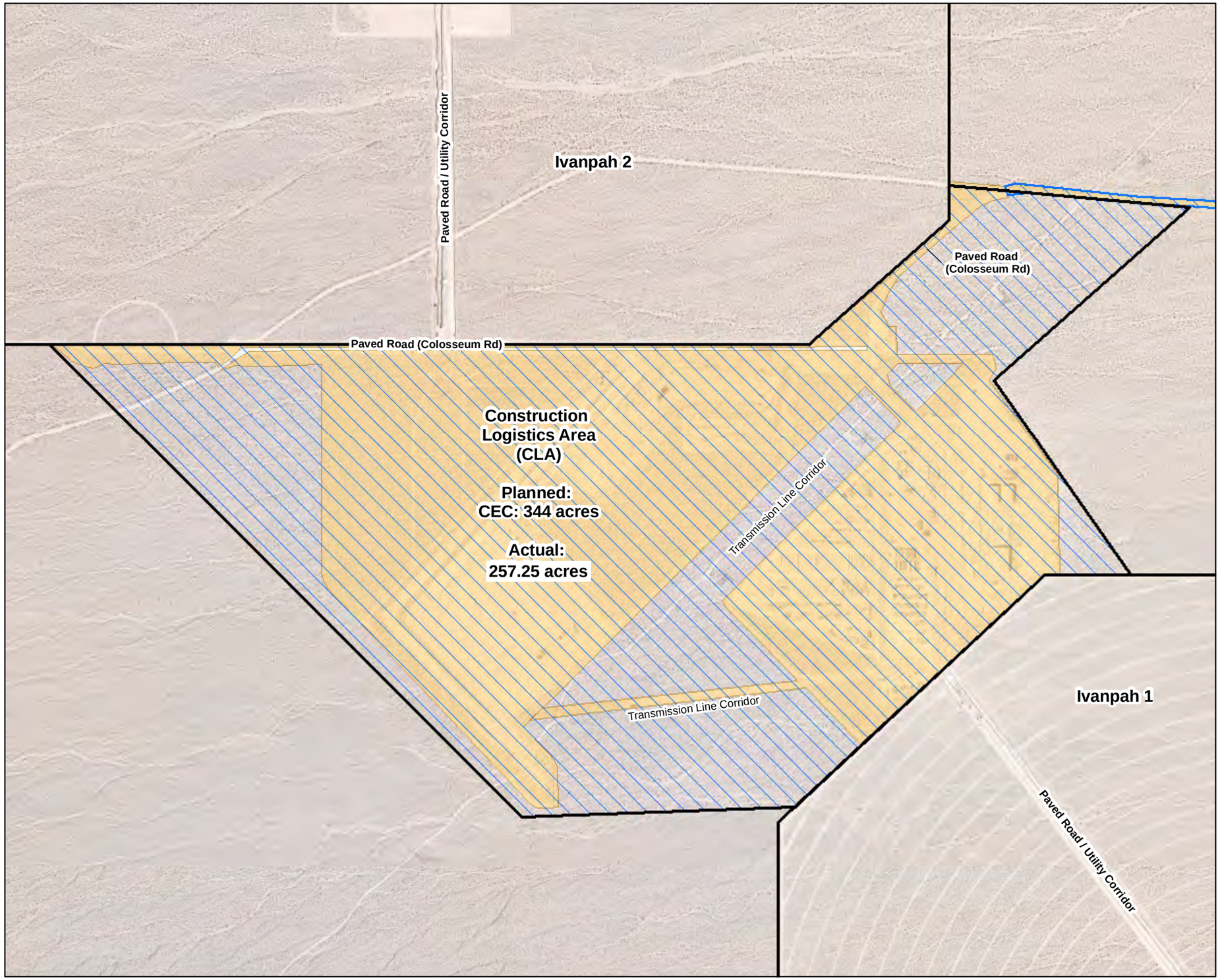
N

0 1,000 2,000
Feet

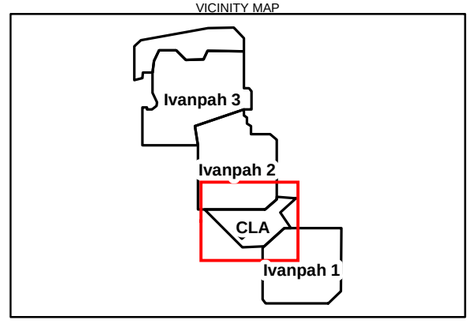
FIGURE 3a
Planned vs. Actual Disturbance Areas
Ivanpah Solar Electric Generating System

CH2MHILL

SAC \\ZION\SACGIS\PROJ\352897_IVANPAH\MAPFILES\2012_IVANPAH\ISEGS_IMPACTS_DESIGNS\FINAL_MAPS\FIGURE3A_COMPARED_DISTURBANCE_ISEGS.MXD SSCOPES 5/4/2012 12:32:10 PM



VICINITY MAP



LEGEND

- Project Site
- Planned Disturbed Area
- Actual Disturbance Area

Planned disturbance acreages based on VTN plans, 2010

N

0 350 700
Feet

FIGURE 3b
Construction Logistics Area
Planned vs. Actual Disturbance Areas
Ivanpah Solar Electric Generating System

CH2MHILL

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Tel 702.369.6175
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August 1, 2012

Carol Watson
Staff Biologist
California Energy Commission
1516 Ninth Street, MS-2000
Sacramento, CA 95814

Subject: ISEGS Final Footprint

Dear Ms. Watson:

At the request of BrightSource Energy, Inc. (BSE), CH2M HILL conducted a survey and audit of the acreage occupied by the Ivanpah Solar Electric Generating System (ISEGS) project. The results of these findings were submitted to the California Energy Commission on May 15, 2012. BSE received an email request for additional information on July 11, 2012 regarding the final footprint of the ISEGS project. The following documents are in response:

1. Construction drawings/blueprints
    a. Please refer to the attached CD "Construction drawings/blueprints"
        i. IvanpahU1-U2-U3_Stitch-small.jpg
        ii. Unit1_2_3-052512.jpg
        iii. Unit1_PB052512.jpg
        iv. Unit1-SF_052512.jpg
        v. Unit2_PB052512.jpg
        vi. Unit3_PB05252012.jpg
2. CH2MHILL staff GPS shapefiles (walked tortoise fence using Trimbles)
    a. Please refer to the attached CD "ISEGS CLA Shapefiles".
3. 2012 aerial imagery
    a. Please refer to attached CD folder "ISEGS Aerial Imagery 2012".
4. breakdown of final acreage impacts to state waters and desert tortoise habitat

RESPONSE: The Ivanpah Valley where the ISEGS project is located is home to the Mojave Desert Tortoise which is a federally listed Threatened species. The project area provides high quality habitat for this species. The CEC identified compensatory mitigation for the loss of approximately 3,582 acres of occupied habitat or the area disturbed by the final project footprint. As stated in the May 15th letter, the actual construction project footprint is 3494.426 acres or 87.57 acres less than the

area used to calculate the habitat loss. Since the 3,582 acres included all of the area within the ISEGS project footprint, any reduction in the project footprint also reduces the amount of desert tortoise habitat lost in equal proportions or by 87.57 acres.

Based on field data, washes were assigned a size category class between 1 and 5. Category 1 washes were the largest at 85 feet wide and Category 5 washes were the smallest and were merely weakly expressed erosional/flow channels that generally lack defined cut band and are no more than 4 feet wide. In the CLA, where all of the project footprint reduction is located, there were estimated to be 3.95 acres of Category 3 (11-20 feet wide) washes, 5.54 acres of Category 4 (5-10 feet) washes, and 5.53 acres of Category 5 (1-4 feet) washes for a total of 15.02 acres. This information was included in Exhibit A "Supplemental Information for the California Department of Fish and Game 1600 Streambed Alteration Agreement Application" for the Ivanpah Solar Energy Project: Eastern San Bernardino County, California, prepared by CH2M HILL for the Solar Partners in June 2009. Since the ephemeral washes in the CLA are generally well distributed, and the amount of reduction is small, an estimate of the amount of ephemeral washes impacted can be determined by taking the percentage of land reduction in the CLA of 2.44% and applying that to the waters of the state estimate of 15.02 acres. This reduces the amount of impacted waters of the state to 14.65 acres.

Please let me know if you have any further questions or comments. I can be reached via cell phone at 702-427-0349 or via email at Amy.Lahav@CH2M.com.

Sincerely,

CH2M HILL

Amy Lahav
Assistant Project Manager

c: Marc Sydnor/BSE
Doug Davis/BSE
John Carrier/CH2M HILL

Appendix B
BRMIMP Tracking Table

APPENDIX B
Biological Resources Mitigation Implementation and Monitoring Plan (BRMIMP) Tracking Table
Construction Termination Report Ivanpah Solar Electric Generating System

Event Description	Expected Dates and Essential Biological Resource Protection Measures	Date Completed
No. 1: Certification by CEC	Expected Date is September 22, 2010 by CEC, and October 6, 2010 by BLM	9/22/10 & 10/7/10
Preliminary Stage (Fence)		
No. 2: Biologists and botanists field preparation	July 2010 – September 2010	
	Wildlife: Assemble materials required for clearance surveys and translocating tortoises. Includes fiber-optic scopes, tortoise tags. Obtain approval for Designated Biologists (DM) and Biological Monitors (BM).	9/30/2010
	Plants: During pre-construction, plant activities will include the following: Avoid impacts to rare plants by excluding from the project area a 433-acre area in the northernmost portion of Ivanpah 3 that is densely populated with rare plants; establish two additional Rare Plant Mitigation Areas in the CLA within which direct impacts to rare plants will be completely avoided; demark and/or fence Mojave milkweed and Rusby's desert mallow rare plant localities proposed for avoidance within the heliostat array to protect the rare plants from direct impacts during pre-construction and construction activities; salvage individual Mojave milkweed and Rusby's desert mallow plants that cannot be avoided for use in translocation, revegetation, and rehabilitation; salvage of all rare cactus (desert pincushion and Parish's club-cholla) onsite for use in translocation, revegetation, and rehabilitation.	11/1/2010
No. 3: Site and Construction Logistics Area (CLA) staked by land surveyors	July 2010 - September 2010	9/30/2010 for areas subject to construction in Phase I
	Administer WEAP (refer to attached BIO-6 Worker Environmental Awareness Program).	9/30/2010
	Wildlife: Survey vehicles to remain on existing roads.	9/30/2010
No. 4: Improved Colosseum Road location staked by land surveyors	July 2010 - September 2010	
	Administer WEAP (refer to attached BIO-*6 Worker Environmental Awareness Program).*	9/30/2010
	Wildlife: Survey vehicles to remain on existing roads.	9/30/2010

APPENDIX B
Biological Resources Mitigation Implementation and Monitoring Plan (BRMIMP) Tracking Table
Construction Termination Report Ivanpah Solar Electric Generating System

Event Description	Expected Dates and Essential Biological Resource Protection Measures	Date Completed
No. 5: Weed inspection station established	October 2010- June 2011	
	Plants: A weed inspection station will be established on the first day of construction. Until the permanent facility is operational (see No. 26) vehicles that require washing will be monitored by security staff and turned back to be washed in Primm before returning to the site. A vehicle log will be included in monthly compliance reports.	10/6/2010
No. 6: 10-foot-wide internal perimeter road (within the staked fence line) is cleared of vegetation and graded	October 2010 – November 2010 (for Phase I of construction)	11/30/2010
	Continue to administer WEAP to all new personnel at site or all subsequent events.	Ongoing
	Administer WEAP (refer to attached BIO-6 Worker Environmental Awareness Program).	11/30/2010
	Wildlife:	
	An AB or BM will be onsite during installation of the temporary desert tortoise fence. If installation of temporary fencing, surveying or clearing is occurring at more than one location, more than one AB may need to be onsite to provide appropriate supervision. After installation of this temporary fencing and prior to initiation of construction activities, an AB and/or BM will perform a pre-construction sweep for desert tortoises. An AB will relocate any desert tortoises found in the project impact area. Desert tortoises will be moved to suitable habitat (at least 300 feet from the project site) outside the impact area and placed in a natural or artificial burrow or under a shrub, depending on time of day and year. An AB will also be available to relocate any desert tortoises that may wander into the impact area during construction. All ABs or BMs will have a copy of the Biological Opinion (Attachment B), Translocation Plan (BIO-9 attached), and be familiar with the COC BIO-11 all activities involving desert tortoise clearance surveys, handling, health assessments, and other related translocation activities.	11/30/2010
	Concurrent with start of perimeter fencing, construct minimum of 16 desert tortoise holding pens for use in quarantining tortoise removed from Ivanpah 1 and the CLA.	11/30/2010
	Plants: Concurrent with start of perimeter fencing, botanists will install protective fencing for rare plants and salvage any rare plants within the fence line corridor. Environmentally Sensitive Areas (ESAs) will be marked with signs.	11/30/2010

APPENDIX B
Biological Resources Mitigation Implementation and Monitoring Plan (BRMIMP) Tracking Table
Construction Termination Report Ivanpah Solar Electric Generating System

Event Description	Expected Dates and Essential Biological Resource Protection Measures	Date Completed
No. 7: Temporary (stand alone) tortoise fence installed on perimeter of Ivanpah 1	September 2010 – October 2010	10/29/2010
	Administer WEAP (refer to attached BIO- 6 Worker Environmental Awareness Program).	10/29/10
	Wildlife: An AB or BM will be onsite during installation of the temporary desert tortoise fence. If installation of temporary fencing, surveying or clearing is occurring at more than one location, more than one AB may need to be onsite to provide appropriate supervision. After installation of this temporary fencing and prior to initiation of construction activities, an AB and/or BM will perform a pre-construction sweep for desert tortoises. An AB will relocate any desert tortoises found in the project impact area. Desert tortoises will be moved to suitable habitat (at least 300 feet from the project site) outside the impact area and placed in a natural or artificial burrow or under a shrub, depending on time of day and year. An AB will also be available to relocate any desert tortoises that may wander into the impact area during construction. All ABs or BMs will have a copy of the Biological Opinion (Attachment B), Translocation Plan (BIO-9 attached), and be familiar with the COC BIO-11 for all activities involving desert tortoise clearance surveys, handling, health assessments, and other related translocation activities.	11/4/2010
	Plants: Botanists continue installation of protective fencing for rare plants and salvage plants within the fence line corridor. Environmentally Sensitive Areas (ESAs) will be marked with signs.	10/29/10
No. 8: Permanent security/Combo fence installed on perimeter of Ivanpah 1	September 2010 – December 2010	12/31/10
	Wildlife: Same as No. 7. Construction crews will require monitoring by DB/BMs until the fence installation is complete.	12/31/10
	Plants: Botanists continue installation of protective fencing for rare plants and salvage plants within the fence line corridor.	10/29/10
No. 9: Tortoise exclusion fence installed along Colosseum Road	September 2010 – October 2010	10/29/10
	Wildlife: An AB or BM will be on site during installation of the fence.	10/29/10

APPENDIX B
Biological Resources Mitigation Implementation and Monitoring Plan (BRMIMP) Tracking Table
Construction Termination Report Ivanpah Solar Electric Generating System

Event Description	Expected Dates and Essential Biological Resource Protection Measures	Date Completed
No. 10: Area within fenced perimeters of Ivanpah 1, and later Ivanpah 2 and 3, is completed	Ivanpah 1 and CLA: October 2010; Ivanpah 2: September 2011; Ivanpah 3: September-October 2011	Ivanpah 1 and CLA: 11/4/2010; Ivanpah 2: 9/28/2011; Ivanpah 3: 10/10/2011
	Wildlife: Within 24 hours prior to the initiation of construction of the desert tortoise-exclusion fence, a desert tortoise survey would be conducted by DB/BMs of those linear areas using techniques providing 100-percent coverage of the construction area and an additional transect along both sides of the fence line transect to provide coverage of an area approximately 90 feet wide, centered on the fence alignment. Transects would be no greater than 30 feet apart. Two passes of complete coverage would be conducted. All desert tortoise burrows, and burrows constructed by other species that might be used by desert tortoises, would be examined to determine occupancy. Any burrow within the fence line corridor would be collapsed after confirmation that a desert tortoise does not occupy it, or if occupied, the desert tortoise has been removed.	Ivanpah 1 and CLA: 11/4/2010; Ivanpah 2: 9/28/2011; Ivanpah 3: 10/10/2011
	Within 72 hours after the area to be cleared is fully enclosed with tortoise exclusion fencing, a desert tortoise clearance survey would be initiated per USFWS protocol (USFWS 1992) and project specific Guidelines (USFWS 2008). At least three complete clearance sweeps with 100 percent coverage would be conducted as described above. Each separate survey would be walked in a perpendicular direction to allow opposing angles of observation. The area will be considered clear after two complete passes have discovered no new desert tortoises. All ABs or BMs will have a copy of the Biological Opinion (Attachment B), Translocation Plan (BIO-9 attached), and be familiar with the COC BIO-11 for all activities involving desert tortoise clearance surveys, handling, health assessments, and other related translocation activities.	Ivanpah 1 and CLA: 11/4/2010; Ivanpah 2: 9/28/2011; Ivanpah 3: 10/10/2011
	Conduct concurrent clearance surveys for burrowing owls (BIO-16), Gila monsters and badger (BIO-11).	Ivanpah 1 and CLA: 11/4/2010; Ivanpah 2: 9/28/2011; Ivanpah 3: 10/10/2011
	Note: Nesting bird surveys (BIO-15) are required if construction occurs between February 1 and August 31.	2/1/2012 – 8/31/2012

Event Description	Expected Dates and Essential Biological Resource Protection Measures	Date Completed
No. 11: Ivanpah 1, and later Ivanpah 2 and 3, is completed -- *CONTINUED*		
	Plants: Monitoring activities specific to special-status plants include: the Designated Biologist will oversee the salvage and transplantation of special-status plants designated on final project plans as "salvage". Salvaged plants will be installed in the Rare Plant Transplantation Area (RPTA); regular inspections of salvaged plants placed in the RPTA will be conducted by the Botanical Monitors to check that salvaged plants are watered and maintained as needed to maximize survivorship throughout the construction period; salvaged native plants that are stored offsite in a native plant nursery, will also be inspected by the Botanical Monitor to document that plants are maintained in good condition; the Botanical Monitor will oversee construction to confirm that no unauthorized construction activities occur in Rare Plant Avoidance Areas (RPAAs); inspections of all fenced special-status plants within the heliostat array will be conducted by the Botanical Monitor to document that avoidance fencing is maintained in good condition; fencing surrounding the Rare Plant Mitigation Areas will be inspected regularly to check that fencing is maintained in good condition; the Botanical Monitor will monitor general construction activities for compliance with regulatory terms and conditions that pertain to special-status plants; and the Botanical Monitor will notify the project owner, BLM's Authorized Officer, and the CPM of any noncompliance with any biological resources condition of certification.	Ongoing
Construction of Fiber-optic and Gas Lines		
No. 12: Fiber-optic line construction	April 2011 – July 2012	7/2/2012
	Wildlife: DB/BMs clear area of all desert tortoises immediately prior to construction and monitor construction.	7/2/2012
No. 13: Gas line construction	March 2011 – April 2013	4/21/2013
	Wildlife: DB/BMs clear area of all desert tortoises immediately prior to construction and monitor construction outside of fenced perimeter.	Ongoing
	Plants: Prior to construction, survey and salvage special-status plants and common succulents within the linear right-of-way and sub-station and transplant to onsite nurseries. Monitor the adjacent mitigation areas to ensure construction does not intrude or extend beyond the right-of-way.	Ongoing

APPENDIX B
Biological Resources Mitigation Implementation and Monitoring Plan (BRMIMP) Tracking Table
Construction Termination Report Ivanpah Solar Electric Generating System

Event Description	Expected Dates and Essential Biological Resource Protection Measures	Date Completed
Preliminary Stage (Fence) of Ivanpah 2 and 3		
No. 14: 10-foot-wide internal perimeter road (within the staked fence line) is cleared of vegetation and graded	October 2011 – January 2011	1/5/2012
	Continue to administer WEAP of all new personnel at site or all subsequent events (refer to attached BIO-6 Worker Environmental Awareness Program).	Ongoing
	Wildlife: Same as No. 6	1/5/2012
	Plants: Same as No. 6	1/5/2012
No. 15: Perimeter fence construction in Ivanpah 2	March 2011 – June 2012	6/6/2012
	Wildlife: Same as No. 7 and No. 8.	6/6/2012
	Plants: Same as No. 7 and No. 8	6/6/2012
No. 16: Perimeter fence construction Ivanpah 3	March 2011 – June 2012	6/13/2012
	Wildlife: Same as No. 7 and No. 8.	6/13/2012
	Plants: Same as No. 7 and No. 8	6/13/2012
Site Development Stage (Primarily inside fenced areas)		
No. 17: Rough Grading of sites	Ivanpah 1 & Common areas: November 2010 – February 2011	2/1/2011
	Ivanpah 2: January 2011 – April 2011	4/1/2011
	Ivanpah 3: April 2011 – June 2011	8/31/2011
	Wildlife: A Biological Monitor will be on site during initial grading to ensure no tortoises remain on the site. If a tortoise is found it will be translocated as previously described.	8/31/2011
	Conduct concurrent clearance surveys for burrowing owls (BIO-16), Gila monsters and badger (BIO-11).	8/31/2011
	Note: Nesting bird surveys (BIO-15) are required if construction occurs between February 1 and August 3.	2/1/2012-8/31/2012
	Plants: Rare plant protection areas, ESAs and RPAAs monitored to ensure construction activities don't intrude. Monitor for newly established special-status species and salvage and transplant to on site nurseries.	5/31/2014

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Event Description	Expected Dates and Essential Biological Resource Protection Measures	Date Completed
No. 18: Pads, parking areas and construction laydown areas graded if needed, and construction trailers moved to locations within the CLA	November 2010 – January 2011	1/24/2011
	Wildlife: No biological monitoring required for wildlife for these construction activities as long as all of the previously described construction events have occurred (e.g., perimeter fence installed) and resources protection measures have been implemented. Monitoring of overwintering tortoises in holding pens will be ongoing.	5/31/2014
	Plants: Same as No. 17	5/31/2014
No. 19: Locations of roads, buildings and structures staked by land surveyors	November 2010 - Present	
	Wildlife: No biological monitoring required for wildlife as long as all of the previously described construction events have occurred (e.g., perimeter fence installed) and resources protection measures have been implemented.	5/31/2014
No. 20: Grading of power block, building pads, internal roads and solar field (as necessary)	Ivanpah 1 & Common: November 2010 - October 2011	10/10/2011
	Ivanpah 2: January 2011 – November 2011	11/3/2011
	Ivanpah 3: April 2011 – June 2012	6/5/2012
	Wildlife: No biological monitoring required for wildlife as long as all of the previously described construction events have occurred (e.g., perimeter fence installed) and resources protection measures have been implemented. *(Note: Biological monitoring required as per Biological Opinion)*	5/31/2014
	Plants: Same as No. 17	5/31/2014
No. 21: Vegetation mowed to within 10-12 inches of ground surface	Ivanpah 1, CLA, Ivanpah 2, and Ivanpah 3: December 2010 – November 2012	11/22/2012
	Wildlife: No biological monitoring required for wildlife as long as all of the previously described construction events have occurred (e.g., perimeter fence installed) and resources protection measures have been implemented. *(Note: Biological monitoring required as per Biological Opinion)*	Ongoing as per BO

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Event Description	Expected Dates and Essential Biological Resource Protection Measures	Date Completed
	Plants: Same as No. 17	Ongoing
No. 22: Colosseum Road graded and paved from golf course to plant	October 2010 – November 2010	July 2011
	Wildlife: DB/BMs clear fenced area of all desert tortoises prior to construction.	11/3/2010
	Plants: No rare plants are located along Colosseum Road.	N/A
No. 23: Internal roads graded, graveled, or paved	Ivanpah 1: October 2010 – November 2012	9/12/2013
	Ivanpah 2: January 2011- February 2013	11/18/2013
	Ivanpah 3: April 2011 – February 2013	12/4/2013
	Wildlife: No biological monitoring required for wildlife as long as all of the previously described construction events have occurred (e.g., perimeter fence installed) and resources protection measures have been implemented. *(Note: Biological monitoring required as per Biological Opinion)*	5/31/2014
	Plants: Same as No. 17	5/31/2014
No. 24: Power equipment and materials brought onsite	November 2010 – May 2014	5/31/2014
	Wildlife: No biological monitoring required for wildlife as long as all of the previously described construction events have occurred (e.g., perimeter fence installed) and resources protection measures have been implemented.	N/A
	Plants: No monitoring necessary required for plants as long as all of the previously described construction events have occurred and resources protection measures have been implemented.	5/31/2014
No. 25: Fabrication shops erected	November 2010 – June 2011	6/28/2011
	Wildlife: No biological monitoring required for wildlife as long as all of the previously described construction events have occurred (e.g., perimeter fence installed) and resources protection measures have been implemented.	6/28/2011
	Plants: Same as No. 24	5/31/2014

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Event Description	Expected Dates and Essential Biological Resource Protection Measures	Date Completed
No. 26: Permanent wheel-washing station established	January 2011 - June 2011	6/30/2011
	Wildlife: No biological monitoring required for wildlife as long as all of the previously described construction events have occurred (e.g., perimeter fence installed) and resources protection measures have been implemented.	6/30/2011
	Plants: Same as No. 24	6/30/2011
No. 27: Power block excavated and foundations poured	Ivanpah 1: February 2011 – April 2012	4/3/2012
	Ivanpah 2: April 2011 – July 2012	7/24/2012
	Ivanpah 3: June 2011 - May 2012	5/31/2012
	Wildlife: No biological monitoring required for wildlife as long as all of the previously described construction events have occurred (e.g., perimeter fence installed) and resources protection measures have been implemented.	5/31/2014
	Plants: Same as No. 24	5/31/2014
No. 28: Installation of underground piping and wiring	Ivanpah 1: December 2010 - May 2012	5/22/2012
	Ivanpah 2: February 2011 - April 2013	4/24/2013
	Ivanpah 3: April 2011 - September 2013	9/19/2013
	Wildlife: No biological monitoring required for wildlife as long as all of the previously described construction events have occurred (e.g., perimeter fence installed) and resources protection measures have been implemented.	Ongoing as per BO
	Plants: Same as No. 24	Ongoing
No. 29: Construction of power block	Ivanpah 1: February 2011 – December 2013	12/30/2013
	Ivanpah 2: April 2011 – December 2013 Ivanpah 3: September 2011 – December 2013	12/31/2013 12/31/2013
	Wildlife: No biological monitoring required for wildlife as long as all of the previously described construction events have occurred (e.g., perimeter fence installed) and resources protection measures have been implemented.	5/31/2014
	Plants: Same as No. 24	5/31/2014

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Event Description	Expected Dates and Essential Biological Resource Protection Measures	Date Completed
No. 30: Heliostat materials brought onsite	Feb 2011- September 2013	9/30/2013
	Wildlife: No biological monitoring required for wildlife as long as all of the previously described construction events have occurred (e.g., perimeter fence installed) and resources protection measures have been implemented.	5/31/2014
	Plants: Same as No. 24	5/31/2014
No. 31: Construction of Administration/warehouse building	February 2011 – November 2012	11/7/2012
	Wildlife: No biological monitoring required for wildlife as long as all of the previously described construction events have occurred (e.g., perimeter fence installed) and resources protection measures have been implemented.	11/7/2012
	Plants: Same as No. 24	5/31/2014
No. 32: Construction of heliostat field	Ivanpah 1: March 2011 - December 2012	12/17/2012
	Ivanpah 2: May 2011 - September 2013	9/10/2013
	Ivanpah 3: May 2012 - October 2013	10/7/2013
	Wildlife: No biological monitoring required for wildlife as long as all of the previously described construction events have occurred (e.g., perimeter fence installed) and resources protection measures have been implemented.	5/31/2014
	Plants: Rare plant protection areas, ESAs and RPAAs monitored to ensure construction activities don't intrude. Monitor for newly established special-status species and salvage and transplant to on-site nurseries.	Ongoing
Solar plant construction	Ivanpah 1 December 2010 – January 2013	9/20/2013
	Implement all of the preceding measures for construction.	5/31/2014
Solar plant construction	Ivanpah 2 January 2011 – April 2013	12/15/2013
	Implement all of the preceding measures for construction.	5/31/2014
Solar plant construction	Ivanpah 3 July 2011 – August 2013	12/6/2013
	Implement all of the preceding measures for construction.	5/31/2014

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Event Description	Expected Dates and Essential Biological Resource Protection Measures	Date Completed
Removal/Restoration Phase		
Construction completed, all construction equipment and temporary buildings removed.	March 2013 - November 2013	11/30/2013
	Wildlife: The permanent exclusion fencing would be inspected bimonthly (i.e., every other month) and after major rainfall events	Not started
	Plants: Areas used for construction that are no longer required for operation are restored per the Closure, Revegetation and Rehabilitation Plan. Special-status plant monitoring will be conducted within the RPAAs.	Not started
Operation (Inside fenced areas)		
	Life of the project (45 Years)	Not started
	WEAP repeated annually for permanent employees, and will be routinely administered within one week of arrival to any new construction personnel.	Not started
	Wildlife: The permanent exclusion fencing is inspected bimonthly (i.e., every other month) and after major rainfall events.	Not started
	Implement ongoing measures of Raven Management Plan (BIO-12).	Not started
	Implement ongoing measures of Tortoise Translocation Plan. Monitoring and adaptive management measures for first 3 years of operation (see BIO-9 and Biological Opinion).	Not started
	Implement ongoing measures of Avian and Bat Monitoring and Management Plan (BIO-21)	Not started
	Plants: Maintain nursery plants. Special-status plant monitoring will be conducted within the RPAAs. An adaptive management approach will be used during long-term monitoring as per BIO-14.	Not started
Maintenance (Inside and outside of fenced areas)		
Class I activities (do not result in surface disturbance)	Life of the project (45 Years)	Not started
	Wildlife: DM/BM administers WEAP and monitors activity outside of fenced area that requires vehicles or construction equipment.	Not started
Class II activities (results in minimal surface disturbance)	Life of the project (45 Years)	Not started
	Wildlife: *DM/BM administers WEAP and monitors activity outside of fenced area that requires vehicles or construction equipment*	Not started
	Plants: *Minimize new disturbance – avoid vegetation.*	Not started

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Event Description	Expected Dates and Essential Biological Resource Protection Measures	Date Completed
Class III activities (result in new, major, surface disturbance outside of fenced areas)	Life of the project (45 Years)	Not started
	Wildlife: *Implement measures established for construction activities outside of fenced areas.*	Not started
	Plants: Implement appropriate measures in the Closure, Revegetation and Rehabilitation Plan (BIO-14).	Not started
Facility Closure		
Decommissioning.	45 years from project's start of operation	Not started
	Implement measures of the Closure, Revegetation and Rehabilitation Plan (BIO-14)	Not started