CH2M HILL
2485 Natomas Park Drive
Suite 600
Sacramento, CA 95833
Tel 916-920-0300
Fax 916-920-8463

CH2MHILL

July 22, 2008
File No.: 04.02.06.02
Project No. 357891

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

RE: Data Response, Set 1E
Ivanpah Solar Electric Generating System (07-AFC-5)

Dear Mr. McFarlin:

On behalf of Solar Partners I, LLC, Solar Partners II, LLC, Solar Partners IV, LLC, and Solar Partners VIII, LLC, please find attached one original and 12 hard copies of Data Response, Set 1E, which addresses Staff's data requests dated December 12, 2007.

Please call me if you have any questions.

Sincerely,

CH2M HILL

John L. Carrier, J.D.
Program Manager

Enclosure
c: POS List
Project File

Ivanpah Solar Electric Generating System (ISEGS)

(07-AFC-5)

Data Response, Set 1E

(Responses to Data Requests: Biological Resources, Cultural Resources, and Soil & Water Resources)

Submitted to the

California Energy Commission

Submitted by

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

July 22, 2008

With Assistance from

CH2MHILL
2485 Natomas Park Drive
Suite 600
Sacramento, CA 95833

Contents

Section Page

Introduction **1**

Biological Resources (13-14, 21-22, 29) **2**

Cultural Resources (37) **8**

Soils and Water Resources (57-58) **9**

Introduction

Attached are Solar Partners I, LLC, Solar Partners II, LLC, Solar Partners IV, LLC, and Solar Partners VIII, LLC (Applicant) responses to the California Energy Commission (CEC) Staff's data requests numbers 1 through 116 for the Ivanpah Solar Electric Generating System (Ivanpah SEGS) Project (07-AFC-5). The CEC Staff served these data requests on December 12, 2007, as part of the discovery process for Ivanpah SEGS. The responses are grouped by individual discipline or topic area. Within each discipline area, the responses are presented in the same order as CEC Staff presented them and are keyed to the Data Request numbers (1 through 116). New graphics or tables are numbered in reference to the Data Request number. For example, the first table used in response to Data Request 15 would be numbered Table DR15-1. The first figure used in response to Data Request 15 would be Figure DR15-1, and so on. AFC figures or tables that have been revised have "R1" following the original number, indicating revision 1.

Additional tables, figures, or documents submitted in response to a data request (supporting data, stand-alone documents such as plans, folding graphics, etc.) are found at the end of a discipline-specific section and may not be sequentially page-numbered consistently with the remainder of the document, though they may have their own internal page numbering system.

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

Biological Resources (13-14, 21-22, 29)

Background

There are significant populations of Sahara mustard, schismus, and cheatgrass in the project region. One of the BLM's primary responsibilities is to curtail the spread of invasive species for a number of reasons. For example, invasive species increase fire risk, reduce natural habitat for native plants and wildlife, and compete with native plants for water and other resources. On AFC page 5.2-60, section 5.2.11.2 Mitigation Measure 2 - Noxious Weeds states that a Noxious Weed Control Plan will be prepared and submitted to BLM prior to construction. However, BLM needs to review a draft Weed Management Plan sooner to facilitate completion of the final plan according to the template BLM provided to the applicant. Similarly, information on the soil source(s) for foundations and structural support is needed because soils brought in from another location will have to be tested for invasive species seeds and other contents.

Data Request

13. Please prepare and submit a Weed Management Plan to the Energy Commission and BLM that includes herbicides to be used in control methods.

Response: A draft Weed Management Plan is in preparation and should be available by the end of July, 2008.

14. Describe specific methods for weed management under heliostat structures (e.g., pre-emergent herbicide or other methods).

Response: The Weed Management Plan prepared in response to Data Request 13 will include information on weed control under the heliostat structures.

Background

Certain common California desert plants protected under the California Desert Native Plants Act and San Bernardino County Development Code (title 8, division 9, chapter 4, section 89.0420) require a permit from the Agricultural Commissioner or other applicable County Reviewing Authority prior to removal or harvesting. In the project area these include cacti, Mojave yucca, and any creosote bush rings ("creosote rings") above a 10-foot diameter. Although creosote bush grows throughout the project area, the applicant did not state whether any creosote rings were searched for or documented.

Data Request

21. Please state the number of creosote rings found in the project area. If any are present, please provide mapped locations and size estimates.

Response:

Overview

High-resolution aerial photographs were examined to identify if creosote bush rings occur within the Ivanpah SEGS project site or the project vicinity.

Due to size, the entire Ivanpah SEGS project site was not included in the map review. The map review was limited to directly counting the number of creosote rings within approximately 680 acres (or about 16 percent of the total 4,217-acre biological survey area). Direct counts revealed the presence of 133 clonal rings within the 680-acre area that was sub sampled (Tables DR21-1 and DR21-2 provided at the end of this data response). Of the 133 clonal rings, approximately 35 are greater than 10-feet in diameter. Results of the sub sampling were extrapolated across the entire 4,217-acre survey area to obtain a total site estimate of 1,307 creosote bush rings, of which an estimated 337 would be greater than 10 feet in diameter (Tables DR21-1 and DR21-2).

Aerial photographs for seven areas within the Mojave Desert in the larger project vicinity were also reviewed to estimate the number of creosote bush rings occurring within defined areas. The estimated densities of clonal creosote rings of the seven reviewed areas and the estimated total number of creosote rings per site are presented in Table DR21-3.

As described in further detail below, results of this review determined that creosote rings greater than 10-feet in diameter are relatively common at the Ivanpah SEGS project site, and in the larger project vicinity. Therefore, it is likely that they do not meet the definition of an unusual plant assemblage (UPA). The creosote rings were therefore not mapped for reasons further detailed below.

Results of Ivanpah SEGS Creosote Ring Investigation

1. **Aerial Photographic Review of Ivanpah SEGS project site.** Orthorectified aerial photographs of the project site with 1-foot resolution were obtained in early spring 2008. The photographs for a total of 680 acres within the Ivanpah SEGS project site were reviewed to determine if any creosote rings were present onsite (Tables DR21-1 and DR21-2). A total of 133 creosote rings were counted within the 680-acre sub sampled area. Of the 133, thirty-five creosote rings are 10 feet or greater in diameter. Results of this sub sampling were then extrapolated across the entire 4,217-acre biological survey area to obtain a total site estimate of 1,307 creosote rings (Tables DR21-1 and DR21-2). About 25 percent of the 1,307 creosote rings (or 337) are estimated to be 10 feet or greater in diameter.

2. **Satellite Imagery Review of Seven Additional Locations.** To expeditiously determine whether creosote bush rings are "unusual" in the sense of being rare across this portion of the Mojave Desert, seven localities were randomly selected in the larger California Mojave Desert. The only criteria were that the sites needed to be on an alluvial fan, and within the elevation range of creosote bush vegetation. Google Earth™ images of these seven sites were searched for creosote rings. Results of this review (Table DR21-3) suggest that creosote rings

are not unusual, but common in the other areas within Inyo and San Bernardino counties, with greater densities of creosote rings noted at higher elevations.

3. **Geomorphic and Historical Considerations.** Geomorphic investigations revealed that some areas of the project site have older soils (see Data Response 40, Set 1B), which would be more likely to support older (larger) creosote rings, and perhaps more of them. To determine if creosote rings were either larger or more numerous in areas with older soils, creosote rings in areas with younger, actively eroding soils were compared to areas with older soils using the 1-foot resolution aerial photographs. No substantial differences in the density or size were identified in areas with young soils compared to those with old soils. The oldest soils on site are estimated to be from the early Holocene and Late Pleistocene. The younger soils are estimated to be from middle to late Holocene age and, therefore, less than 8,000 B.P., and cover most of the site. Given the uniformity of creosote ring density and diameter, even on older soils, and that the majority of the site is covered by relatively young soils, it seems unlikely that any creosote rings within the site are old (on the order of 11,700 B.P. as in the Lucerne and Johnson Valleys [Vasek, 1980]). This agrees with paleoecological data suggesting that, on its postglacial migration northward through the Mojave Desert, creosote bush did not arrive at this latitude until close to 8,000 B.P. and perhaps later (Hunter et al., 2001).

Interpretation

Results suggest that the creosote rings that are 10 feet or more in diameter at the Ivanpah SEGS project site do not appear to be "unusual plant assemblages" (UPAs) because they are not unusual in terms of their frequency either locally or regionally. Also, the creosote rings within the Ivanpah SEGS project site are probably not very old. Thus, they would not be considered an UPA or otherwise protected under the California Desert Native Plants Act (CDNPA).

References

Bureau of Land Management. 1980. The California Desert Conservation Area Plan. Bureau of Land Management, Riverside, California. 173 pages plus appendices.

Hunter, K. L., J. L Betancourt, B. R. Riddle, T. R. Van Devender, K. L. Cole, and W. G. Spaulding. 2001. Ploidy race distributions since the Last Glacial Maximum in the North American desert shrub, *Larrea tridentata*. Global Ecology & Biogeography 10: 521–533.

Vasek, Frank. 1980. Creosote Bush: Long Lived Clones in the Mojave Desert. American Journal of Botany 67(2): 246-255.

TABLE DR21-1
Approximate Number of Creosote Bush Rings by Soil Surface and Diameter - Ivanpah SEGS

Number of Creosote Rings	Early Holocene to Pleistocene Surfaces [3]		Middle to Late Holocene Surfaces [4]		Total Number of Creosote Rings
	Creosote Bush Ring ≥10 ft diameter	Creosote Bush Rings ≤ 10 ft diameter	Creosote Bush Rings ≥ 10 ft diameter	Creosote Bush Rings ≤ 10 ft diameter	
Creosote Bush Rings (Directly Measured in 680-acre Area) [1]	4	60	30	38	133
Creosote Bush Rings (Extrapolated Across 4,217-acre Survey Area) [2]	42	590	295	380	1,307

Notes:
[1] Number of creosote rings directly measured in 680-acres onsite. This amount of sub sampled area roughly corresponds to 16 percent of the total site acreage (about 4,217 acres).
[2] Number of creosote rings extrapolated across the 4,217-acre biological survey area to obtain an estimate of total creosote ring abundance.
[3] Early Holocene to Pleistocene Surfaces are the oldest soils located onsite.
[4] Middle to Late Holocene Surfaces are the youngest soils located onsite.

TABLE DR21-2
Estimated Total Number of Creosote Bush Rings by Diameter in Sampled Areas at the Ivanpah SEGS Site

	Approximate Number of Creosote Bush Rings Located at Ivanpah SEGS		
Number of Creosote Rings	Creosote Bush Rings ≤ 10 ft diameter [1]	Creosote Bush Ring ≥10 ft diameter	TOTALS
Creosote Bush Rings (Directly Measured in 680-acre Area) [2]	98	35	133
Creosote Bush Rings (Extrapolated Across 4,217-acre Survey Area) [3]	970	337	1,307

Notes:
[1] Both old (early Holocene to Pleistocene soil surfaces) and young (middle to late Holocene soil surfaces) combined.
[2] Number of creosote rings directly measured in 680-acres onsite. This amount of sub sampled area roughly corresponds to 16 percent of the total site acreage (about 4,217 acres).
[3] Number of creosote rings extrapolated across the 4,217-acre biological survey area to obtain an estimate of total creosote ring abundance.

TABLE DR21-3
Preliminary Estimates of Creosote Ring Density at Seven Locations in the Mojave Desert

Site Location[1]	Approximate Site Elevation (ft)	Estimated Density of Creosote Bush Rings [2]	Number of Creosote Bush Rings [3]
Chicago Valley (Inyo Co)	2310 ft	0.1/acre	5
Silurian Valley (San Bernardino Co)	850 ft	0.02/acre	1
Mesquite Valley (San Bernardino Co)	3000 ft	0.1/acre	5
Shadow Valley (San Bernardino Co)	3220 ft	0.14/acre	7
Mojave Sink (San Bernardino Co)	2000 ft	0.04/acre	2
Piute Valley (San Bernardino Co)	2350 ft	0.14/acre	7
N. Lucerne Valley (San Bernardino Co)	3000 ft	0.18/acre	9

Notes:

[1] A 50-acre area (estimated) was reviewed at each location using Google Earth™ aerial photography at an approximate scale of 1:600.

[2] Estimated densities of creosote rings per acre equal to, or greater than, 10 feet in diameter.

[3] The number of creosote rings 10 feet in diameter or larger at each site was obtained by multiplying the estimated density per acre by the total number of acres and rounded to the nearest whole digit.

22. Provide a description of the proposed project's conformance with the California Desert Native Plants Act and the San Bernardino County Development Code, expected impacts, and specific mitigation.

Response: The California Desert Native Plants Act (CDNPA) (Food and Agricultural Code Section 80001 et seq.) was passed in 1981 to protect non-listed California desert native plants from unlawful harvesting on both public and privately owned lands. The CDNPA is described in Section 88.01 in the San Bernardino County Development Code (2007).

The CDNPA is enforced by the California Department of Fish and Game (CDFG), in cooperation with the California Department of Food and Agriculture (CDFA), but permits for native plant removal (as listed in Subsection 89.0420(b)) are issued by the county agricultural commissioner or the sheriff. Under the CDNPA, the harvest, transport, sale, or possession of specific native desert plants in specified counties is prohibited unless a person has a valid permit.

As outlined in Section 88.01.030 (San Bernardino County Code, 2007), removal of native plants on land owned by the U.S. Government (e.g., Bureau of Land Management, as is the case here) is excluded from the CDNPA, as federal regulations regarding native plant salvage specific to BLM would apply. Several thousand (amount not quantified) yucca occur onsite, a native desert species specifically identified in the CDNPA. Other native desert species onsite, such as barrel cactus, are not specifically identified in the CDNPA, but in consultation with

the BLM, plans are being developed for salvage of succulents as well. The need for a permit and the exact requirements and plans for native plant salvage will be determined through coordination with the BLM.

Background

As noted in the AFC, ravens are known to prey upon juvenile desert tortoise and other wildlife species. However, ravens are a migratory species and federally protected under the Migratory Bird Treaty Act. Perch-deterrent device installation is mentioned in the AFC on page 5.2-67, but the facilities upon which they would be installed are not specified. In addition, CDFG commented in a March 23, 2007 letter on Victorville 2, another desert solar project, regarding the need for a sufficiently detailed raven control plan.

Data Request

29. Please provide a detailed raven control plan that discusses, but is not limited to the following elements:

    a. coordination process with CDFG and USFWS

    b. area to be covered by the plan

    c. use of perch-deterrent devices and locations of installation

    d. circumstances when nest removal would be necessary

    e. remedial actions that would be employed if evidence of raven predation of juvenile desert tortoise is detected and the circumstances that would trigger the implementation of remedial actions

    f. facility/project owner staff expected to implement the raven control plan and their qualifications

Response: A Draft Raven Control Plan should be available for review by the end of July, 2008.

Cultural Resources (37)

Background

The cultural resources discussion of cultural resource CA-SBR-10315 (AFC pp. 5.3-18–5.3-19) indicates that this line would be the interconnection point for the ISEGS power output. The discussion also includes the statement that the electrical tie-in would not be an adverse impact because "the physical lines and towers are not considered contributing elements to the significance of the site under criterion A." Staff needs further information on this resource and this assessment of impact.

Data Request

37. Please provide a discussion by a qualified architectural historian of the proposed project's impact on resource CA-SBR-10315, addressing integrity in transmission lines under criterion A and the extent of replacement or modification to resource CA-SBR-10315 required for the proposed project's electrical connection.

Response: This data request is now being addressed as Data Request 126 (Set 2).

Soils and Water Resources (57-58)

Background

To determine the potential erosion impacts to water and soil resources from construction of the project, the California Energy Commission (CEC) requires a draft Drainage Erosion and Sediment Control Plan (DESCP). The draft DESCP is to be updated and revised as the project moves from the preliminary to final design phases and is to be a separate document from the construction Storm Water Pollution Prevention Plan (SWPPP). The final DESCP, submitted prior to site mobilization, must be developed and signed by a professional engineer/erosion control specialist.

Data Request

57. Please provide a draft DESCP containing elements A through I listed below. These elements will outline site management activities and erosion/sediment control Best Management Practices (BMPs) to be implemented during site mobilization, excavation, construction, and post-construction activities. The level of detail in the draft DESCP should correspond to the current level of planning for site construction and corresponding site grading and drainage. Please provide all conceptual erosion control information for those phases of construction and post-construction that have been developed or provide a statement when such information will be available.

Response: The DESCP is being revised and will be submitted as Attachment DR140-1A, in response to Data Request 140 (Set 2B).

Background

Approximately 3,400 acres of land will be disturbed by the project construction activity. Section 5.11.4.6 (Construction) of the AFC states that "…substantial water erosion and dust control measures will be required to prevent an increased dust load and sediment load to ephemeral washes on and off the project site." In section 4.2.4 (Erosion Control) in the AFC, year-round and rainy season erosion control practices are discussed. To the extent not discussed in Item 57 above, please provide the following information.

Data Request

58. Describe in detail the purpose, construction, and effectiveness of the controls to protect slopes susceptible to erosion and the controls to stabilize non-active areas, and provide an appropriately scaled map showing the location and engineering drawings illustrating the construction of these controls.

Response: This information will be provided in the DESCP, which is being revised and will be submitted as Attachment DR140-1A, in response to Data Request 140 (Set 2B), and in the 90 percent design drawings.