

Docket No. 08-AFC-2

Beacon Solar Energy Project Data Request No. 2 Supplemental Workshop Data Responses

Geomorphologic Mapping Cover Memorandum

(CEC Data Request 34W)

DOCKET 08-AFC-2
DATE _____
RECD. <u>NOV 26 2008</u>

**BEACON SOLAR ENERGY PROJECT (BSEP)
GEOMORPHOLOGICAL MAPPING**

November 24, 2008

A desktop geomorphological study for BSEP identified four geomorphological surfaces (A-D) in the project vicinity. A discussion of this study at the November 6, 2008 California Energy Commission (CEC) Workshop in California City included a request from Mike Lerch (on behalf of Mike McGuirt) for a map showing the geomorphological surfaces. To provide this more detailed information, figures have been prepared showing the location of these surfaces as discussed in Table 1 of the Kleinfelder geomorphological report (DR-34). Figure 1 includes contours, cut and fill, geomorphic surfaces, and eligible archaeological sites on BSEP. Figure 2 contains only the geomorphic surfaces and eligible archaeological sites.

Table 1: Geomorphic Surface Relative Age

Surface	Age Range (yrs.)	Description and Location
A	0 – 8,700	Paleo-lake deposits, approximately 1-mile wide extending across the northern 20% of the site and over to Koehn Lake. Most of the deposit has been farmed.
B	1,000 – 8,000	Alluvial fan deposits covering most of the site (80%) and vicinity south and north of Surface A. The deposit is incised with drainage channels floored with alluvium that is less than 1,000 years old.
C	20,000 – 180,000	Older alluvial fan deposits which have been uplifted. Deeply incised with channels floored with alluvium. These deposits are generally located east of the project site and longitude 117.55°.
D	15,000 – 19,000	Older alluvial fan deposits found near the head of the fan and mountain front west of Highway 14. These deposits are generally uplifted above younger alluvial deposits.

As indicated on the attached figures, only two of the surfaces (A and B) occur within the project limits. Surface A is described as lake deposits ranging in age from 0 to 8,700 years. Surface A is present only in the northeastern portion of the project. Surface B is comprised of alluvial fan deposits ranging in age from 1,000 to 8,000 years. Surface B covers the majority of the project site.

A review of the attached figures indicates that most of the BSEP archaeological sites with fire affected rock are associated with Surface A. These sites all date to the younger end of the date range for Surface A (i.e., less than 1,000 years before present). These results indicate an apparent association of sites with hearths with the lake deposits (Surface A). These results do not totally preclude the presence of buried resources in the alluvial environment of Surface B, but the presence of fire affected rock appears to be strongly correlated with the lacustrine setting associated with Surface A.

Although there are more recent non-lacustrine alluvial deposits in incised areas within Surface B, the majority of the project site (Surface B) is slated for fill and the potential

for impacts to buried cultural resources does not appear to be great in this area. In order to address the potential for additional buried cultural features in the northeastern portion of the project where the lake deposit (Surface A) is located, it is recommended that the initial phase of the data recovery program include field investigations by a geoarchaeologist in this portion of the project site if it is deemed that such investigations would allow for a more focused monitoring effort during construction. These investigations could include a trenching program, the results of which will be incorporated into the second phase of the data recovery, the archaeological field program. The results of the data recovery investigations will be provided to the CEC and incorporated into the monitoring and discovery program as appropriate.

BEACON SOLAR ENERGY PROJECT (08-AFC-02)
CEC STAFF DATA REQUEST NUMBERS – 14, 17, and 20

Technical Area: Biological Resources

Supplemental Response Date: November 26, 2008

Beacon Solar Energy Project Data Request No. 2 Supplemental Workshop Responses

Following are supplemental responses to the Data Requests clarifications requested at the CEC Staff Data Response and Issue Resolution Workshop held on November 6, 2008 in California City. This supplement includes supplemental information for Biological Technical Area Data Request Numbers 14, 17, and 20. To facilitate review and understanding of the supplemental information, we have provided a summary of the workshop requests below with each response. We have placed a “W” after each data request number to indicate that the supplemental data request came from a workshop.

Data Request 14W:

Revise proposed evaporation pond management/sampling program to include avian egg monitoring if nesting activities occurs in or around the evaporation ponds; restrict activities with high noise levels (e.g., use of air cannons) during nesting seasons; increase minimum water depth in evaporation ponds to two feet and discuss how the depth will be managed; make sure placement of temperature gauge provides appropriate information.

Supplemental Response:

Avian egg monitoring is proposed in the existing evaporation pond discussion submitted on October 13, 2008 under specific trigger conditions. In response to requests by the California Department of Fish and Game (CDFG) at the Workshop on November 6th, the avian egg monitoring program trigger conditions have been modified. Beacon Solar, LLC. (Beacon) will implement avian egg monitoring if nesting birds are found adjacent to the evaporation ponds. A specific avian egg monitoring program will be established based upon protocols and methods approved by CDFG and will be presented in the Biological Resources Mitigation Implementation Plan.

Air cannons are proposed as only one of several methods that will be employed to discourage bird use of evaporation ponds if monitoring efforts show ongoing usage of the ponds by birds. Air cannons will not be deployed during the nesting season, from April 1st through August 1st; however, other methods of hazing that do not affect nesting birds will continue to be implemented, as appropriate, during the breeding season to discourage further nesting activity. Similarly, pond maintenance will occur during the breeding season only insofar as it does not disturb already nesting birds.

Beacon will modify the baseline minimum water level in the ponds to discourage use by wading birds and minimize the available shoreline for nesting. The ponds will be managed with a 2-foot minimum water depth as opposed to a 1-foot minimum water depth as originally recommended in the October 13 data response. The depths will be managed as described in

**BEACON SOLAR ENERGY PROJECT (08-AFC-02)
CEC STAFF DATA REQUEST NUMBERS – 14, 17, and 20**

Technical Area: Biological Resources

Supplemental Response Date: November 26, 2008

the supplemental response to Data Request No. 14, submitted on October 13, 2008. In addition, temperature gauges will be installed to monitor water temperatures both at the water surface and subsurface.

Data Request 17W:

Revise monitoring of revegetation efforts and other criteria in the relocated Pine Tree Creek wash for the life of the Project. Provide success criteria (biological function and water conveyance/flood control) for evaluation, and identify measures that will be taken if the success criteria are not met.

Supplemental Response:

In response to CEC concerns regarding the ability of the proposed restoration of Pine Tree Creek wash to replace the functions and values of the existing degraded wash, several success criteria have been developed as part of the proposed mitigation approach. In addition to the vegetative cover success standards included in the August 2008 Revised Conceptual Mitigation Plan submitted to the CEC and CDFG as part of the Streambed Alteration Agreement application package, the physical, hydrological, and biological conditions of the rerouted wash will be assessed during the maintenance and monitoring program and compared to the existing Pine Tree Creek wash. The existing Pine Tree Creek Wash within the plant site boundary will serve as a reference for determining the success of the rerouted wash (i.e., to ensure the biological and hydrological functions of the rerouted wash are as good or better than the existing wash). Proposed success criteria include:

HYDROLOGIC CRITERIA

GOAL: Creation of a drainage system with physical characteristics of a natural desert wash (interfluves, shelving, scour areas and sediment deposition areas) and retention of the existing hydrology that will support dynamic channel formation processes and resulting functions.

- Flood flow, volume, and extent are equivalent to or better than existing wash.
Objective: Minimal or no structures or diversions, and maintain natural water sources and flood flow, volume, and extent.

- Maintain hydrologic connections equivalent to or better than exiting wash. Objective: Maintain natural water sources and confirm the on-site wash segment remains properly connected with the upstream and downstream channel segments.

**BEACON SOLAR ENERGY PROJECT (08-AFC-02)
CEC STAFF DATA REQUEST NUMBERS – 14, 17, and 20**

Technical Area: Biological Resources

Supplemental Response Date: November 26, 2008

- Sediment transport is equivalent to or better than existing wash. Objective: Maintain natural levels of sediment transport by maintaining natural flood-prone area width, and prevent development of significant erosion areas. This is evidenced by creation of interfluves, shelving, and sediment deposition that results in a braided system.

BIOLOGICAL CRITERIA

GOAL: Creation of a drainage system with biological functions and values (botanical and wildlife) of a natural desert wash system.

- Achieve vegetation cover equivalent to or better than existing wash. Objective: Restore and maintain vegetation to support functional wildlife habitat by obtaining 26 percent vegetation cover within the wash area consistent with mitigation plan presented in the Project's Streambed Alteration Agreement application package.
- Achieve plant species richness, evenness, and structure equivalent to reference site. Objective: Achieve plant species richness, evenness, and structure at least equivalent to the existing Pine Tree Creek Wash in the Plant Site.

Creation of the functions and values of a desert wash system in the rerouted wash, and hence successful mitigation for impacts, would be measured by achievement of success criteria. As part of the mitigation plan, Beacon has proposed a maintenance and monitoring program that would occur for a minimum of 5 years to evaluate the success of the restoration/mitigation effort. A 5-year monitoring program is a standard period of performance for evaluating the effectiveness of a mitigation and/or restoration program. Maintenance and monitoring for the restoration effort will include:

- Evaluation of vegetative cover, structure, and composition
- Evaluation of the physical characteristics of the restoration area
- Removal of problematic invasive nonnative species
- Erosion control, as necessary but not to limit natural hydrological function of the wash
- Removal of trash and debris as appropriate (some debris, such as plant material, can facilitate successful microhabitats).

The success of restoration is based on achievement of the success criteria defined above. Beacon has also identified corrective actions if success criteria are not met. Corrective actions include:

- If vegetation cover does not represent 26 percent (26 percent cover is equivalent to 4.8 acres of 18.4 total mitigation acres per the Conceptual Mitigation Plan) average cover within the restoration area after 5 years of monitoring, and the restoration

BEACON SOLAR ENERGY PROJECT (08-AFC-02)
CEC STAFF DATA REQUEST NUMBERS – 14, 17, and 20

Technical Area: Biological Resources

Supplemental Response Date: November 26, 2008

ecologist determines that the mitigation effort is not progressing at a productive rate, the monitoring period will be extended for a period agreed to by Beacon, CDFG and CEC. If appropriate, additional seeding may also occur if sufficient vegetation has not established.

- Invasive weed control will occur for up to five years following construction of the rerouted wash and completion of restoration activities. If vegetation establishment does not achieve the 26 percent average cover of native species and the monitoring period is extended, invasive weed control will continue for the extended monitoring period as agreed to by Beacon, CDFG and CEC.
- If typical physical characteristics (interfluves/braiding, shelving, scour and deposition) are not found to be forming, Beacon will employ a restoration ecologist to identify locations and mechanisms to facilitate the development of these features such as additional minor grading and contouring or the addition of organic debris (e.g., shrub branches) and/or rocks and other abiotic features to promote microtopographic complexity.

In addition to the five years of monitoring and the evaluation of success criteria for achieving mitigation goals, Beacon recognizes that there will be a need to provide maintenance of the rerouted wash for the life of the project to ensure structural stability and effective flow conveyance. Maintenance inspection and repair activities for the rerouted wash, including the slopes and level spreader discharge point, are anticipated to include:

- Structural inspections
- Erosion control repairs
- Debris removal

The purpose of this maintenance is to ensure the proper hydrologic and hydraulic function of the rerouted wash.

It is anticipated that the 18.4-acre restoration effort recommended to mitigate for impact to the 16.0 acres of highly degraded desert wash will effectively replace the loss of California jurisdictional waters within the Plant Site. Similar efforts to reroute desert washes have been conducted at other desert locations and have resulted in successful recruitment and establishment of natural wash features with even less directed effort (e.g., seeding) to restore functions and values. Kramer Junction is an example of a rerouted wash that was constructed at a facility located west of Highway 395 (north of Highway 58). This wash has shown successful recruitment of native vegetation and supports the natural hydrologic functions of a desert wash with multiple braided flow channels (see photo below).

**BEACON SOLAR ENERGY PROJECT (08-AFC-02)
CEC STAFF DATA REQUEST NUMBERS – 14, 17, and 20**

Technical Area: Biological Resources

Supplemental Response Date: November 26, 2008



Data Request 20W:

In the event that the project proponent does not properly manage the conservation easement placed on the six acres set aside for western burrowing owl artificial burrows to support passive relocation, the conservation easement should name a 3rd party beneficiary conservation organization acceptable to CDFG and CEC that would take over management of the six acres.

Supplemental Response:

Beacon will name a 3rd party beneficiary conservation organization acceptable to CDFG and CEC on the conservation easement that would take over management of the six acres in the event if needed to ensure the six acres are properly managed.

**BEFORE THE ENERGY RESOURCES CONSERVATION AND DEVELOPMENT COMMISSION
OF THE STATE OF CALIFORNIA**

**APPLICATION FOR CERTIFICATION FOR
THE BEACON SOLAR ENERGY PROJECT**

DOCKET NO. 08-AFC-2

PROOF OF SERVICE
(Revised 11/10/08)

INSTRUCTIONS: All parties shall either (1) send an original signed document plus 12 copies or (2) mail one original signed copy AND e-mail the document to the address for the docket as shown below, AND (3) all parties shall also send a printed or electronic copy of the document, which includes a proof of service declaration to each of the individuals on the proof of service list shown below:

CALIFORNIA ENERGY COMMISSION
Attn: Docket No. 08-AFC-2
1516 Ninth Street, MS-14
Sacramento, CA 95814-5512
docket@energy.state.ca.us

Mike Argentine FPL Energy, LLC 1465 Oak Hill Way Roseville, CA 95661 Michael.argentine@fpl.com	Kenneth Stein, J.D. Duane McCloud Bill Narvaez Meg Russell FPL Energy, LLC 700 Universe Blvd., MS JES/JB Juno Beach, FL 33408 Kenneth.stein@fpl.com Guillermo.narvaez@fpl.com Duane.mccloud@fpl.com Meg.russell@fpl.com
Jane Luckhardt, Esq. Downey Brand, LLP 621 Capitol Mall, 18th Floor Sacramento, CA 95814 jluckhardt@downeybrand.com	Sara Head, Vice President ENSR Corporation 1220 Avenida Acaso Camarillo, CA 93012 shead@ensr.aecom.com
Geoffrey R. Baxter, P.E. – Project Manager Worley Parsons 2330 E. Bidwell Street, Suite 150 Folsom, CA 95630 Geoffrey.baxter@worleyparsons.com	CA Independent System Operator P.O. Box 639014 Folsom, CA 95763-9014 e-recipient@caiso.com

Tanya A. Gulesserian Marc D. Joseph Adams, Broadwell, Joseph & Cardozo 601 Gateway Blvd., Suite 1000 So. San Francisco, CA 94080 tgulesserian@adamsbroadwell.com	California ISO P.O. Box 639014 Folsom, CA 95763-9014 e-recipient@caiso.com
Karen Douglas Commissioner & Presiding Member kldougla@energy.state.ca.us	Jeffrey D. Byron, Associate Member jbyron@energy.state.ca.us
Kenneth Celli, Hearing Officer kcelli@energy.state.ca.us	Jared Babula, Staff Counsel jbabula@energy.state.ca.us
Eric K. Solorio, Project Manager esolorio@energy.state.ca.us	Public Adviser pao@energy.state.ca.us

DECLARATION OF SERVICE

I, Lorraine Ballew, declare that on November 26, 2008, I deposited copies of the attached **Beacon Solar Energy Project Data Request No. 2 Supplemental Workshop Data Responses (CEC Data Requests 14W, 17W & 20W)**, and **Geomorphologic Mapping Cover Memorandum (CEC Data Request 34W)** in the United States mail at Sacramento, California with first-class postage thereon fully prepaid and addressed to those identified on the Proof of Service list above.

OR

Transmission via electronic mail was consistent with the requirements of the California Code of Regulations, title 20, sections 1209, 1209.5 and 1210. All electronic copies were sent to all those identified on the Proof of Service list above.

I declare under penalty of perjury that the foregoing is true and correct.

/s/ Lorraine Ballew
Lorraine Ballew