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November 25, 2009

Commissioner Julia Levin, Presiding Member
Vice Chair James D. Boyd, Associate Member
Mr. Craig Hoffman, Project Manager
Abengoa Mojave Solar Project (09-AFC-5)
California Energy commission
1516 Ninth Street
Sacramento, CA 95814

Re: Abengoa Mojave Solar Project (09-AFC-5): Written Response to Data Request Set 1B (nos. 1-86)

Dear Commissioners Levin and Boyd:

Abengoa Solar Inc. (the "Applicant") hereby files these written responses to certain Data Requests in Set 1B promulgated by Staff on October 26, 2009. Reponses to the following Data Requests are included in this submittal: Data Request 1, 2, 3, 4, 5, 6, 7, 8, 9, 13, 14, 18, 19, 26, 27, 28, 29, 32, 33, 36, 39, 46, 47, 48, 49, 50, 51, 52, 53, 54, 55, 56, 57, 58, 59, 60, 61, 62, 63, 64, 65, 66, 67, 68, 69, 70, 71, 72, 73, 74, 75, 76, 77, 78, 79, 81, 82, 83, 84, 85, and 86. The Applicant requested additional time to respond or objected to the remaining Data Requests in Set 1B in a Notice filed on November 16, 2009.

The Applicant appreciates Staff's time and efforts reviewing the enclosed materials. The Applicant looks forward to working with Staff to achieve complete and satisfactory resolution of all issues in a timely manner. Thank you for your time and consideration of this matter.

Sincerely,

Christopher T. Ellison
Shane E. Conway
Ellison, Schneider & Harris, L.L.P.

Attorneys for Abengoa Solar Inc.

STATE OF CALIFORNIA

Energy Resources Conservation
and Development Commission

Application for Certification for the ABENGOA MOJAVE SOLAR POWER PLANT	)	Docket No. 09-AFC-5

PROOF OF SERVICE

I, Deric Wittenborn, declare that on November 25, 2009, I served the attached *Abengoa Mojave Solar Project (09-AFC-5): Written Response to Data Request Set 1B (nos. 1-86)* via electronic and U.S. mail to all parties on the attached service list.

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

/s/
Deric Wittenborn

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09-AFC-5

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Table of Contents

Cultural Resources (1-20)

Item 1:

Information Required:

Please add the following information to the Hays Farmstead DPR523 form:

A. In Item B10 of the DPR523 BSO form, provide an evaluation of the CRHR eligibility for the Hays Farmstead that clearly defines how the resource is associated with one or more events important in a defined historic context.
B. Provide a justification of the consultant's potential recommendation under CRHR Criterion 1.
C. Please also include in Item B10 a discussion of the integrity of the resource.

Response:

Please see Attachment for Response to Item 1, "P-36-006556 DPR 523L."

Item 2:

Information Required:

Please complete a DPR523 form for the Lockhart General Merchandise store, including:

A. In Item B10 of the DPR523 BSO form, provide an evaluation of the CRHR eligibility for the Lockhart General Merchandise store that clearly defines how the resource is associated with one or more events important in a defined historic context.
B. Provide a justification of the consultant's significance recommendation under CRHR Criterion 1.
C. Please also include in Item B10 a discussion of the integrity of the resource.

Response:

Please see Attachment for Response to Item 2, "P-36-006557 DBR 523B."

Item 3:

Information Required:

Please instruct a historical archaeologist who meets the U.S. Secretary of Interior's Professional Qualifications Standards for historical archaeology to:

A. Conduct site-specific archival research on the Hays Farmstead and the community of Lockhart to identify where historical archaeological deposits could be located.
B. Write a letter report to Energy Commission staff stating that archaeological deposits are likely or unlikely at either or both sites, with a justification for that conclusion. Please include a resume that demonstrates the required qualifications have been met by the author of the report.

Response:

Please see Attachment for Response to Item 3.

Item 4:

Information Required:

If the historical archaeologist concludes that historical archaeological deposits are likely at either or both sites, instruct him/her conduct a field survey and write a letter report for staff describing the field methods used and the historical archaeological deposits present, and making recommendations for the sites as eligible/ineligible for the CRHR.

Response:

The historical archaeologist concluded that while there is a potential for minor historic subsurface deposits at sites P-36-006556 and P-36-006557, there are no physical or archival indications of sufficiently significant subsurface deposits at either site for eligibility under CRHR Criterion 4. (See Attachment for Response to Item 3.)

Item 5:

Information Required:

If the historical archaeologist cannot reach conclusions on the CRHR eligibility of the sites, instruct him/her to draft and submit for staff approval testing plans for the sites to determine if any subsurface deposits are present at these sites. The plan should be designed with the goal of acquiring sufficient data to enable recommendations of eligibility for the CRHR for these sites. The recovered data should be evaluated according to its applicability to the research questions posed in the confidential cultural resources technical report.

Response:

Applicant requested more time to respond to this Item in the letter "Abengoa Mojave Solar Project (09-AFC-5): Notice Pursuant to 20 CCR 1716(f): Data Request Set 1B (nos. 1-86)" dated November 16, 2009 and docketed. However, because the historical archaeologist *can* reach conclusions regarding the CRHR eligibility of the sites (See Response to Item 4, above), the Applicant believes there is no need to draft and submit testing plans.

Item 6:

Information Required:

After implementation of the testing plans, please provide to staff a letter report on the testing methods and results at these sites, presenting an analysis of the recovered data and recommendations regarding the eligibility of these sites.

Response:

Please see Responses to Items 4 and 5, above.

Item 7:

Information Required:

Please complete DPR 523 "Archaeological Site" detail forms for each of these sites, including dating and significance recommendations, and submit them to staff with the letter report submitted in response to either Data Request 4 or 6.

Response:

Please see Responses to Items 4 and 5, above.

Item 8:

Information Required:

A. Please provide the distance of the archaeological site boundaries from the project boundary for each of the archaeological sites referenced above.
B. In addition, if the site is within 50 feet of the boundary of the project site, please provide a discussion of the potential for impacts to these sites by the proposed project.

Response:

A. MS-H-026 is 8m within the project boundary
MS-H-004 is 3m outside the project boundary
MS-H-225 is 2m outside the project boundary
P-36-006553 is 13m within the project boundary

A map of these sites was submitted separately as a confidential attachment.

B. Sites MS-H-004 and MS-H-225 are located outside of the project boundary and no ground disturbing activities or above ground construction activities are anticipated to impact these sites.

As a means of avoiding potential ground disturbance within the site boundaries, certain measures will be implemented prior to construction. These measures are designed to prevent the accidental or unintentional disturbance to potentially significant sites prior to and throughout the duration of the proposed construction. Each of these measures is discussed below.

The most important component of any successful archaeological site avoidance is awareness on the part of the construction personnel about the location, boundaries and extent of the site itself. Prior to construction, all contractors, subcontractors, and construction personnel will be made aware of the significance of the site and need for avoidance as well as the exact location and boundaries of the site to be avoided. No ground disturbance, including the moving of heavy machinery, construction staging, or equipment storage will be conducted within the confines of the site boundary.

A fence of high visibility orange barricade fencing will be installed around the entire site boundaries prior to the initiation of any ground disturbance. All contractors, subcontractors, and construction personnel will recognize the barricade fence as the site boundary, and will not conduct any ground disturbing activities within that area.

The barricaded site boundary will be protected from erosion during the construction. Like the barricade fencing, a silt fence to stabilize the ground around the site may be necessary during proposed ground disturbance.

Item 9:

Information Required:

Should the project have impacts on any of these sites, please identify the nature and extent of the impacts and provide a plan to avoid project impacts to these sites.

Response:

Sites MS-H-026 and P-36-006553 are located partially within the project boundary. Project impacts to these sites cannot be avoided. A Testing Plan is currently being prepared to recommend using test excavations to identify any subsurface deposits.

Item 10-12:

Please refer to the letter "Abengoa Mojave Solar Project (09-AFC-5): Notice Pursuant to 20 CCR 1716(f): Data Request Set 1B (nos. 1-86)" dated November 16, 2009 and docketed regarding this request.

Item 13:

Information Required:

This work should be completed by a qualified historical archaeologist. Please include the resume that demonstrates the previously stated qualifications have been met by the author of the report.

Response:

See Attachment for Response to Item 13.

Item 14:

Information Required:

Please provide a plan to avoid project impacts to these sites.

Response:

Project impacts to these sites cannot be avoided. A Testing Plan is currently being prepared to recommend using test excavations to identify any subsurface deposits.

Item 15-17:

Please refer to the letter "Abengoa Mojave Solar Project (09-AFC-5): Notice Pursuant to 20 CCR 1716(f): Data Request Set 1B (nos. 1-86)" dated November 16, 2009 and docketed regarding this request.

Item 18:

Information Required:

Please obtain the services of a professional in geoarchaeology: a person who, at a minimum, meets the U.S. Secretary of Interior's Professional Qualifications Standards for prehistoric archaeology, as published in Title 36, Code of Federal Regulations, part 61, and includes the completion of graduate-level coursework in geoarchaeology, physical geography, geomorphology, or Quaternary science, or education and experience acceptable to cultural resources staff. Please submit the resume of the proposed geoarchaeologist for staff review and approval.

Response:

Please see Appendix A to the document attached as Attachment for Response to Item 18 for the resume of the proposed geoarchaeologist.

Item 19:

Information Required:

Please have the approved geoarchaeologist provide a discussion, based on the available Quaternary science and geoarchaeological literature, of the historical geomorphology of the project areas. The discussion should describe the development of the landforms on which the project components are proposed, with a focus on the character of the depositional regime of each landform since the Late Pleistocene epoch. The discussion should include data on the geomorphology, sedimentology, pedology, hydrology, and stratigraphy of the project areas and the near vicinity. The discussion should relate landform development to the potential in the project areas for buried archaeological deposits. The discussion should include maps overlaying the above data on the project areas.

Response:

Applicant requested more time to respond to this Item in the letter "Abengoa Mojave Solar Project (09-AFC-5): Notice Pursuant to 20 CCR 1716(f): Data Request Set 1B (nos. 1-86)" dated November 16, 2009 and docketed. However, the proposed geoarcheologist prepared the requested discussion (See Attachment for Response to Item 18). Once the geoarchaeologist is approved by Staff, please consider the attached document responsive to this request.

Item 20:

Information Required:

In the absence of sufficient extant Quaternary science and/or geoarchaeological literature pertinent to the reconstruction of the historical geomorphology of the project areas, please have the approved geoarchaeologist design a primary geoarchaeological field study of the project areas, submit a research plan for staff approval, and conduct the approved research. The purpose of the study is to facilitate staff's assessment of the likelihood of the presence of archaeological deposits buried deeper than 3 feet in the project's areas. The primary study should, at a minimum, include the following elements:

A. A map (or map series) of the present landforms in the project areas at a scale of not less than 1:24,000; the data sources for the map may be any combination of published maps, satellite or aerial imagery that has been subject to field verification, and the result of field mapping efforts;
B. A sampling strategy to document the stratigraphy of the portions of the landforms in the project areas where the construction of the proposed project will involve disturbance at depths greater than 3 feet;
C. Data collection necessary for determinations of the physical character, the ages, and the depositional rates of the various sedimentary deposits and paleosols that may be beneath the surface of the project areas to the proposed maximum depth of ground disturbance. Data collection at each sampling locale should include a measured profile drawing and a profile photograph with a metric scale, and the screening of a small sample (three 5-gallon buckets) of sediment from the major sedimentary deposits in each profile through ¼-inch hardware cloth. Data collection should also include the collection and assaying of enough soil humate samples to reliably radiocarbon date a master stratigraphic column for each sampled landform;
D. An analysis of the collected field data and an assessment, based on those data, of the likelihood of the presence of buried archaeological deposits in the project areas, and, to the extent possible, the likely age and character of such deposits.
E. Please have the approved geoarchaeologist prepare a report of the primary field study and submit it to staff under confidential cover.

Response:

Applicant requested more time to respond to this Item in the letter "Abengoa Mojave Solar Project (09-AFC-5): Notice Pursuant to 20 CCR 1716(f): Data Request Set 1B (nos. 1-86)" dated November 16, 2009 and docketed.

Soils and Water Resources (21-61)

Item 21-25:

Please refer to the letter "Abengoa Mojave Solar Project (09-AFC-5): Notice Pursuant to 20 CCR 1716(f): Data Request Set 1B (nos. 1-86)" dated November 16, 2009 and docketed regarding this request.

Item 26:

Information Required:

Please provide the MODFLOW input and output files for the steady-state and transient calibrations and the project pumping scenarios. Please also include the MODFLOW listing files from these simulations. Note: In order to keep the file size manageable, the binary heads and cell-by-cell flow files are not needed for review at this time.

Response:

These files are provided electronically on the CD attached to these Responses within the folder Attachment for Response to Item 26, in the folders: "DR26_MODFLOW_steady-state"; "DR26_MODFLOW_Transient 30 yr"; and "DR26_MODFLOW_Transient Construction"

Item 27:

Information Required:

Please provide the Groundwater Vistas file(s) used to create and run the MODFLOW models for the steady-state and transient simulations identified above.

Response:

These files are provided electronically on the CD attached to these Responses within the folder Attachment for Response to Item 27, in the folder: "DR27_Groundwater Vistas."

Item 28:

Information Required:

Please provide the real-world coordinates for the MODFLOW model grid origin (i.e., UTM, California State Plane, etc.).

Response:

6680824 easting, 2108347 northing; California State Plane, ft, NAD83

Item 29:

Information Required:

Please provide the WinFlow model project files.

Response:

These files are provided electronically on the CD attached to these Responses within the folder Attachment for Response to Item 29, in the folder: "DR29_WinFlow_model." The diagrams for the modeling results for 26 months and 30 years are attached here as Attachment to Response to Item 29, as well as provided electronically on the CD attached to these Responses.

Item 30-31:

Please refer to the letter "Abengoa Mojave Solar Project (09-AFC-5): Notice Pursuant to 20 CCR 1716(f): Data Request Set 1B (nos. 1-86)" dated November 16, 2009 and docketed regarding this request.

Item 32:

Information Required:

Please show the data values and locations utilized to construct the contours.

Response:

The contours in the maps contained in Figure 1-7: Potentiometric Surface (1930) of the Basin Conceptual Model, Appendix A to the AFC, were not created from data values and locations. Instead these contours were created by digitizing a geo-referenced map from Hardt (1971) (full reference listed below). Specifically, the 1930 contours are found in Figure 14.—Ground-water level, 1930 map from Hardt (1971).

The potentiomentric contours in the maps contained in Figure 1-8: Potentiometric Surface (1958), Figure 1-9: Potentiometric Surface (1998), and Figure 1-10: Potentiometric Surface (2004) of the Basin Conceptual Model, Appendix A to the AFC, were not created from data values and locations. Instead these contours were generated by digitizing geo-referenced maps taken from California State University Fullerton (2007) (full reference listed below). Specifically, figures 19, 20, and 21 (California State University Fullterton, 2007) were used for the potentiometric surface contour maps for the Basin Conceptual Model, Appendix A, figures 1-8 through 1-10. Original data tables showing well locations and water level data used to construct the historical potentiometric surface contours were included as Appendix B in the California State University Fullerton (2007) report.

See Attachment for Response to Item 32, "Figures" for all figures referenced.

References:

California State University Fullerton Department of Geological Sciences. (2007). Harper Lake Basin, San Bernardino County, California Hydrogeologic Report. Mojave Water Agency. *Note: this reference is included as Attachment for Response to Item 47.*

Hardt, F.H. (1971). Hydrologic analysis of Mojave River Basin, California, using electric analog model. U.S. Geological Survey Open-File Report. Menlo Park, CA: U.S. Geological Survey. *Note: this reference is provided as Attachment for Response to Item 32, Hardt (1971) Report.*

Item 33:

Information Required:

Please modify the contours to reflect uncertainty (i.e., query and dash the contours where the lack of data contributes to uncertainty in groundwater level contours).

Response:

As referenced in response to Data Request Item 32, the potentiometric contours shown in Figures 1-7 through 1-10 in the Basin Conceptual Model, Appendix A to the AFC, were acquired from the California State University Fullerton (2007) and Hardt (1971) reports. Contours were scanned and then geo-referenced before digitizing into a new coverage. Layne is unable to modify the contours to reflect uncertainty given the character of the original report.

References: See references listed in Response to Item 32, above.

Item 34-35:

Please refer to the letter "Abengoa Mojave Solar Project (09-AFC-5): Notice Pursuant to 20 CCR 1716(f): Data Request Set 1B (nos. 1-86)" dated November 16, 2009 and docketed regarding this request.

Item 36:

Information Required:

The MODFLOW model indicated total water inflow of 6,530 AFY (*App. A Table 4-3a* and the MODFLOW mass balance table at the end of *App. I*). The simulated inflow is derived entirely from the Mojave River general-head boundary, and all of this flow passes through the Hinkley Gap. Four previous estimates of groundwater flow through the Hinkley Gap range from 22 to 3,071 AFY (*App. A, page 27*). The MODFLOW simulated inflow is approximately two times greater than the sum of the recharge terms for which independent estimates are available (valley floor, mountain front, mountain block, and Hinkley Gap). The excess is considered "recharge of indeterminate origin" (*App. A, Tables 4-3a and 4-3b*). The text states that this excess recharge probably occurs as underflow through "perimeter gaps" connecting the HVGB with adjacent basins (*App. A, p. 82*), but the MODFLOW model represents all gaps except the Hinkley Gap as no-flow boundaries. The calibrated hydraulic conductivity in the gap west of Iron Mountain was four orders of magnitude smaller than through the Hinkley Gap (0.001 ft/d versus 70 ft/d; *App. I, p. 15*), so in practical terms it also effectively acts as a no-flow boundary.

Response:

This item seems to be Background Information to Data Request 37. Within the preceding paragraph there is no data request.

Item 37-38:

Please refer to the letter "Abengoa Mojave Solar Project (09-AFC-5): Notice Pursuant to 20 CCR 1716(f): Data Request Set 1B (nos. 1-86)" dated November 16, 2009 and docketed regarding this request.

Item 39:

Information Required:

Please explain the rationale or need for using two models (ie., Winflow and MODFLOW) to evaluate pumping drawdown.

Response:

WinFlow. The WinFlow model was used to determine aquifer properties and hydraulic parameters from the pumping test done at the site. A transient model was constructed and a solution was run with the test well pumping at its known rate. Adjustments were made to modeled aquifer properties until observed drawdown matched the model results. When a stable solution was achieved, the local properties became the starting point for the regional MODFLOW model.

MODFLOW. The regional model used to evaluate the long-term effects of the proposed pumping well was MODFLOW. Using a finite difference code allowed substantial flexibility in simulating perimeter conditions and variability of aquifer geometry (e.g., variation in aquifer thickness) when estimating the impacts within the Basin.

Item 40-45:

Please refer to the letter "Abengoa Mojave Solar Project (09-AFC-5): Notice Pursuant to 20 CCR 1716(f): Data Request Set 1B (nos. 1-86)" dated November 16, 2009 and docketed regarding this request.

Item 46:

Information Required:

Please provide a copy of: California Department of Water Resources. 1967. Mojave River ground water basins investigation. Bulletin 84.

Response:

This report is provided here as Attachment for Response to Item 46.

Item 47:

Information Required:

Please provide a copy of: California State University Fullerton, Department of Geological Sciences (CSU) and Mojave Water Agency. September 2007. Harper Dry Lake basin, San Bernardino County, California, hydrogeologic report.

Response:

This report is provided here as Attachment for Response to Item 47.

Item 48:

Information Required:

Please provide a copy of: The Mark Group. April 1989. Hydrogeologic assessment report, Harper Dry Lake, California. Final. Report No. 88-03219.18. Prepared for LUZ Development and Finance Corporation.

Response:

This report is provided here as Attachment for Response to Item 48.

Item 49:

Information Required:

Please provide a copy of: The Mark Group. December 1989. Aquifer analysis, LUZ solar energy generating station, Harper Valley, California. Preliminary report. Report No. 89-03409.18. Prepared for LUZ Development and Finance Corporation.

Response:

This report is provided here as Attachment for Response to Item 49.

Item 50:

Information Required:

Please quantify and discuss the economic soundness and environmental desirability of a wet-dry hybrid system.

Response:

Please refer to the Alternatives Section of the AFC. Section 4.7.2.1 describes the different cooling technologies considered. A purely "Dry Cooling" design was not found to be viable and as such a hybrid design was studied. The studied hybrid approach includes dry cooling with an ACC to cool the power generation process while a smaller wet-cooling tower is included to cool plant auxiliaries. For simplicity this approach is referred to below as "Dry Cooling" or "Dry." The comparison contained in the AFC includes economic soundness, environmental desirability,

and environmental benefits of the two studies' approaches (See AFC, following the descriptions in Section 4.7.2.2).

Item 51:

Information Required:

Please discuss the environmental benefits of a wet-dry hybrid system.

Response:

See Response to Item 50, above.

Item 52:

Information Required:

Please quantify and discuss the environmental desirability of the air cooled system in comparison with the wet cooled system.

Response:

See Response to Item 50, above.

Item 53:

Information Required:

Please quantify and discuss the economic soundness and environmental desirability of using recycled water instead of groundwater for wet cooling.

Response:

Cooling water supply alternatives were studied and presented in Section 4.8 of the AFC including sources, transportation (pipeline), and practical aspects.

Item 54:

Information Required:

Please provide the following:

A. Long-term maintenance requirements for access roads;
B. Reapplication requirements of herbicides, dust suppressants, and soil stabilizers; and
C. The expected number and a description of the maintenance equipment that would be used for all maintenance activities in the facility.

Response:

A. A large proportion of the surface of the facility infrastructure is a simple dirt grade. In order to keep these dirt-grade access roadways, lay-down areas, and the interior of the entire solar field well maintained, both dust and weed overgrowth are addressed by the reapplication of soil stabilizers and herbicides. All private access roads will be repaired as necessary via sub-

contracts during the Project life but initial compaction and preparation coupled with the low travel speed of maintenance vehicles allows for the roads to remain relatively low maintenance.

B. A dust mitigation product will be applied to various un-paved areas on a frequency dictated by actual field conditions such as evidence of fugitive dust – typically more often for certain heavily-traveled areas such as perimeter roadways. This is done to help maintain high mirror reflectivity levels in the solar field by reducing excessive dust conditions.

Dust mitigation will be carried out through the application of acrylic copolymers commonly derived from unstable paint or plaster binders and are considered environmentally benign and cost competitive. These types of products do not become viscous or tacky and do not cause corrosion of metal components. Acrylic copolymer have been determined to be acceptable to local agencies for solar applications in Arizona, California, and Nevada and is a well understood practice employed at the existing California SEGS power plants and will therefore be the treatment of choice.

Information regarding herbicides is contained in the answer to Item 57 below.

C. Below is a list and tally of major equipment to be purchased for use in the routine maintenance activities of the facility relevant to this data request:

SCA Cleaning Trucks: 4
Small Tractor and Trailer for SCA Brush Cleaning: 5
Flatbed Truck: 2
Small Pickup Truck: 17
Half-ton Pickup Truck: 4
Maintenance/Welding Truck Truck (similar to Flatbed Truck): 2
One-ton Pickup Truck: 3

Item 55:

Information Required:

A. Please provide a schedule for the proposed mirror washing, including the frequency and duration of the washing.
B. Provide the quantity of water that would be used daily. As this information may be provided in air quality data requests, a cross reference may be used.

Response:

A. Based on the many years of experience with the California SEGS power plants, it is expected that the site will incorporate similar seasonal reflectivity maintenance wash cycles. During the winter months, reflectivity averages are generally high due primarily to the concentration of rainfall during those months; cleaning activities are of lesser relative priority with fewer wash cycles.

In contrast, during the summer months reflectivity represents one of the greatest single factors influencing plant performance reflectivity is the most difficult to maintain due to the dust-

generating (hot, dry and windy) conditions normally experienced. As a result, wash cycles are increased.

Beginning in approximately mid-April to early May, the solar field Equipment Operators will transition from dayshift support duties to full-time nightshift reflectivity maintenance duty. This activity will continue until approximately early to mid-October, at which time off-season cleaning schedules will resume.

The Reflectivity Maintenance Program currently envisioned for the solar field will utilize a combination of spray wash and scrub cleaning methods to maintain reflectivity (see additional detail in Item 56 below). Both cleaning methods utilize demineralized water. No detergents, surfactants or other additives are added to the water. The cleaning water is drawn out of the power plant's condensate storage system utilizing a water truck fill station.

Currently 20 spray wash truck cleanings and 10 scrubbing cleanings are anticipated concentrated as described above (heavier in summer months lighter in winter months).

B. Daily water use will range depending on the concentration of cleaning as described above. However, the maximum amount of water that could be produced in a day for cleaning purposes is 172,800 gallons due to equipment sizing in shown in the water balance (AFC Figure 2-8). Less water including none could be used in a day if no cleaning activities are schedule.

Item 56:

Information Required:

A. Please describe in detail the method by which the mirrors would be washed.
B. Please provide the volume of water that would run off the mirrors and in to the soil below the mirrors.

Response:

A. The two type of mirror washing activities are indicated below:

Deluge Cleaning (Spray Wash)

The deluge cleaning method utilizes specialized diesel tractor trucks with approximately 4,000-gallons of water capacity. The deluge units are each set up to be run by a single operator, and sprays a large volume of precisely-patterned, low-pressure demineralized water on the entire aperture of an SCA as it moves between rows of SCAs.

The deluge trucks are set to clean one row of SCAs at a time and must be backed into the non-crossover openings between solar field loops. A forward spray wets the surface and helps dust dissolve into solution with a slight resident time before the trailing spray rinses the solution off the surface. This cleaning method will not remove certain surface films that cause reflectance to degrade at more rapid rates, but it does remove dust and bolster reflectivity in the intervals between rain washes or scrub cleaning.

During the winter off season, operations will be expected to run the deluge units approximately three days per week. As this activity must be subordinate to other operational priorities, it is expected that approximately 6 hours per shift will be devoted to cleaning. Water consumption is a function of travel speed and the rate of water flow necessary for effective cleaning.

During the summer months, operations will likely be deluge cleaning only twice per week – on the weekends. However, 8 hours of deluge cleaning will be targeted per shift to target an approximate three week deluge cleaning cycle.

Scrub Cleaning

Over time, the mirror surfaces develop a light film as a result of dust and natural environment that will reduce the reflectivity ceiling attainable through simple deluge cleaning. When this film develops on the mirror surface it becomes even more susceptible to retaining dust.

As simple deluge cleaning cannot remove this film, a scrub cleaning method is required that utilizes physical agitation (a scrubbing process) to remove the film. This method requires a relatively small amount of water and is capable of removing the above discussed film.

Based on the successes of this cleaning method (which allows SCA cleaning without the use of surfactants), ASI is developing a modified approach utilizing highly specialized cleaning equipment; a new water delivery system (remote directed spray) and new revolving brush head concept. This method will clean only the lower half of the collector because it operates with a scrubbing device which must pass below the receiver tube support arm. After one half of the loop is cleaned, the collectors will be repositioned so that the other half may be cleaned.

Each scrub cleaning rig will have a capacity of approximately 600 gallons, will be trailer mounted, and therefore require an operator for the rig and an operator for the tractor that pulls the rig.

During the summer months, scrub cleaning will be performed 5-days per week, 8 hours per shift and target an approximate 1-week cleaning cycle through the summer season.

B. Runoff of demineralized rinse water onto the ground is typically less than the amount dispensed. During summer months nearly all the water will evaporate as it sheets off the mirrors or shortly after touching the ground. This is due to the arid environment in the Project area. During the winter months more water reaches the ground but it typically doesn't pool and only leaves the dirt surface moist temporarily.

The amount of water used to clean the SCAs is "tuned" to avoid using excessive water since excessive water running off the SCAs is not beneficial to the process. The rate of spray is adjusted to provide a properly cleaned surface while not excessively using water.

Item 57:

Information Required:

Please describe how vegetation beneath the mirrors would be managed, including treatment of noxious and invasive species.

Response:

The control of overgrowth or weed control is an important element of keeping the solar field in a safe condition by not allowing growth to present fire hazards as the weeds dry, allowing for broken glass to be readily visible, maintaining clear access for maintenance and reflectivity equipment, and not allowing possible interference with collector tracking. In order to maintain a weed-free facility, a combination of treatments will be employed.

A pre-emergent herbicide will be applied by maintenance personnel to all solar field and staging or storage areas during the early spring on an annual basis. Contact herbicides will be employed by operations personnel during the course of the growth seasons to effect spot treatment. This approach has also been used with local agency approval in Arizona, California, and Nevada and employed in the existing California SEGS power plants for many years.

Item 58:

Information Required:

A. Please discuss how wastewater from the mirror washing would be managed.
B. Provide the locations and dimensions of wastewater disposal sites. As this information may be provided in a response to Biological Resources data requests, a cross reference may be used.

Response:

A. Demineralized water that removes dusts and environmental contaminants from the SCA will remain on the site under the SCAs. If it doesn't evaporate it will percolate into the surface.

B. As the water contains no cleaning chemicals or pollutants and is not used in high enough specific volumes per area utilized to warrant disposal for erosion prevention, there are no onsite wastewater disposal sites for mirror washing wastewater.

Item 59:

Information Required:

Please provide an evaluation of alternatives to allowing the mirror wash water to run off to the soil below the mirrors.

Response:

The Applicant does not believe that there is a reasonable mirror washing wastewater recovery system for mirror wash water runoff. The use of custom-designed linear trough gravity flow

and/or vacuum recovery systems would result in significant economic and engineering costs with increased potential for solar collector assembly damage during wash cycles.

Item 60:

Information Required:

A. Please identify the chemical composition of any surfactants for mirror washing and any herbicides, dust suppressors, or soil stabilizers that would be used by the project.
B. Provide a copy of the Material Safety Data Sheet (MSDS) for each surfactant, herbicide, dust suppressor, and soil stabilizer.

Response:

A. No surfactants will be used. Roundup® or equivalent is expected to be used as the herbicide and Coherex® is expected to be used as the soil stabilizer.

B. The MSDS for the herbicide and soil stabilizer are included as Attachment for Response to Item 60.

Item 61:

Information Required:

Please discuss and quantify the buildup of mirror wash water surfactant, herbicide, dust suppressor, and soil stabilizer chemicals in the soil over the life of the project.

Response:

SCA Wash Water Surfactant

No surfactants will be used with mirror wash water and as such no buildup will occur.

Herbicides

How long an herbicide persists in the environment depends on a lot of factors, but the half-life is typically very short. Half-life is a measure of how long it takes for 50% of a chemical to degrade or dissipate. Herbicides are not expected to build up as their half-life can range from days to months and as such the herbicide would be largely dissipated upon yearly applications.

Soil Stabilizers

The Applicant plans on using Coherex® as a soil stabilizer. Coherex® resins are suspended in water, and are not water-soluble as are the components of most other dust control agents. Therefore, Coherex® will not leach out of the soil as happens to many other dust palliatives.

The biodegradability of Coherex® has not been measured. Coherex® will biodegrade under normal environmental conditions. Successive treatments of Coherex® will result in a desirable gradual buildup of the resins, even though the resin is undergoing biodegradation. Maintenance applications will likely only require light application of dilute Coherex® solution. When

maintenance treatment is discontinued the built-up Coherex® resins will disappear through the biodegradation process.

Visual Resources (62-71)

Item 62:

Information Required:

Please provide scaled architectural elevations of the SCAs (both front and side elevations), and indicate the point of mirror rotation. Please describe the maximum and minimum heights of the SCAs in the course of the day.

Response:

Please refer to the Attachment for Response to Item 62 for the requested drawings.

Item 63:

Information Required:

Please provide close-up photographs of SCAs of the type proposed for the Abengoa Mojave Solar project. Please include photographs of fronts, backs and mounting structures for the SCAs. If SCAs in the photographs differ from those proposed for the Abengoa Mojave Solar project, please describe the differences.

Response:

Please refer to the Attachment for Response to Item 63 for the requested photographs.

The SCA photographs are of one version being considered by the Applicant for the Project. Another version under consideration is largely the same (aperture, height, center of rotation) as shown in response to Data Request Item 62 but employs a novel structural design currently under development. The differences do not affect visual resources and are simply structural in nature.

Item 64:

Information Required:

Please identify all occupied residences within 5 miles of the project vicinity on a map or aerial photo. Reference is made in the AFC to residences south, north and west of the project site (AFC 5.15-36). Please indicate these on the map or photo.

Response:

An additional review of the area was conducted to identify residences. In some cases it is not clear whether or not a residence is occupied. A map of the residences that have the potential to be occupied within 5 miles of the project is provided as Attachment for Response to Item 64. Locations marked with “Residence” or that have no label associated with the location could not be confirmed to be occupied. All other markings are occupied residences.

AFC 5.15-6 noted a residence to the north of the Alpha site. This is incorrect as the structure located on that property is not habitable. Other structures in the area that are not marked are also not habitable.

The provided map only shows within about one mile from the site. A search out to five miles was conducted and revealed no other residences and is subsequently not mapped.

Item 65:

Information Required:

In order to convey the wider project context, please provide a map of surrounding BLM lands, including Wilderness Areas, Areas of Critical Environmental Concern, and the Watchable Wildlife Area boundaries, at 1:24,000 scale encompassing a radius of at least 5 miles from the project.

Response:

Please refer to the map provided as Attachment for Response to Item 65. The Watchable Wildlife Area boundaries are coincident or within the Harper Dry Lake ACEC boundaries.

Item 66:

Information Required:

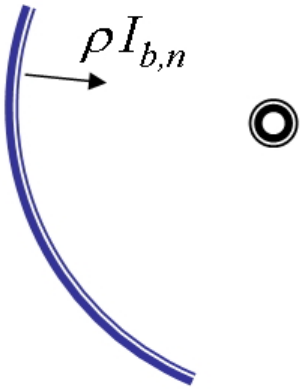
Please characterize the maximum potential brightness (luminance) of diffuse and spread reflection from mirrors in candela per square meter.

Response:

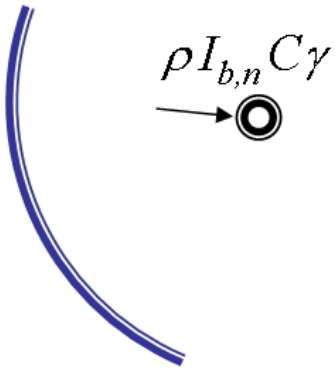
As is shown in the Response to Item 72, the focal point constitutes the point for maximum concentration of solar radiation. Any rays that miss the receiver will be spread out with decreased concentration as the distance from the collector increases.

There are two hypothesized situations of potential brightness emanating from the collector. The first is a direct reflection of sunlight off of an SCE mirror back to an observer. This situation is not expected due to the singularly-curved specular surface reducing distant images to a line when viewed by an observer.

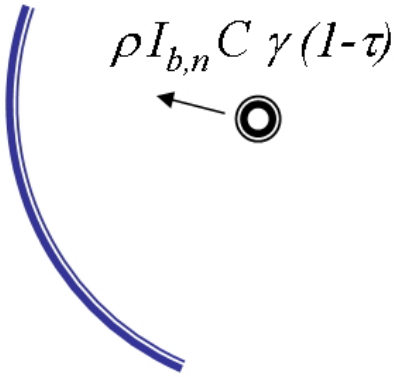
Second, when an observer is not on the axis of the collector, an image of the illuminated Heat Collection Element (HCE) would appear. This image will appear at a much lower intensity than the sun due to the reflectivity of the mirror and the properties of the HCE. The resulting HCE image is created from the reflectivity component of the HCE that is mainly diffuse and being imaged onto the SCA mirror to the viewpoint of the observer. Reflectivity of the HCE as a function of incident angle and rejection angle is not available and would be needed to accurately estimate the brightness. Notwithstanding this, a method to estimate the brightness is presented below which presents a worst-case methodology.



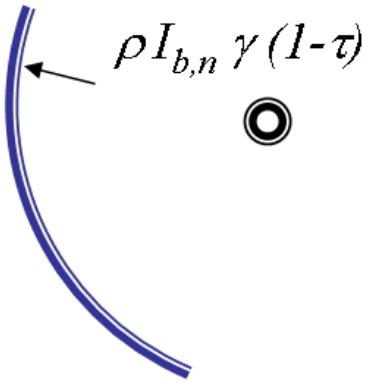
The radiation incident on the collector is the beam normal radiation. For simplicity, let´s assume that a zero incidence angle is considered.
This radiation is reflected by the mirrors. This reduces the solar radiation by the reflectivity ρ of the mirrors.



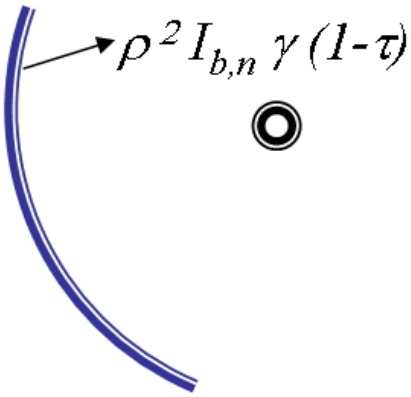
The radiation incident on the receiver is obtained by factoring in the concentration ratio *C*, and the optical intercept γ.



Only a fraction of the incidence radiation is reflected by the receiver. For simplicity, let´s assume that no absorption occurs on the receiver glazing, and that a fraction (1 – τ) is reflected.



The radiation that hits back to the mirror is the reduced by the inverse of the concentration ratio, cancelling out this term.



Finally, the radiation being reflected back from the receiver is affected again by the reflectivity of the mirror.

If typical values are used for the above parameters (r = 0.939, g = 0.97, and t = 0.963), the reflected radiation is 3.1% of the incident solar radiation. The reflected radiation will be further reduced by the aforementioned specular and diffuse properties of the HCE. A highly specular receiver would tend the result to 0% where a highly diffuse receiver will tend the result to 3.1%.

Item 67:

Information Required:

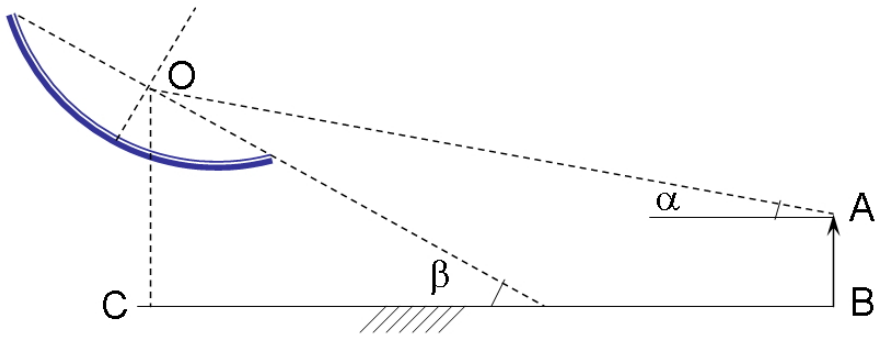
Please describe the hours in which the mirror surface of a trough could be visible to an off-site viewer on the ground, and the proportion of surface visible in the course of the day.

Response:

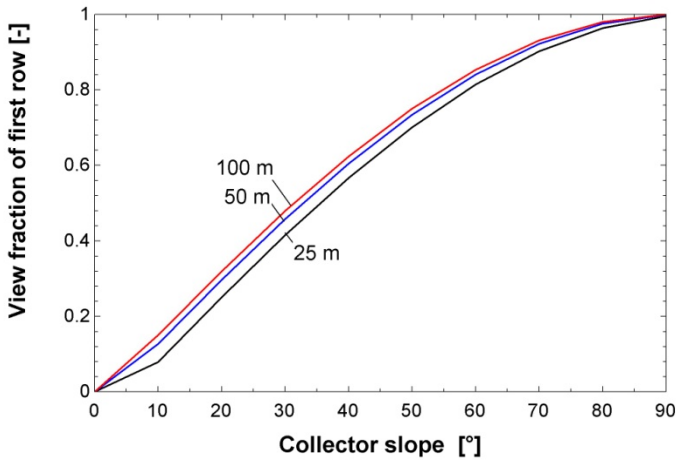
In order to answer this question, the following picture defines the basic geometry of an observer represented by the line AB, at a distance BC from a collector which is in a tilted position described by the slope angle β. The observer's view angle from the horizontal to the center of the collector (O) is described by the angle α.

Considering the normal operation of the collector field, at sunrise the collector aperture will be vertical, facing east, with a slope of 90°. As the sun moves above the horizon, the collector slope decreases, until it reaches a value of zero at noon. After noon, the slope grows until it reaches

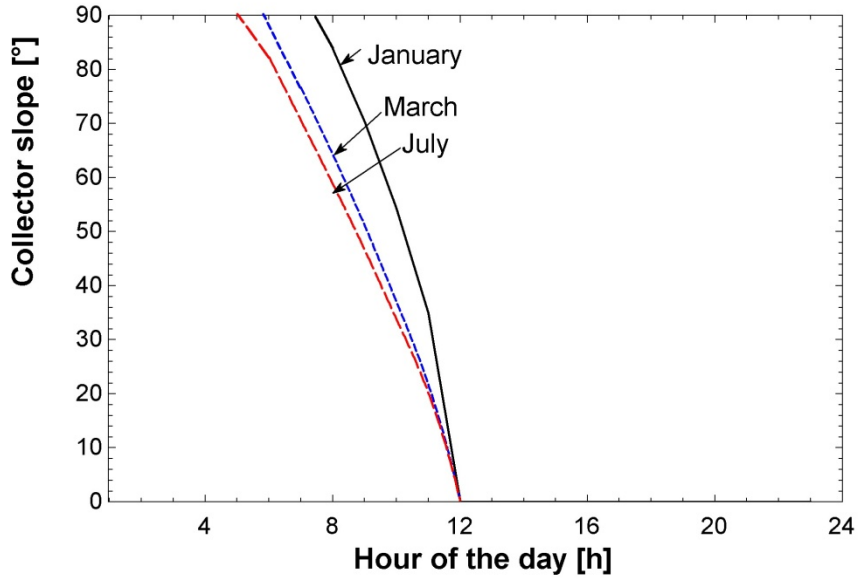
the value of 90 °, but facing west. For a particular observer located on the east side of the collector, the mirror surface will be visible only from sunrise to noon.



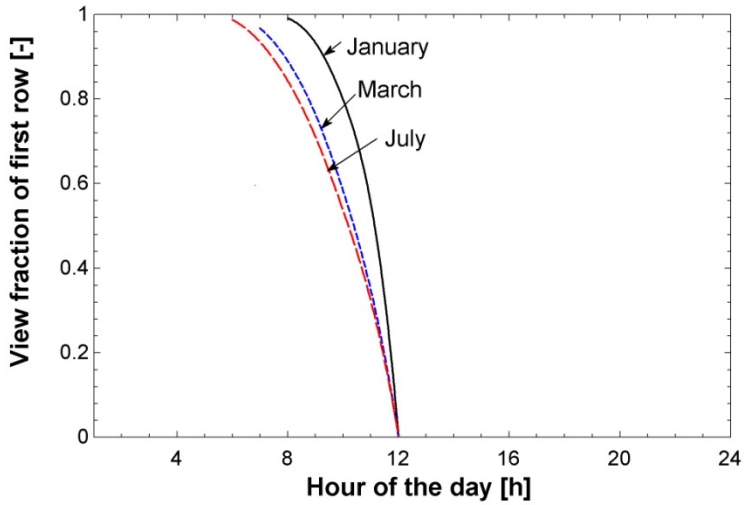
An analysis was performed in order to evaluate the mirror surface visible to an observer at a distance BC from the collector. The following figure shows the mirror surface visible to an observer at different collector slope angles. Three distances from the collector were evaluated: 25m, 50m and 100m, which show very similar behavior. The vertical axis in this plot is presented as the non-dimensional visible surface area, calculated as the ratio between the visible area to the aperture of the collector.



The second step was to calculate the hourly collector slope for the entire year. The following figure shows the monthly average collector slope, for January, March and July, as function of hour of the day. For this plot, only the values of slope when the collector face east are plotted, indicating the slope for the time of the day in which some part of the mirror surface is visible. This plot shows how the sunrise is earlier in July than in January, as well as it shows a much faster movement of the collector during winter, going from a slope of 90° to zero in fewer hours than in July.



Finally, the two functions (the fraction of visible mirror surface as function of collector slope and the slope as function of hour of the day) were combined into a single figure. The following figure shows the fraction of the mirror surface visible to an observer at 100 meters from the collector, as function of hour of the day.



This plot indicates that an observer located on the east side of the collector field will see a fraction of the collector surface from sunrise to noon. However, this fraction drops very rapidly during the day. In July, the visible collector surface drops to 50% in 4 hours, while in January it drops to 50% in less than 3 hours.

The plots were developed for one collector row, as the first collector row will block the view of all of the following collector rows.

Item 68:

Information Required:

Please provide all available anecdotal information on glare effects of the Kramer Junction and existing Luz Solar Energy Generation System (SEGS) XI and XII power plants to the west and north of the project site, including photographs of off-site diffuse or spread glare, and images of the heated HCEs, as seen from public roads/viewpoints.

Response:

The Applicant is not aware of reports of adverse glare effects from any of the above listed facilities. The existing SEGS sites located at the intersection of Highway 58 and 395 are in close proximity to businesses, the roadway (within about 200 feet of US Hwy 395) and other observers. These facilities are situated in a much less remote location than the proposed Project site without issue. The Applicant is also not aware of any issues resulting from the existing SEGS sites at Harper Lake, adjacent to the proposed Project which is a very remote location. Moreover, this issue has been reviewed on recent and current projects before the Energy Commission and glare has been routinely been found to be not an issue.

Additionally, the Applicant is not aware of any worker safety issues resulting from glare at any SEGS facilities.

Pictures available to the Applicant and taken of the Applicant's project in Sevilla Spain showing with illuminated HCEs are included in Figure 1 and Figure 2 below.

Figure 1. Illuminated HCE Pictured from Below

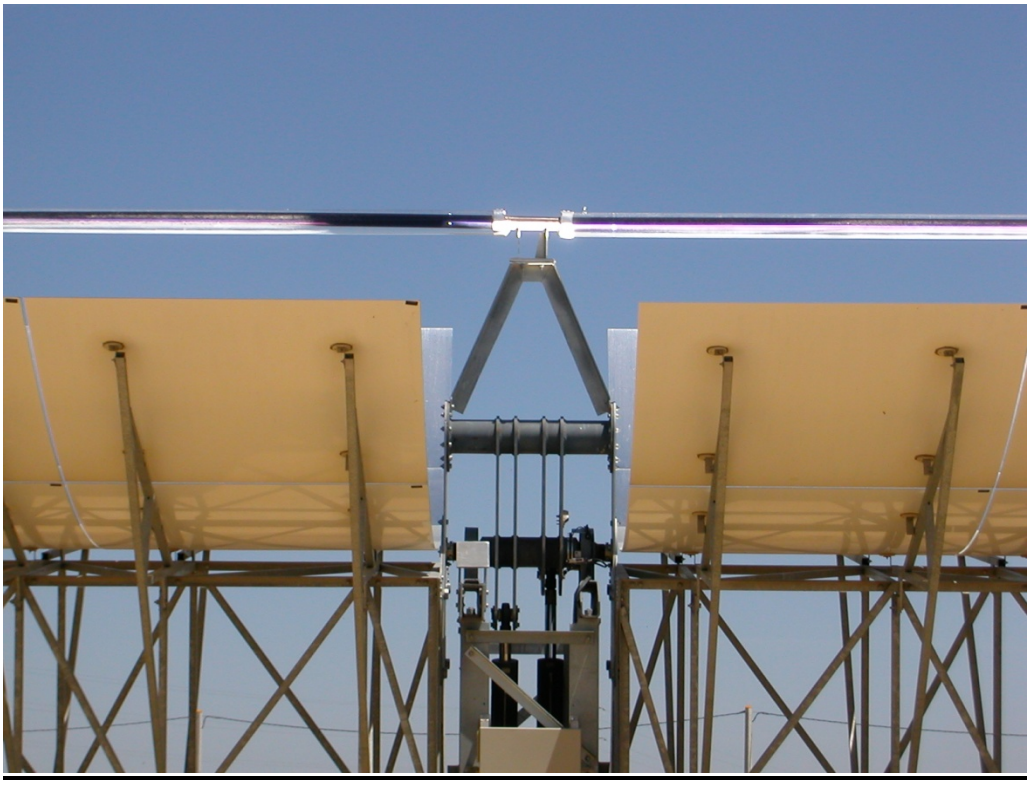


Figure 2. Illuminated HCE Pictured from Side

Item 69:

Information Required:

Please describe whether any portion of the HCEs would be visible to viewers on the ground, either on- or off-site.

Response:

Yes, the receiver will be visible for viewers on the ground. When the collector is horizontal, the HCE is 50 cm above the mirror line. Therefore, in the worst case, when the collector is horizontal, any viewer on the ground located at a distance equal or greater than 164 m will be able to see the HCE. If the collector slope is greater than zero, this distance becomes shorter.

Item 70:

Information Required:

If so, please characterize the maximum potential brightness (luminance) of the HCEs in candela per square meter.

Response:

Please refer to Response to Item 66, above.

Item 71:

Information Required:

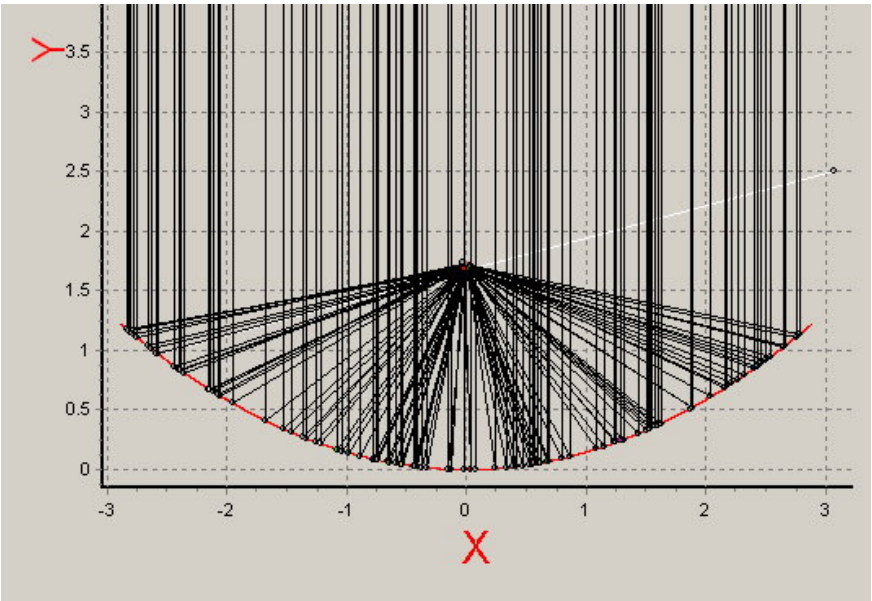
Please explain whether any portion of the directly reflected solar radiation could pass by the HCEs (the steel tube annulus) due to the total divergence factor of the reflectors.

A. If so, how much?
B. Is this amount sufficient to cause any potential retinal damage or flash blindness?
C. Are there measures that would prevent such inadvertent off-site reflection (such as shielding of the HCEs, etc.)?

Response:

Overall design methods and detailed ray-tracing analysis have been used to determine the fraction of the energy that hits the receiver to the energy that is reflected from the mirror surface. This fraction is called optical intercept. It has been determined that the collector that Abengoa Solar will deploy in Mojave Solar Project has an intercept factor of 0.97. This means that 3 percent of the radiation that is reflected from the mirror misses the receiver.

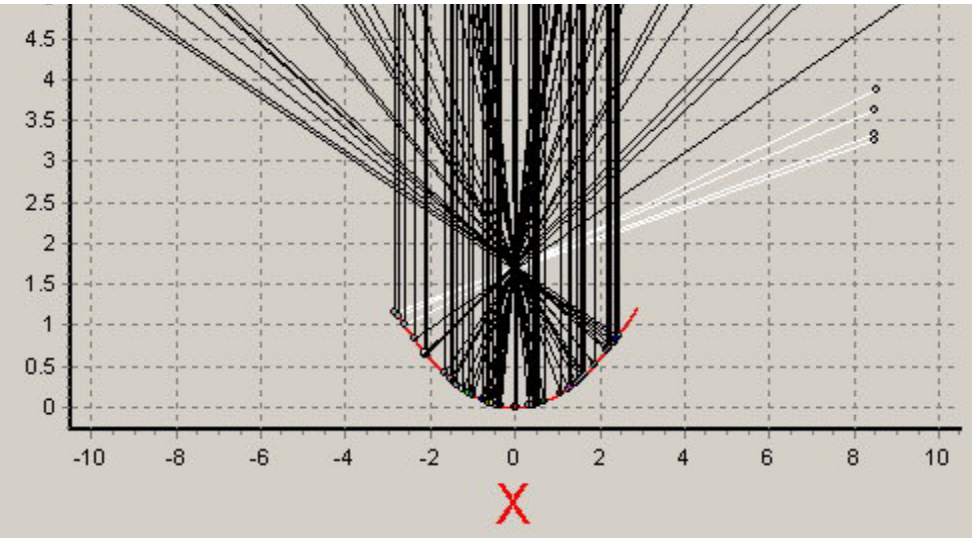
The following figure shows an example raytracing analysis of the collector. The high concentration of lines on the receiver and the few missed rays demonstrate the high optical accuracy of the collector.



A. Please refer to the answer provided for Data Request Item 70.

B. The Applicant is not qualified to make judgments better made by an opthamologist. Notwithstanding this, the Applicant expects that the answer is no. Only 3% of the energy that hits the mirror misses the receiver. Furthermore, once the radiation misses the focal point (i.e., the receiver), the radiation becomes more and more dispersed. For example, the following figure represents a raytracing analysis without the receiver. The vertical sun rays hit the mirrors and

are reflected towards the focal point. However, once that they pass the focal point, the distance between them grows as they leave the collector. This behavior indicates the behavior of the rays that miss the receiver.



C. There are no practical measures that would prevent such reflection. Any measure that would try to prevent this radiation would result in higher energy being missed by blocking incident radiation.

Visual Resources – Visual Plume (72-77)

Item 72:

Information Required:

Please provide an electronic copy of the SACTI modeling input and output files including the meteorological data file(s) and any raw meteorological data files (in a ready to use spreadsheet format) used to create the SACTI meteorological data input file(s).

Response:

The SACTI files are provided in the Attachment for Response to Item 72. included with this response.

Item 73:

Information Required:

Please summarize for the cooling towers the conditions that affect vapor plume formation including cooling tower heat rejection, exhaust temperature, and exhaust mass flow rate. Please provide values to complete the table.

Parameter	Cooling Towers Exhausts		
Number of Cells	6 cells (1 by 6)		
Cell Height*	15.55 meters (51 feet)		
Cell Diameter*	9.14 meters (30 feet)		
Tower Housing Length*	98.75 meters (324 feet)		
Tower Housing Width*	16.46 meters (54 feet)		
Ambient Temperature*	30°F	65°F	100°F
Ambient Relative Humidity	90%	40%	15%
Number of Cells in Operation			
Heat Rejection (MW/hr)			
Exhaust Temperature (°F)			
Exhaust Flow Rate (lb/hr)			

* Cell height and diameter and tower length and width are from air quality modeling files.

Additional combinations of temperature and relative humidity, if provided by the applicant, will be used to more accurately represent the cooling tower exhaust conditions. Please include appropriate design safety margins for the heat rejection, exhaust flow rate and exhaust temperature in consideration that the air flow per heat rejection ratio may be used in a Condition of Certification confirmation of design limit.

Response:

The completed table is presented below, with the addition of the coldest projected operational case. All of this data is for one cooling tower with 6 cells per plant. The project intends to run all cells when the turbine generator is operating at the summer afternoon design point, but reduce the fan speed during partial load conditions and colder hours of operation as necessary to save power. However, during cold periods when plume formation is more likely, fans will be operated in a manner to minimize plume conditions.

1. **Parameter**	**Cooling Towers Exhausts**			
Number of Cells	6 cells (1 by 6)			
Cell Height*	15.55 meters (51 feet)			
Cell Diameter*	9.14 meters (30 feet)			
Tower Housing Length*	98.75 meters (324 feet)			
Tower Housing Width*	16.46 meters (54 feet)			
Ambient Temperature*	30°F*	65°F	2. 100°F	50°F
Ambient Relative Humidity	90%*	40%	15%	85%
Number of Cells in Operation	3*	6	6	6
Heat Rejection (MW)	124.6*	211.6	250.6	191.1
Exhaust Temperature (°F)	80*	80.9	90.2	80
Exhaust Flow Rate (1000 cfm)	3400*	7357	8098	6137

We were not able to identify any operational (daylight) hours for the site for which the solar plant (without salt storage) would be able to operate at the 30°F ambient temperature and 90% relative humidity conditions. If this case is possible, it would be with 50% load if the sun was shining at that same time; and we could run the cooling tower at any of the multiple cases. The data in the above table shows a case in which we significantly reduce the air flow to maintain an exhaust temperature of 80 °F.

To compensate for the unlikelihood of the 30°F case, we have included in the table the coldest hour that we have any considerable power generation (large heat load). This occurs at 50°F Dry Bulb which we assumed is at 85% Relative Humidity. At these hourly conditions the maximum expected heat rejection would be 124.6 MW (652 Million Btu/hr).

Item 74:

Information Required:

Please provide the variation in average cooling tower heat load per hour (military time) for each month.

Response:

Table 1 below provides the variation in average cooling tower heat load per hour for each month, as a percentage of full load.

Table 1. Variation in Average Cooling Tower Heat Load per Hour for Each Month

Time (HRS)	1:00	2:00	3:00	4:00	5:00	6:00	7:00	8:00	9:00	10:00	11:00	12:00	13:00	14:00	15:00	16:00	17:00	18:00	19:00	20:00	21:00	22:00	23:00	0:00
Month																								
Jan	0%	0%	0%	0%	0%	0%	0%	0%	3%	43%	42%	36%	32%	43%	40%	51%	0%	0%	0%	0%	0%	0%	0%	0%
Feb	0%	0%	0%	0%	0%	0%	0%	0%	25%	57%	51%	48%	45%	51%	54%	62%	30%	0%	0%	0%	0%	0%	0%	0%
Mar	0%	0%	0%	0%	0%	0%	0%	21%	81%	85%	85%	81%	80%	80%	81%	74%	65%	1%	0%	0%	0%	0%	0%	0%
Apr	0%	0%	0%	0%	0%	0%	0%	60%	89%	91%	97%	94%	91%	89%	90%	89%	77%	14%	0%	0%	0%	0%	0%	0%
May	0%	0%	0%	0%	0%	0%	35%	93%	98%	100%	100%	100%	99%	98%	97%	90%	84%	44%	0%	0%	0%	0%	0%	0%
Jun	0%	0%	0%	0%	0%	0%	54%	100%	100%	100%	100%	100%	100%	100%	100%	100%	98%	73%	0%	0%	0%	0%	0%	0%
Jul	0%	0%	0%	0%	0%	0%	39%	93%	97%	97%	99%	100%	99%	97%	94%	94%	82%	62%	0%	0%	0%	0%	0%	0%
Aug	0%	0%	0%	0%	0%	0%	3%	94%	100%	100%	100%	100%	100%	99%	95%	95%	87%	46%	0%	0%	0%	0%	0%	0%
Sep	0%	0%	0%	0%	0%	0%	0%	73%	100%	100%	97%	93%	87%	88%	88%	94%	72%	2%	0%	0%	0%	0%	0%	
Oct	0%	0%	0%	0%	0%	0%	0%	20%	69%	82%	72%	70%	67%	76%	84%	85%	21%	0%	0%	0%	0%	0%	0%	
Nov	0%	0%	0%	0%	0%	0%	0%	0%	31%	55%	48%	45%	45%	48%	55%	44%	0%	0%	0%	0%	0%	0%	0%	0%
Dec	0%	0%	0%	0%	0%	0%	0%	0%	3%	45%	36%	32%	36%	45%	44%	42%	0%	0%	0%	0%	0%	0%	0%	0%

Item 75:

Information Required:

Please provide heat rejection reduction assumptions, with or without corresponding ambient condition assumptions, that staff can use to determine when cooling tower cells would be shut off when operating at reduced cooling loads and/or when under favorable ambient conditions.

Response:

The cooling tower will contain 6 cells. As output is decreased, the number of cells required is expected to decrease approximately linearly.

No of Cells in Operation	Percentage of Full Load Operation
6	83% - 100%
5	67% - 83%
4	50% - 67%
3	33% - 50%
2	17% - 33%
1	0 - 17%

Item 76:

Information Required:

Please provide the cooling tower manufacturer and model number information and a fogging frequency curve from the cooling tower vendor for the two cooling towers, if available.

Response:

The anticipated manufacturer and model number for the cooling tower is SPX Cooling Technologies, Model No. F499-6.0-06. The Fogging Frequency curve is included as Attachment for Response to Item 76. The two cooling towers will be the same design.

Item 77:

Information Required:

Please identify if the cooling tower fan motors will be dual speed or have variable speed/flow controllers.

Response:

The cooling tower fan motors will be single, dual speed, or variable speed. At this point in the design, all options are still under consideration.

Item 78:

Information Required:

Please indicate whether the county of San Bernardino operates a Construction and Demolition Waste Diversion Program.

Response:

San Bernardino offers a Construction & Demolition Waste Recycling Guide & Directory[1] with the goal to meet the requirements of Assembly Bill 939.

Item 79:

Information Required:

Please provide information on how the Abengoa Mojave Solar project will meet each of the requirements of the program cited in the previous data request.

Response:

Table 5.16-5 of the AFC summarizes the anticipated waste streams generated during Project construction, along with appropriate management methods for treatment or disposal.

The county has set up a Comprehensive Disposal Site Diversion Program to address materials coming into the landfill. This program addresses all self-haul and large-debris boxes (20/30/40 cubic yard bins) and diverts materials based on recyclability and current market conditions. This includes Construction and Demolition waste. Users of this program must pay an additional $12 minimum load fee, also known as an AB 939 fee.

Select loads are sorted and material, such as concrete, metal, wood/green waste, that can be reused or recycled will be pulled out for further processing. Loads are reviewed at the landfill for possible recycling or reuse.

The Applicant will sort waste material at the construction site haul waste material to the nearest county landfill for diversion to the County's Comprehensive Disposal Site Diversion Program.

Item 80:

Please refer to the letter "Abengoa Mojave Solar Project (09-AFC-5): Notice Pursuant to 20 CCR 1716(f): Data Request Set 1B (nos. 1-86)" dated November 16, 2009 and docketed regarding this request.

Item 81:

Information Required:

Please provide information on when, and how the oil tanks, excess aboveground piping, and waste oil was or will be cleaned up and disposed of prior to construction at the project site.

[1] http://www.co.san-bernardino.ca.us/dpw/solidwaste/pdf/20080623_dpw_SWMD_CandDBooklet_2006.pdf

Response:

Demolition and clearing of the site will occur in the first few months of the project construction schedule prior to grading a project area. As noted in the Phase 1 ESA, the tanker was temporarily parked on the property by the neighboring SEGS owner and used to dispense soil stabilizer at their facility. Smaller containers and piping that are remnants of the historical use will be removed and disposed of consistent with appropriate standards. This may include sampling of any residuals, containing components during removal, and disposing of components appropriately either as general or hazardous waste depending on the findings of sampling. Given the current condition of the site, the recent and preceding Phase 1 ESAs, and the highly salvaged condition of any remaining equipment, it is not expected that much of anything remains that will become an issue during construction.

Although not anticipated, if during construction adverse conditions exist due or unanticipated equipment or materials being discovered, an action plan will be developed and executed to properly prepare the site for construction.

Item 82:

Information Required:

Please provide aerial photographs of the proposed project site for the last 20 years at a map scale of 1-inch is equal to 500 to 1,000 feet. These aerials may not have been flown every year. Please provide whatever is available for this time period.

Response:

The Applicant was able to retrieve two aerial photographs of the site for the desired time period (1995 and 2008). These photographs are provided as Attachment for Response to Item 82, scaled to fit 18x24 inch paper. The photographs are also provided electronically on the CDs enclosed with these responses at the requested scale.

Item 83:

Information Required:

Please explain what procedures will be used for handling and remediating HTF spills.

Response:

Although the HTF system is designed to minimize the potential for HTF leakage or spills to soil, any such occurrences will be promptly reported and the soil spill area will be excavated in accordance with agreed-upon state and local requirements and transferred to an on-site bio-remediation facility. The Project will include bioremediation/land farm units to treat soil contaminated with HTF in the event of a leak or spill. The proposed bioremediation and land farm facilities will cover an area of approximately 1.5 acres on each plant site.

The bioremediation/land farm area will be designed and permitted in accordance with Lahontan RWQCB requirements and will include a leak detection system and monitoring wells. Treatment

in the bioremediation units involves the addition of nitrogen and phosphorous (i.e., fertilizers) as nutrients to the HTF-contaminated soil to stimulate consumption of HTF by indigenous bacteria.

Item 84:

Information Required:

Please explain what happens to the HTF-impacted soils once the soil has been bioremediated or land farmed.

Response:

The soil will remain in the bioremediation/land farm unit until concentrations are reduced to appropriate levels, as confirmed testing, for re-use as fill material on the site for erosion control and soil maintenance.

Item 85:

Information Required:

Please explain how HTF-contaminated soil will be handled and disposed of if it is determined to be present in concentrations that constitute a hazardous waste.

Response:

Appropriate contamination levels for bioremediation and land farming of site soils will be determined by Lahontan-approved testing to ensure the adequacy of the bioremediation/land farm unit design for HTF-contaminated soil.

Contaminated soil that exceeds this level will be disposed of at an appropriate off-site waste facility in appropriate containers.

Item 86:

Information Required:

Please explain what the difference is between bioremediation and land farming for the Abengoa Mojave Solar project.

Response:

Land farming is essentially a method of bioremediation however the lexicon used in the industry led to “land farming” and “bioremediation” differing in the level of soil contamination and thus the type of activity needed to decompose the contaminant in the soil. Bioremediation is the first step for soils that don’t exceed the hazardous material limit but are still above approximately 100 mg/kg of contaminant. This activity is more intensive and requires fertilizers to degrade the contaminant. Land farming is less intensive and the soil is typically only turned when sampled.