UNITED STATES ENVIRONMENTAL PROTECTION AGENCY
REGION IX
75 Hawthorne Street
San Francisco, CA 94105-3901

MAY 17 2010

Attn: Gregory Helseth
Renewable Energy Project Manager
BLM Pahrump Field Office
4701 North Torrey Pines Drive
Las Vegas, NV 89130-2301

Subject: Draft Environmental Impact Statement for the Solar Millennium Amargosa Farm Road Solar Energy Project, Nye County, Nevada [CEQ# 20100083]

Dear Mr. Helseth:

The U.S. Environmental Protection Agency (EPA) has reviewed the Draft Environmental Impact Statement (DEIS) for the Solar Millennium Amargosa Farm Road Solar Energy Project, Nye County, Nevada. Our comments are provided pursuant to the National Environmental Policy Act (NEPA), Council on Environmental Quality (CEQ) regulations (40 CFR Parts 1500-1508), and our NEPA review authority under Section 309 of the Clean Air Act.

EPA supports increasing the development of renewable energy resources in an expeditious and well planned manner. Using renewable energy resources such as solar power can help the nation meet its energy requirements while minimizing the generation of greenhouse gases. While renewable energy facilities offer many environmental benefits, they are not without the potential for adverse impacts. Appropriate siting and design of such facilities is of paramount importance if the nation is to make optimum use of its renewable energy resources without unnecessarily depleting or degrading its water resources, wildlife habitats, recreational opportunities, and scenic vistas.

The Bureau of Land Management (BLM) has identified thirty-four proposed renewable energy projects as "fast track" projects that are expected to complete the environmental review process and be ready to break ground by December 2010 in order to be eligible for funding under the American Recovery and Reinvestment Act. Twenty-eight of these projects are located in our Region; 13 of them are located in Nevada. We are aware that many more projects that have not been designated "fast-track" are also being considered by BLM. Many, if not all, of these projects, fast track or otherwise, are proposed for previously undeveloped sites on public lands. In making its decisions regarding whether or not to grant rights-of-way for such projects, we recommend that BLM consider a full range of reasonable alternatives to minimize the adverse environmental impacts. Such alternatives could include alternative technologies or altered project footprints at the proposed location, as well as alternate sites, such as inactive mining or other disturbed sites that may offer advantages in terms of availability of infrastructure and less vulnerable habitats. Given the large number of renewable energy project applications currently under consideration, particularly in the Desert Southwest, we encourage BLM to apply its land

management authorities in a manner that will promote a long-term sustainable balance between available energy supplies, energy demand, and protection of ecosystems and human health.

On August 6, 2009, EPA provided extensive scoping comments for the Amargosa Farm Road Solar Energy Project, which included detailed recommendations regarding purpose and need, range of alternatives, water resources, and other resource areas of concern. On May 3, 2010, we requested and received an informal two-week extension of the comment period for the DEIS. We appreciate your willingness to provide us with additional time to complete our review.

Based on our review of the DEIS, we have rated the document as *Environmental Objections – Insufficient Information* (EO-2). Please see the enclosed "Summary of EPA Rating Definitions." An "EO" signifies that EPA's review of the DEIS has identified potential significant environmental impacts that should be avoided in order to provide adequate protection for the environment. Corrective measures may involve substantial changes to the project. A "2" rating signifies that the DEIS does not contain sufficient information for EPA to fully assess environmental impacts that should be avoided in order to fully protect the environment.

We are particularly concerned about the potential impact of the proposed project to waters of the United States, and this is the basis for our "EO" rating. We understand that the jurisdictional delineation of waters of the United States has not been finalized and the full extent of impacts has not been determined. Based on the preliminary analysis, however, the impacts appear to be of a magnitude that is a significant environmental concern, especially within an arid ecosystem. We are also concerned about the long-term availability of groundwater in the Amargosa Valley, given that future appropriations have already been curtailed. Finally, we are concerned about the indirect and cumulative effects associated with the influx of at least 10 other large-scale solar energy projects proposed in the Amargosa Valley, and the potential impacts on aquatic and riparian communities at Devils Hole and Ash Meadows National Wildlife Refuge.

The Final Environmental Impact Statement (FEIS) should clarify the extent of the jurisdictional waters, demonstrate that the proposed project is the *Least Environmentally Damaging Practicable Alternative* (LEDPA), and identify measures that could mitigate the impacts. It should include a robust discussion of all mitigation measures proposed for the project. To facilitate this action, EPA staff, the U.S. Army Corps of Engineers, BLM, and the project proponent and consultants met on May 13, 2010 and toured the proposed project site to: 1) discuss the geographic extent of jurisdictional waters on the project site and the direct, indirect/secondary impacts that would occur as a result of the proposed project; 2) identify opportunities to avoid and minimize impacts to waters of the U.S.; 3) review the process for identifying the LEDPA; and 4) outline the requirements of a compensatory mitigation plan. We are available for further discussion of these matters and our comments on the DEIS.

EPA appreciates the Bureau's coordination to date and the opportunity to provide input on this project. Please send one hard copy of the Final EIS and two CD ROM copies to this office at the same time it is officially filed with our Washington D.C. Office. If you have any questions, please contact me at 415-972-3843, or contact Ann McPherson, the lead reviewer for this project. Ann can be reached at 415-972-3545 or mcpherson.ann@epa.gov.

Sincerely,

Enrique Manzanilla, Director
Communities and Ecosystem Division

Enclosures: Summary of EPA Rating Definitions
Detailed Comments

Cc: Ron Wenker, Bureau of Land Management, Nevada State Office, Reno, NV
Colonel Thomas C. Chapman, U.S. Army Corps of Engineers, Sacramento, CA
Kristine Hansen, U.S. Army Corps of Engineers, Reno, NV
Amy M. LaVoie, U. S. Fish and Wildlife Service, Las Vegas, NV
Sharon McKelvey, U.S. Fish and Wildlife Service, Amargosa Valley, NV
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Wayne R. Belcher, U.S. Geological Survey, Henderson, NV

SUMMARY OF EPA RATING DEFINITIONS*

This rating system was developed as a means to summarize the U.S. Environmental Protection Agency's (EPA) level of concern with a proposed action. The ratings are a combination of alphabetical categories for evaluation of the environmental impacts of the proposal and numerical categories for evaluation of the adequacy of the Environmental Impact Statement (EIS).

ENVIRONMENTAL IMPACT OF THE ACTION

"LO" (Lack of Objections)

The EPA review has not identified any potential environmental impacts requiring substantive changes to the proposal. The review may have disclosed opportunities for application of mitigation measures that could be accomplished with no more than minor changes to the proposal.

"EC" (Environmental Concerns)

The EPA review has identified environmental impacts that should be avoided in order to fully protect the environment. Corrective measures may require changes to the preferred alternative or application of mitigation measures that can reduce the environmental impact. EPA would like to work with the lead agency to reduce these impacts.

"EO" (Environmental Objections)

The EPA review has identified significant environmental impacts that should be avoided in order to provide adequate protection for the environment. Corrective measures may require substantial changes to the preferred alternative or consideration of some other project alternative (including the no action alternative or a new alternative). EPA intends to work with the lead agency to reduce these impacts.

"EU" (Environmentally Unsatisfactory)

The EPA review has identified adverse environmental impacts that are of sufficient magnitude that they are unsatisfactory from the standpoint of public health or welfare or environmental quality. EPA intends to work with the lead agency to reduce these impacts. If the potentially unsatisfactory impacts are not corrected at the final EIS stage, this proposal will be recommended for referral to the Council on Environmental Quality (CEQ).

ADEQUACY OF THE IMPACT STATEMENT

Category "1" (Adequate)

EPA believes the draft EIS adequately sets forth the environmental impact(s) of the preferred alternative and those of the alternatives reasonably available to the project or action. No further analysis or data collection is necessary, but the reviewer may suggest the addition of clarifying language or information.

Category "2" (Insufficient Information)

The draft EIS does not contain sufficient information for EPA to fully assess environmental impacts that should be avoided in order to fully protect the environment, or the EPA reviewer has identified new reasonably available alternatives that are within the spectrum of alternatives analyzed in the draft EIS, which could reduce the environmental impacts of the action. The identified additional information, data, analyzes, or discussion should be included in the final EIS.

Category "3" (Inadequate)

EPA does not believe that the draft EIS adequately assesses potentially significant environmental impacts of the action, or the EPA reviewer has identified new, reasonably available alternatives that are outside of the spectrum of alternatives analyzed in the draft EIS, which should be analyzed in order to reduce the potentially significant environmental impacts. EPA believes that the identified additional information, data, analyzes, or discussions are of such a magnitude that they should have full public review at a draft stage. EPA does not believe that the draft EIS is adequate for the purposes of the NEPA and/or Section 309 review, and thus should be formally revised and made available for public comment in a supplemental or revised draft EIS. On the basis of the potential significant impacts involved, this proposal could be a candidate for referral to the CEQ.

*From EPA Manual 1640, Policy and Procedures for the Review of Federal Actions Impacting the Environment.

U.S. EPA DETAILED COMMENTS ON THE DRAFT ENVIRONMENTAL IMPACT STATEMENT FOR THE SOLAR MILLENNIUM AMARGOSA FARM ROAD SOLAR ENERGY PROJECT, NYE COUNTY, NEVADA, MAY 17, 2010

Project Description

Solar Millennium, LLC, has submitted a right-of-way application to the Bureau of Land Management (BLM) to construct two concentrated solar thermal parabolic trough power plant facilities with a combined capacity of 464 megawatts (MW). The proposed project would consist of two 232 MW dry-cooled power plants, solar fields composed of parabolic trough mirrors, and thermal storage tanks containing molten salt, capable of producing additional energy for 3 1/2 hours after sundown. Water needs for the proposed project will be met by one of two options: 1) leasing and conveying groundwater from three existing wells nearby; or 2) purchasing existing water rights from the three wells and moving the point of diversion to the power block areas. The proposed design also includes a stormwater retention pond, water pipeline, bioremediation area, and switchyard and will utilize a 230-kilovolt (kV) transmission line connecting the plant to the nearby Valley Electric Substation. The project facilities would be located on approximately 4,350 acres of public land within a 6,320 acre right-of-way (ROW) in Amargosa Valley about 80 miles northwest of Las Vegas, Nevada. Each facility is expected to operate for approximately 30 years.

Compliance with Clean Water Act Section 404

In our scoping comments (August 6, 2009), EPA noted that the project applicant should coordinate with the U.S. Army Corps of Engineers (Corps) to determine if the proposed project requires a Section 404 permit under the Clean Water Act (CWA). The Draft Environmental Impact Statement (DEIS) presents no information on this topic except to note that activities resulting in dredging or filling of jurisdictional waters of the United States (WUS or jurisdictional waters), which can include drainages and ephemeral washes, require authorization under a Section 404 Permit (pg. 3-27).

The purpose of the CWA is to restore and maintain the chemical, physical, and biological integrity of waters of the United States. These goals are achieved, in part, by prohibiting discharges of dredged or fill material that would result in avoidable or significant adverse impacts on the aquatic environment. Pursuant to Section 404 of the CWA, discharge of dredged or fill material to WUS requires a permit, issued by the Corps. If a permit is required, EPA will review the project for compliance with the *Federal Guidelines for Specification of Disposal Sites for Dredged or Fill Materials* (40 CFR 230) (Guidelines), promulgated pursuant to Section 404(b)(1) of the CWA. The burden to demonstrate compliance with the Guidelines rests with the permit applicant. The Guidelines contain four main requirements that must be met to obtain a Section 404 permit:

a) Section 230.10(a) prohibits a discharge if there is a less environmentally damaging practicable alternative to the proposed project.

b) Section 230.10(b) prohibits discharges that will result in a violation of water quality standards or toxic effluent standards, jeopardize a threatened or endangered species, or violate requirements imposed to protect a marine sanctuary.
c) Section 230.10(c) prohibits discharges that will cause or contribute to significant degradation of waters. Significant degradation may include individual or cumulative impacts to human health and welfare; fish and wildlife; ecosystem diversity, productivity and stability; and recreational, aesthetic or economic values.
d) Section 230.10(d) prohibits discharges unless all appropriate and practicable steps have been taken to minimize potential adverse impacts of the discharge on the aquatic ecosystem.

Recommendation:
Discuss and demonstrate compliance with the Guidelines in the Final Environmental Impact Statement (FEIS).

Geographic Extent of Waters of the United States

EPA is concerned about the potential adverse impact to aquatic resources that would result from the project, as proposed. The DEIS contains no information on the geographic extent of waters of the United States on the project site. EPA has received two documents[1] submitted on behalf of the project proponent to the Corps that assess CWA jurisdiction at the proposed project site. These two documents are currently under review by the Corps and EPA. At present, we are unable to determine the full extent of project impacts to jurisdictional waters. We are concerned that the extent of such waters may be underestimated. EPA met with the Corps, BLM, and others on May 13, 2010 at the project site to discuss this issue further.

Recommendation:
The FEIS should include a final determination of the extent of waters of the United States at the project site, and address any issues raised as a result of the EPA/Corps site visit.

Analysis of Alternatives – 40 CFR 230.10(a)

In order to comply with the Guidelines, the applicant must comprehensively evaluate a range of alternatives to ensure that the *"preferred"* alternative is the *Least Environmentally Damaging Practicable Alternative* (LEDPA). Identification of the LEDPA is achieved by performing an alternatives analysis that estimates the direct, indirect, and cumulative impacts to jurisdictional waters resulting from a set of on- and off-site project alternatives. Project alternatives that are not practicable and do not meet the project purpose are eliminated. The LEDPA is the remaining alternative with the fewest impacts to aquatic resources, so long as it does not have other significant adverse environmental consequences. Only when this analysis has been performed can the applicant and the permitting authority be assured that the selected alternative is the LEDPA (40 CFR 230.10(a)).

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[1] *Delineation of Wetlands and Waters of the U.S. for Amargosa Farm Road Solar Power Project*, Nye County, Nevada, August 2009, and *Appendix A: Drainage C Addendum*, March 11, 2010, prepared for Solar Millennium, LLC, Berkeley, CA, by Tierra Data Inc., Escondido, CA.

As currently proposed, we cannot determine whether or not the preferred alternative represents the LEDPA. It is not possible to determine the LEDPA in the absence of an approved determination of the geographic extent of waters of the United States on the project site. The DEIS contains only a cursory evaluation of three off-site alternatives (pgs. 2-3 to 2-4), with minimal consideration of practicable alternatives in light of costs, logistics, and existing technology as required under the Guidelines. Furthermore, the DEIS does not include a formal analysis of on-site alternatives that may reduce impacts to jurisdictional waters. For example, the DEIS provides only cursory information on the potential for reconfiguration or redesign of building footprints, drainage channels, roads, or project downsizing that could result in avoidance of jurisdictional waters.

The DEIS states that the project proponent has considered the alternative of developing the proposed project as a single 232 MW plant, and that building one plant would have fewer environmental impacts (pg. 2-4). The single plant alternative is rejected, in part, because two plants allow for economies of scale and a single plant would not be as effective in meeting the project objective of attainment of energy mandates and objectives. Based on the information in the DEIS, it appears that the single plant alternative may be practicable and less environmentally damaging to jurisdictional waters when compared to the proposed project alternative. As such, a single 232 MW plant would be considered an on-site *less environmentally damaging, practicable alternative*, pursuant to the Guidelines.

Recommendation:
EPA recommends that BLM include analyses of on- and off-site alternatives in the FEIS and identify the LEDPA. Sufficient detail should be provided to allow for meaningful comparisons.

Minimize Potential Adverse Impacts and Mitigation – 40 CFR 230.10(d)

Pursuant to the Guidelines, mitigation of project impacts begins with the avoidance and minimization of direct, indirect, and cumulative impacts to the aquatic ecosystem, followed by compensatory measures if a loss of aquatic functions and/or acreage is unavoidable. Compensatory mitigation is, therefore, intended only for unavoidable impacts to waters after the LEDPA has been determined. For this reason, it would be premature to examine in detail any mitigation proposal before compliance with 40 CFR 230.10(a) is established.

The DEIS has not clearly demonstrated that all practicable measures to minimize unavoidable impacts to potential waters of the United States have been incorporated into the proposed project design. For example, the DEIS states that off-site flows originating within potentially jurisdictional waters will be managed by filling natural washes and rerouting surface flows through a system of concrete-lined channels around the perimeter of the project site (pg. 2-34). We believe there may be project designs that avoid and minimize direct, indirect, and cumulative impacts to potential jurisdictional washes by reducing the fill footprint, utilizing existing drainage channels, and if necessary, constructing drainage channels with more natural features, such as earthen berms. In addition, the DEIS provides no assessment of the cumulative

impacts on waters of the United States of the proposed project and another 12 proposed energy-related projects in the area. Finally, the DEIS includes no compensatory mitigation measures for potential impacts to jurisdictional waters. In short, the project appears not to comply with EPA's Guidelines, nor with the Corps and EPA's regulations governing mitigation under Section 404 of the CWA.[2]

Recommendations:
Discuss the steps taken to avoid and minimize impacts to waters of the United States. To the extent any aquatic features that could be affected by the project are determined not to constitute waters of the United States, EPA recommends that the FEIS characterize the functions of such features and discuss potential mitigation.

Include in the FEIS a mitigation plan for unavoidable impacts to waters of the United States, as required by Corps and EPA regulations.

Ephemeral Washes and Drainage

EPA is concerned about the potential impact to the ephemeral water segments of Fortymile Wash located within the project area. The DEIS provides basic hydrologic information on the location of the proposed project, but does not include a detailed map of the water resources or hydrographic basins in the Amargosa Valley (pg. 3-29).

Recommendation:
Include a more detailed map of the water resources and hydrographic basins surrounding the proposed project, specifically Fortymile Wash.

Natural washes perform a diversity of hydrologic and biogeochemical functions that directly affect the integrity and functional condition of higher-order waters downstream. Healthy ephemeral waters with characteristic plant communities control rates of sediment deposition and dissipate the energy associated with flood flows. Ephemeral washes also provide habitat for breeding, shelter, foraging, and movement of wildlife. Many plant populations are dependent on these aquatic ecosystems and adapted to their unique conditions. The potential damage that could result from disturbance of flat-bottomed washes includes alterations to the hydrological functions that natural channels provide in arid ecosystems: adequate capacity for flood control, energy dissipation, and sediment movement, as well as impacts to valuable habitat for desert species.

Recommendation:
Include information on the functions and locations of ephemeral washes in the project area because of the important hydrologic and biogeochemical role these washes play in direct relationship to higher-order waters downstream.

The DEIS states that the section of Fortymile Wash that transverses the project area will be rechanneled and designed to intercept the 100-year storm event and convey the concentrated flow to historic discharge points at the southwest corner of the property. Flood protection of the

[2] Compensatory Mitigation for the Loss of Aquatic Resources, Final Rule, 33CFR 325 and 332, April 10, 2008.

property from off-site flows will be provided by means of a continuous concrete-lined channel around the northern and western perimeter of the site. Four primary onsite channels will provide 100-year stormwater runoff interception; minor channels onsite within each section will be designed to intercept and convey the 25-year storm event. All primary channels are proposed to be concrete lined. Energy dissipation facilities will be provided in order to disperse the concentrated flow back to a shallow sheet flow condition prior to leaving the property boundary (pg. 2-34).

Recommendations:
Demonstrate that downstream flows will not be disrupted due to proposed changes to any natural washes nor the excavation of large amounts of sediment.

Include a functional assessment of the waters on the proposed project site and the change to the function of those waters as a result of the proposed project.

Discuss the feasibility of utilizing existing drainage channels on site. Discuss the feasibility of utilizing more natural features, such as earthen berms or channels, rather than concrete-lined channels.

The DEIS does not provide detailed information about fencing (pg. 2-33) or the effects of fencing on drainage systems. In this region, storms can be sudden and severe, resulting in flash flooding. Fence design must address hydrologic criteria, as well as security performance criteria. The National Park Service recently published an article[3] on the effects of the international boundary pedestrian fence on drainage systems and infrastructure. We recommend that BLM review this article to ensure that such issues are adequately addressed.

Recommendation:
Provide more detailed information about fencing and potential effects of fencing on drainage systems within the FEIS. Ensure that the fencing proposed for this project will meet appropriate hydrologic performance standards.

The DEIS also states that a regional flood control alternative was presented to the BLM and Nye County staff. The alternative would provide a regional off-site detention basin at the apex of the Fortymile Wash that would effectively and considerably reduce existing condition peak storm flow. Reducing off-site peak flows impacting the site would allow for a reduction in size of perimeter flood control facilities. EPA contacted BLM to ascertain whether this was still being considered and was told that Nye County was unlikely to move forward with the stormwater detention basin.

Recommendation:
Provide an update on the status of the regional flood control alternative in the FEIS.

[3] National Park Service, August 2008, Effects of the International Boundary Pedestrian Fence in the Vicinity of Lukeville, Arizona, on Drainage Systems and Infrastructure, Organ Pipe Cactus National Monument, Arizona,

Clean Water Act Section 303(d)

Section 303(d) of the CWA requires each State to develop, every two years, a list of impaired waters that do not meet water quality standards; to establish priority rankings of such waters; and to develop Total Maximum Daily Loads (TMDLs) for the pollutants causing impairment. Based on Nevada's 2006 Section 303(d) list, there are no impaired waters in the project area. The Nevada Division of Environmental Protection and the EPA have agreed that Nevada need not develop a 2008 303(d) list, but can combine the 2008 and 2010 303(d) lists. A draft 2008–2010 303(d) Impaired Waters list should be available for review in Spring 2010.

> *Recommendation:*
> Utilize the 2008-2010 303(d) Impaired Waters list, if it is available, and update the information regarding impaired waters in the FEIS.

Groundwater Resources

Over Appropriation of Groundwater Resources

EPA is concerned about the over appropriation of groundwater within the Amargosa Valley and potential impacts associated with pumping groundwater in the basin. The project site is located in the Amargosa Desert Hydrographic Basin, a region that has already experienced rapid water level declines. Several springs of regional importance are located nearby in the Ash Meadows National Wildlife Refuge (NWR), including Devils Hole, a 40-acre detached unit of Death Valley National Park. Devils Hole provides habitat for the only naturally occurring population of the endangered Devils Hole Pupfish.

Water rights in the Amargosa Valley have been scrutinized for many years due to the proximity of environmentally sensitive areas at Devils Hole, Ash Meadows, and Death Valley. In the late 1960s/early 1970s, ranching and farming operations in the Ash Meadows area resulted in a decline in water levels in Devils Hole, which threatened the survival of the Devils Hole Pupfish (pg. 3-37). In 1973, the U.S. District Court[4] granted a preliminary injunction preventing pumping that would lower the pool below a certain datum. In 1978, the U.S. District Court issued a permanent injunction to limit pumping, and, by 1988, water levels had recovered to about 1 foot below the pre-pumping level. More recently, concerns were raised that the pool level would fall below the court mandated minimum level in the intermediate to long-term future. To further protect federally reserved[5] water rights at Devils Hole, the Nevada State Engineer issued Order 1197, ruling that conditions warranted the curtailment of future appropriations of underground water and additional regulation of change applications within portions of the Amargosa Desert Hydrographic Basin (November 4, 2008).

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[4] Note: The District Court's decision was upheld by the Court of Appeals and the Supreme Court of the United States. See: *United States v. Cappaert*, 375 F. Supp. 456 (D. Nev. 1974); *Cappaert v. United States*, 426 U.S. 128, 141 (1976); *United States v. Cappaert*, 455 F. Supp. 81 (D. Nev. 1978).

[5] Since 1989, the U.S. Fish and Wildlife Service (USFWS) has acquired certified water rights for 19,250 afy to protect groundwater sources that feed the springs and seeps in the Ash Meadows National Wildlife Refuge, making it the largest water rights holder in the basin (pg. 3-37).

As disclosed in the DEIS, the perennial yield of the Amargosa Valley Hydrographic Basin is estimated at 24,000 acre-feet per year (afy). Active annual duty (approved water use) is estimated at 25,260 afy; pending annual duty is estimated at 619 afy (table 3-7; pg. 3-39). Missing from the discussion in the DEIS, however, is the correlation between perennial yield and discharge from springs at Ash Meadows NWR. The 17,000 afy discharged by springs in Ash Meadows, which is used to satisfy the certificated rights of the U.S. Fish and Wildlife Service (USFWS) (pg. 3-37), is a component of perennial yield[6]. This results in a net imbalance between committed resources (25,260 afy + 17,000 afy) and perennial yield (24,000 afy), which should be disclosed and discussed more clearly within the DEIS.

Recommendation:
Discuss the apparent over appropriation of groundwater resources within the Amargosa Valley in the FEIS.

Utilization of Groundwater Flow Model

Groundwater flow modeling was conducted using the Death Valley Regional Flow System (DVRFS) Model. As described in the DEIS, there are limitations associated with using a regional-scale groundwater model to evaluate potential water resource impacts at springs or other sites that are local in scale (pg. 3-43). The DEIS states, in fact, that it is not an appropriate use of the DVRFS Model to predict hydraulic heads or water-level change at Devils Hole, although the model may give a qualitative sense of how water levels change over time at a given location. Furthermore, the Groundwater Modeling Report states that all the model results presented here are not accurate to the feet scale, but several meters (GWMR; pg. 3). In the Biological Resources section the DEIS further states that, "*It is impossible to specifically measure Project effects on drawdown at Devils Hole, because of the limitations of the model design*" (pg. 4-37). In spite of these precautions, however, the DVRFS Model results are presented in the DEIS and are utilized to support the conclusion that an additional 400 afy of pumping reduces simulated water levels at Devils Hole by a minute amount, less than 0.6 of an inch after 200 years (pg. 4-18).

Recommendation:
Quantify the uncertainty associated with using the DVRFS Model to predict drawdown at specific points, such as Devils Hole. Discuss calibration standards used to calibrate the DVRFS Model, and compare them to the results. Consider revising summary and conclusions to reflect qualitative information rather than quantitative information.

Even more noteworthy, however, is the fact that the DVRFS results indicate that groundwater levels at Devils Hole are steadily declining and may reach critical levels in the near future. Simulated water levels in Devils Hole show a decline of over 13 feet after 200 years of pumping at current (2003) levels (pg. 4-18). By 2020, the water level is expected to reach a court mandated minimum water level needed to sustain the Devils Hole pupfish if 2003 pumping levels continue (pg. 4-37; pg. 4-42). According to the Groundwater Modeling Report, pumping in the basin would have to be reduced between 80 and 90% from 2003 levels to stabilize water

[6] Ruling 5750, Nevada State Engineer, July 16, 2007.

levels at Devils Hole (Appendix B, pg. 6). This is important information; however, the DEIS focuses the discussion, instead, on the minute amount of groundwater decline associated with project-related pumping.

Recommendations:
Revise the summary to note that groundwater levels at Devils Hole are steadily declining and may reach critical levels in the near future. Discuss when the U.S. District Court mandated level will be reached using current pumping data. Illustrate this critical point on figures 6, 7, 8, and 9 (Appendix B). Address this issue with greater transparency within the FEIS, including in the Water Resources and Cumulative Impacts section.

Demonstrate whether there is sufficient groundwater for the lifetime of this project, considering current pumping levels in the basin.

Discuss whether existing water rights are likely to be curtailed in the event that pool levels at Devils Hole decline, leading to the imperilment of the Desert Pupfish. Discuss how the proponents would deal with this situation and the adaptability of the project to this scenario.

Consider whether it would be prudent and feasible to lease or purchase additional water rights to compensate for this possible scenario.

EPA recently learned that the U.S. Geological Survey (USGS) is currently working on a hydrologic study utilizing the Southern Amargosa Embedded Model (SAMM), a higher resolution embedded flow model. This study should provide additional information about the study area and be utilized as a more accurate tool for groundwater management in the Amargosa Valley.

Recommendations:
Describe the USGS SAMM hydrologic study and compare this to the DVRFS Model.

Include a discussion of the potential effect of future climate change on the proposed project and groundwater resources.

Cumulative Impacts Analysis

The BLM has received more than 220 ROW applications for utility-scale solar energy projects in California, Nevada, Arizona, New Mexico, Utah, and Colorado (pg. 4-105). The DEIS discusses the Solar Programmatic EIS (PEIS) but does not provide detailed information about this project since it is not yet complete. The 24 solar energy study areas identified in conjunction with the Solar PEIS encompass 670,000 acres, and that area could be used to generate nearly 100,000 MW of solar electricity. Seven solar energy study areas were identified in Nevada, including one in the Amargosa Valley (32,699 acres) located nearby. The DEIS lists 10 solar projects in close proximity to the proposed project, but does not include an estimate of annual water requirements associated with these projects (fig. 4-10; pgs. 4-110-111). Without

this type of information, it is difficult to conduct a thorough cumulative impacts analysis. We also understand that the Department of Energy (DOE) is planning a large-scale solar demonstration project (1,000 MW) at the Nevada Test Site, in proximity to the proposed site. That project is not mentioned in the DEIS cumulative impacts analysis.

Recommendations:
Update the list of reasonably foreseeable projects to include the large-scale solar demonstration project at the Nevada Test site.

Discuss whether the proposed project might be better situated at one of the solar energy study areas or at another location nearby, including the Nevada Test Site.

Evaluate site conditions at locations with an existing ROW application. Determine whether the ROW applications are active and viable.

The DEIS presents a brief cumulative impacts analysis discussion but does not provide detailed information nor an in-depth analyses of potential impacts for any resource, including groundwater (pg. 4-103 to 4-119). Although the DEIS notes that there would be no net increase in groundwater pumping within the basin (due to Order 1197), it does not consider what will happen to groundwater levels if pumping continues at existing rates (2003 conditions); nor does it address what might happen if there is an incremental increase associated with pumping due to the influx of large-scale solar projects in the area.

The DEIS states that annual water requirements for each of the renewable energy projects is unknown, but the developer would need to either lease or purchase water currently being pumped under an existing certified water right (pg. 4-113). The DEIS concludes that since the water user can only pump up to the authorized duty of the water right, there would be no net increase in groundwater pumping within the basin. To the extent that the purchased or leased water rights are more fully utilized, however, actual pumping may increase and incremental declines in groundwater levels and spring discharge may occur. Due to the scarcity of water in the region, the large number of solar projects proposed nearby, and the ever-increasing demand for this commodity, EPA is concerned about the depletion of this resource in the Amargosa Valley, and the potential impact on aquatic and riparian communities, particularly in Devils Hole and Ash Meadows NWR.

Recommendations:
Discuss the DVRFS results indicating that groundwater levels in Devils Hole are steadily declining and may reach critical levels in the near future. Evaluate the indirect impacts associated with groundwater pumping in the Amargosa Valley using recent pumping rates. Utilize more recent pumping data than 2003, or explain why 2003 is a representative number.

Identify owners with existing water rights within a 25-mile radius of Devils Hole and illustrate this with a table and map. Evaluate the extent to which existing water rights are fully utilized. Evaluate the consequences (indirect and cumulative impacts) should the

existing water rights become more fully utilized in the future. Consider that existing water rights are largely associated with irrigation where there is some return flow to the aquifer; solar energy projects will not provide that recharge.

Estimate the annual water use associated with the reasonably, foreseeable large-scale solar projects proposed in the Amargosa Valley. The BLM should be able to obtain this information, upon request, from proponents of viable projects.

Demonstrate whether there is sufficient groundwater for the lifetime of this project and other reasonably foreseeable projects in the study area, based on the additional information.

Address what measures would be taken, and by whom, should groundwater resources in the basin become overextended to the point that further curtailment is necessary due to, for example, additional growth, the influx of large-scale solar projects, drought, and the utilization of existing or pending water rights in the basin.

Describe mitigation and monitoring measures appropriate for groundwater resources.

Consider the indirect and cumulative impacts associated with multiple large-scale solar projects proposed in the desert southwest on various resources including: habitat, endangered species, groundwater, aquatic species, and air quality.

As an indirect result of providing additional power, it can be anticipated that this project will allow for development and population growth to occur in those areas that receive the generated electricity.

Recommendation:
The DEIS should describe the reasonably foreseeable future land use and associated impacts that will result from the additional power supply. The document should provide an estimate of the amount of growth, likely location, and the biological and environmental resources at risk.

Biological Resources and Habitat

The DEIS states that a Biological Assessment (BA) has been prepared for the proposed action and will be submitted to the U.S. Fish and Wildlife Service (USFWS) as required by Section 7 of the Endangered Species Act. Submission of the BA will initiate consultation with the USFWS. The DEIS states that the BA is being prepared for seven plant species (table 3-13) that may occur in the Project's Region of Influence (pg. 4-37) and for six wildlife species that may be affected by the implementation of the project (pg. 4-42). Long-term groundwater pumping could indirectly impact six of the seven plant species at Ash Meadows and six wildlife species. EPA believes the FEIS should include a more in-depth discussion of the project's potential impacts to biological resources, including the aquatic species in the Ash Meadows NWR.

Recommendations:
The FEIS should include the outcome of consultation with the USFWS. Include a copy of the BA or Biological Opinion and/or concurrence received from USFWS in the FEIS.

Specify, in the FEIS, the measures that will be taken to protect important wildlife habitat areas from potential adverse effects of the proposed activities. Discuss any associated monitoring and mitigation.

Climate Change

The DEIS presents a brief discussion on climate change in Section 3.1.5 but does not include measures to avoid, minimize, or mitigate the effects of climate change on the proposed project (pg. 3-13). Scientific evidence supports the concern that continued increases in greenhouse gas emissions resulting from human activities will contribute to climate change. Effects on weather patterns, sea level, ocean acidification, chemical reaction rates, and precipitation rates can be expected.

Recommendations:
Consider how climate change could affect the proposed project, specifically within sensitive areas, and assess how the impacts of the proposed project could be exacerbated by climate change.

Identify strategies to more effectively monitor for climate change impacts in the surrounding area, such as monitoring groundwater change or special status species.

Quantify and disclose the anticipated climate change *benefits* of solar energy. We suggest quantifying the greenhouse gas emissions that would be produced by other types of electric generating facilities (solar, geothermal, natural gas, coal-burning, and nuclear) generating comparable amounts of electricity, and compiling and comparing these values.

Alternatives Analysis

CEQ Regulations for implementing NEPA (40 CFR, Parts 1500-1508) state that the alternatives section of an EIS should "rigorously explore and objectively evaluate all reasonable alternatives, and for alternatives which were eliminated from detailed study, briefly describe the reasons for their having been eliminated" (40 CFR, part 1502.14). As stated in our scoping comments, reasonable alternatives should include, but are not necessarily limited to, alternative sites, capacities, and technologies as well as alternatives that identify environmentally sensitive areas or areas with potential use conflicts. A robust range of alternatives will include more options for avoiding significant environmental impacts.

The DEIS presents only two action alternatives and a no-action alternative. Each of the alternatives includes two 232 MW parabolic trough solar power plants with a nitrate salt thermal storage system. The two alternatives are virtually identical except for the type of cooling

technology utilized. The Proposed Action includes dry-cooling technology and the other alternative uses wet-cooling technology. Water requirements for dry-cooling technology are approximately 400 afy; whereas, water requirements for wet-cooling technology would be approximately 4,600 afy.

These two alternatives provide a very limited range of options for decision makers to evaluate the proposed project, except within the context of water use. While we strongly support the decision to utilize dry-cooling rather than wet-cooling, we expect that it would have been difficult to obtain and utilize sufficient water rights for the wet-cooling option for the lifetime of the project, given the situation in the Amargosa Valley. From that standpoint, the wet-cooling option may not represent a viable alternative. In essence, what remains is a very limited range of alternatives (Proposed Action and a No-action Alternative), rather than a robust range of alternatives. In addition, we note that existing water rights are likely to be in ever-increasing demand in the future because of the large number of solar projects that have been proposed within the Amargosa Valley.

The DEIS states that three other alternative sites were considered, but were eliminated after further analysis. While the DEIS includes a very brief qualitative discussion (2-3 sentences) on the reasons for eliminating alternatives, it provides no detailed information on these three sites. The DEIS also states that the proponent considered the alternative of developing the proposed project as a single 232 MW plant, but the development of a smaller project was rejected given the infrastructure requirements associated with building a single 232 MW plant and the economies of scale. The DEIS notes, however, that building one plant would have fewer environmental impacts (pg. 2-4).

Since the proponent has been unable to identify any other site suitable for further consideration, we recommend that the FEIS analyze an on-site alternative with a reduced footprint. Defining another alternative within the project area would enable decision makers to evaluate the proposed project using a wider range of variables.

Recommendations:
Include maps of the three alternative sites and a more detailed discussion regarding the reasons for elimination. Quantify potential impacts to the greatest extent practicable.

Consider, analyze, and present an on-site alternative with a reduced footprint and lesser environmental impacts. Discuss how the project was reduced down to 4,350 acres and provide an illustration of the original ROW application.

Discuss whether another technology might be more suitable for this particular site, such as photovoltaic or dish systems. These technologies use less water than parabolic trough systems, which is an important factor, considering the shortage of groundwater in the Amargosa Valley. In addition, there is greater flexibility associated with the layout of components, which could result in avoidance and minimization of impacts to Fortymile Wash.

EPA has worked closely with the DOE's National Renewable Energy Laboratory (NREL) to develop maps[7] showing contaminated lands and mining sites with renewable energy generation potential. These maps were developed in conjunction with the *RE-Powering America's Land: Renewable Energy on Contaminated Land and Mining Sites* program,[8] which was launched by the EPA Office of Solid Waste and Emergency Response (OSWER) in September 2008. Under this initiative, EPA is taking a multi-pronged approach[9] to encouraging reuse of EPA-tracked lands[10] into clean and renewable energy production facilities. EPA has developed a Renewable Energy Interactive Mapping Tool[11] that utilizes Google Earth to display these sites. We estimate that there are approximately 480,000 disturbed and contaminated sites and almost 15 million acres of potentially contaminated properties across the United States. Many of the contaminated properties are suitable for renewable energy development and have existing transmission capacity and infrastructure in place, as well as adequate zoning.

Recommendations:
Describe the current condition of the land selected for the proposed project, discuss whether the land is classified as disturbed, and describe to what extent the land could be used for other purposes.

Utilize the Renewable Energy Interactive Mapping Tool to explore whether there are disturbed sites located in proximity to the proposed project and discuss this in the FEIS. Consider the Nevada Test Site as well.

Purpose and Need

EPA believes the discussion in the DEIS regarding the purpose and need for the proposed Project should be expanded to include more robust information regarding the *need* for the proposed project. As indicated in our scoping comments (August 6, 2009), the DEIS should discuss the proposed project in the context of the larger energy market that this project would serve; identify potential purchasers of the power produced; and discuss how the project will assist the state in meeting its renewable energy portfolio standards and goals. Strengthening the discussion on these topics will improve the readability of the document and may also provide further justification for the project.

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[7] To develop the maps, EPA and NREL collected renewable energy resource information and merged it with EPA and state data on contaminated lands and mining sites across the country. The mapping analysis applied basic screening criteria, such as distance to electric transmission lines, distance to roads, renewable energy potential, and site acreage in order to identify EPA tracked lands that might be good candidates for solar, wind, or biomass energy production facilities.
[8] For additional information on EPA's RE-Powering America's Land, please use the following weblink: http://www.epa.gov/renewableenergyland/index.htm
[9] See Internet site: http://www.epa.gov/renewableenergyland/docs/repower_contaminated_land_factsheet.pdf
[10] EPA tracks abandoned mine lands, Brownfields, Resource Conservation and Recovery Act (RCRA) sites, Federal Superfund Sites, and Non-Federal Superfund Sites.
[11] See Internet site: http://www.epa.gov/renewableenergyland/mapping_tool.htm. Open the Renewable Energy Interactive Map (KMZ) to launch the Renewable Energy Mapping Tool. More detailed information on the EPA tracked sites is available at: http://epa.gov/renewableenergyland/maps/ocpa_renewable_energy_data.xls.

The DEIS presents purpose and needs statements for two federal agencies: BLM (pg. 1-3) and the DOE (pg. 1-4). The BLM's purpose and need for the proposed project is to respond to the application for a ROW grant to construct, operate and decommission a solar thermal generation facility and associated infrastructure. The DOE's purpose and need would be to comply with its mandate under the Energy Policy Act (EPAct) to select eligible projects that meet the goals of the EPAct, and is contingent upon the decision to enter into negotiation of a loan guarantee. In addition, the DEIS presents the proponent's objectives and purpose for the proposed project (pg. 1-8).

Within the introduction, the DEIS cites Executive Order 13212 and Section 211 of the Energy Policy Act (EPAct). Executive Order 13212 orders executive departments and agencies to take appropriate actions to expedite projects that will increase the production, transmission, or conservation of energy. Section 211 of the EPAct calls for the Secretary of the Interior to seek to have at least 10,000 MW of approved renewable energy projects located on public lands by 2015. The DEIS states that Nevada utilities will need in excess of 3,000 gigawatt hours per year (GWh/yr) of new renewable energy generation capability over the next 10 years to meet the State's renewable energy needs, and cites the Nevada Renewable Energy and Energy Conservation Task Force 2005 Annual Report. In the same paragraph, the DEIS states that at least 1,000 MW of new solar power will be required annually to meet this need (pg. 1-1).

EPA reviewed the 2005 Annual Report but did not locate a citation for 3,000 GWh/yr nor 1,000 MW. The 2005 Annual Report summarizes results from a 2004 workshop on how to improve the Nevada Renewable Portfolio Standard (RPS). At that time, utilities were having difficulty complying with the 2003 RPS and anticipated having difficulty complying with the 2004 and 2005 RPS. Since 2004, the energy sector has changed dramatically. In the last three years, there has been tremendous growth in renewable energy, and decline in the more traditional sectors, including the postponement/indefinite delay/modification of three large coal-fired power plants. Many factors have triggered this shift, including concerns about global warming and climate change. These events have spawned an unprecedented increase in the number of applications submitted to BLM for large-scale renewable energy projects on public lands in the desert southwest. BLM has received over 470 renewable energy project applications, to date, with a projected capacity of 97,000 MW of electricity[12].

We would urge BLM to revise this section of the DEIS and utilize more robust and up-to-date estimates on the *need* for renewable energy within Nevada in the Final Environmental Impact Statement (FEIS). As a starting point, we suggest that BLM examine Governor Jim Gibbons' Nevada Renewable Energy Transmission Access Advisory Committee (RETAAC) Phase II Report (July 2009). Other sources of information include the Nevada Public Utilities Commission (NPUC) and U.S. Energy Information Administration, as well as annual reports on Portfolio Standard Compliance and the Status of Energy in Nevada.

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[12] "Secretary Salazar, Senator Reid Announce 'Fast-Track' Initiatives for Solar Energy Development on Western Lands", U.S. Department of Interior, News Release, June 29, 2009. http://www.blm.gov/wo/st/en/info/newsroom/2009/june/NR_0629_2009.html

Recommendation:
Update the discussion regarding the *need* for the proposed project, utilizing more accurate, robust, and up-to-date references.

The RETTAC Phase II Report recognizes that there is great potential for renewable energy development within Nevada and provides estimates of this potential. The report also recognizes that there is a market for renewable energy not only in Nevada, but also in surrounding states, particularly California. We note that the DEIS does not identify a specific purchaser for the power generated. In light of these facts, we recommend that the FEIS expand the introduction to include a discussion of how renewable energy generated in Nevada might also be utilized to satisfy renewable portfolio standards of nearby states, in particular California.

Recommendation:
Identify potential purchasers of the power produced and discuss how the project will assist Nevada, and/or California, in meeting its RPS goals.

The DEIS includes a list of the Proponent's objectives and purpose of the proposed Project (pg. 1-8). We are pleased to see a wide range of objectives, with no specific objective (such as MW generated) used to preclude a specific alternative. According to these objectives, the 464 MW facility will contribute approximately 1,000,000 MW hours of clean, renewable solar energy per year to meet renewable energy goals. This terminology can confuse the reader if one is not careful. Many people don't realize that "*GWhr/yr*" provides a measure of the actual output of the plant; whereas "*megawatts*" provides a measure of how much a solar power plant is able to generate instantaneously. The ratio of these two values is deemed the net capacity factor. Solar energy projects typically have a capacity factor that is much lower than baseload systems (coal, natural gas, geothermal). The RETAAC report, for example, assumes a capacity factor of 30% for solar projects. Based on the information presented in the DEIS, the capacity factor for this project is assumed to be about 24.6% (1,000,000 / (464*24*365.25)*100). Power purchase agreements (PPA) between the power plant owner and the electric utility contain the expected annual output of the plant (in GWh/yr) and the price to be paid for each MWh produced. For the proposed project, we might expect to see a PPA signed for 139 MW (464 * 0.3), for example, rather than 464 MW.

Recommendation:
Expand the introduction to include a discussion of RPSs, PPAs, and capacity factors and how this is relevant to intermittent energy sources such as solar energy.

<u>Hazardous Materials/Hazardous Waste/Solid Waste</u>

The DEIS states that approximately 8,300 tons of heat transfer fluid (HTF) will be utilized in the parabolic trough heat transfer system (pg. 4-98). The HTF (Therminol) is not listed as a hazardous material, but may be considered hazardous waste as that term is defined by RCRA, 40 CFR 261.24, due to its toxicity characteristic. The HTF can be heated up to 752 degrees Fahrenheit and circulates in a closed loop system that is monitored continuously for pressure. The DEIS states that this material at high temperatures can present a fire hazard (pg. 4-

99), but does not elaborate on the risks. A literature search reveals that concerns have been expressed regarding the compatibility of Therminol and molten salt and the subsequent reaction that would occur due to a failure in the oil-to-salt heat exchanger. Because the proposed project would be located in close proximity to residential housing and schools, EPA recommends that the FEIS discuss this topic in greater detail.

> *Recommendation:*
> EPA recommends that the FEIS provide additional information on solar energy fire hazards, particularly those associated with the compatibility of HTF and nitrate salt thermal energy storage systems.

Miscellaneous Edit

1. Page 4-42, Ash Meadows NWR Species – Text states that there are five fish that inhabit the Ash Meadows NWR within the Project's ROI, but lists only four fish.