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TO

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DEPARTMENT / OFFICE: Needles Field Office

SUBJECT: US EPA Comments on Ivanpah Solar Electric Generating System DEIS

UNITED STATES ENVIRONMENTAL PROTECTION AGENCY
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FEB 11 2010

George R. Meckfessel
Bureau of Land Management
Needles Field Office
1303 South U.S. Highway 95
Needles, CA 92363

Subject: Joint Draft Environmental Impact Statement and Final Staff Assessment for the Ivanpah Solar Electric Generating System, San Bernardino County, California [CEQ# 20090386]

Dear Mr. Meckfessel:

The U.S. Environmental Protection Agency (EPA) has reviewed the Joint Draft Environmental Impact Statement (DEIS) and Final Staff Assessment for the Ivanpah Solar Electric Generating System (ISEGS) Project (Project). Our review and comments are provided pursuant to the National Environmental Policy Act (NEPA), the Council on Environmental Quality (CEQ) Regulations (40 CFR Parts 1500-1508), and our NEPA review authority under Section 309 of the Clean Air Act (CAA).

EPA supports increasing the development of renewable energy resources, as recommended in the National Energy Policy Act of 2005, in an expeditious and well planned manner. Using renewable energy resources such as solar power can help the nation meet its energy requirements while reducing greenhouse gas emissions. Given the large number of renewable energy project applications currently under consideration, particularly in the Desert Southwest, we believe it is imperative that BLM and project applicants coordinate early with other agencies and stakeholders on site selection and project design in order to facilitate timely environmental reviews. 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 January 16, 2008, EPA provided extensive formal scoping comments for the ISEGS Project which included a variety of detailed recommendations regarding purpose and need, range of alternatives, and resource areas of concern. Based on our review of the ISEGS DEIS, we have rated the document as *Environmental Concerns – Insufficient Information* (EC-2). Please see the enclosed "Summary of EPA Rating Definitions." In the enclosed detailed comments, EPA provides specific recommendations regarding analyses and documentation to assist in assessing potential significant impacts from the proposed ISEGS Project. Specifically, EPA is concerned with the: 1) current justification for the Project purpose, need, and independent utility; 2) range of alternatives; 3) impacts to biological and aquatic resources; 4) impacts to air quality;

5) impacts to endangered species and other species of concern; and, 6) cumulative impacts from reasonably foreseeable future actions.

Based on communication with the Bureau regarding the ISEGS Project on January 27, 2010, it is our understanding that BLM intends to prepare a Supplemental DEIS to be released later this Spring. We support this decision and are pleased that, in response to stakeholder comments, BLM has recognized the need to strengthen the analyses. EPA strongly encourages BLM to also address comments provided on the subject DEIS in the forthcoming Supplemental DEIS.

EPA appreciates the Bureau's coordination, to date, and the opportunity to provide input on this Project and the multitude of DEISs under preparation for renewable energy projects in our Region. We are available to further discuss all recommendations provided. When the Supplemental DEIS is released for public review, please send two hard copies and two CDs to the address above (Mail Code: CED-2). If you have any questions, please contact me at 415-972-3521, or contact Tom Plenys, the lead reviewer for this Project. Tom can be reached at 415-972-3238 or plenys.thomas@epa.gov.

Sincerely,

Kathleen M. Goforth, Manager
Environmental Review Office (CED-2)

Enclosures: Summary of EPA Rating Definitions
Detailed Comments

Cc: Tom Hurshman, Bureau of Land Management
John Kessler, California Energy Commission
Shannon Pankratz, U.S. Army Corps of Engineers
Brian Croft, U. S. Fish and Wildlife Service
Becky Jones, California Department of Fish and Game

US EPA DETAILED COMMENTS ON THE JOINT DRAFT ENVIRONMENTAL IMPACT STATEMENT (DEIS) AND FINAL STAFF ASSESSMENT FOR THE IVANPAH SOLAR ELECTRIC GENERATING SYSTEM (ISEGS), SAN BERNARDINO COUNTY, CALIFORNIA, FEBRUARY 11, 2010

The ISEGS would consist of three concentrating solar thermal power plants and related facilities in southern California's Mojave Desert, approximately 4.5 miles south of Primm, Nevada. It would utilize distributed power tower and heliostat (mirror) technology, in which heliostat fields focus solar energy on power tower receivers near the center of each heliostat array. The ISEGS, as proposed, would require a total of 4,073 acres (approximately 6.4 square miles). BrightSource Energy (Applicant) has requested four Right-of-Way (ROW) grants from BLM for the ISEGS Project (Project) pursuant to the Federal Land Policy and Management Act (FLPMA).

While EPA is pleased with certain aspects of this Project including the use of dry cooling, the close proximity to current highway infrastructure, and a 5% maximum energy production cap on natural gas, EPA recommends that the forthcoming Supplemental DEIS (SDEIS) provide additional analyses (including any necessary supporting documentation) and identify specific minimization or mitigation measures, as appropriate, regarding the issue areas below. (Specific recommendations are included in the following detailed comments.)

- Project Purpose, Need, and Independent Utility
- Range of Alternatives
- Biological and Aquatic Resources
- Air Quality (including impacts from construction)
- Endangered Species and Other Species of Concern
- Cumulative Impacts (from reasonably foreseeable future actions)

<u>Project Purpose, Need and Independent Utility</u>

Project Purpose and Need

EPA believes the discussion in the DEIS regarding the purpose and need for the ISEGS Project should be expanded. As we indicated in our scoping comments, the *purpose* of the proposed action is typically the specific objectives of the activity, while the *need* for the proposed action may be to eliminate a broader underlying problem or take advantage of an opportunity.

Building upon the comment above, the Purpose and Need for a project should be broad enough to cover the full breadth of a reasonable range of alternatives, regardless of what the future findings of an alternatives analysis may be. It is critical that the Purpose and Need should not prescribe a solution, nor should it imply a predetermined solution, such as a specific type of renewable energy plant in a specific location that generates a specific amount of power. The Purpose and Need should focus on the underlying problems to address (e.g., lack of capacity to serve an increasing demand for energy, or the need to develop sufficient renewable energy to meet State renewable portfolio standards) and the reasons a project is considered, and should not be written in a way that includes the solution itself. A solar thermal power plant may be an

integral component of the potential solution to the problems identified in a Purpose and Need discussion; however, the Purpose and Need should allow for the analysis of a full scope of alternatives in the SDEIS, including alternative off-site locations, environmentally preferable on-site alternatives or other modes of renewable energy generation.

The ISEGS DEIS eliminates 22 alternatives from further evaluation and ultimately only analyzes the No Project and Proposed Action Alternatives in the DEIS. Such a narrow range of alternatives is, in part, influenced by the Bureau of Land Management's (BLM) narrowly defined Purpose. According to the DEIS, BLM's purpose for the ISEGS proposed action is "to approve, approve with modifications, or disapprove Right-of-Way (ROW) applications filed by (the Applicant)" (at p. 2-7). EPA understands the rationale in considering the "federal" Purpose and Need for the Project; however, EPA recommends that the SDEIS further characterize the "project" Purpose and Need as part of BLM's statement of purpose. BLM's purpose statement should be broad enough to allow for a reasonable range of alternatives, including environmentally preferable alternatives. It is our understanding that BLM has considered other potential areas for future renewable energy development, including other BLM sites, private lands and previously disturbed sites; however, BLM's purpose statement appears too narrowly focused on the potential ISEGS site, and this unduly limits the alternatives carried forward for further analysis in the DEIS.

Recommendation:

- The SDEIS should reflect a broader purpose and need statement for BLM that allows for a full evaluation, in the SDEIS, of other alternatives, including off-site locations and other environmentally preferable on-site alternatives. BLM should also consider evaluating an alternative that combines on and off site locations in the SDEIS.

The DEIS does identify three project objectives that are intended to reflect the Applicant's objectives and BLM's stated Purpose and Need of the Project (at pg. 2-7). These three objectives are: 1) to safely and economically construct and operate a nominal 400-MW, renewable power generating facility in California capable of selling competitively priced renewable energy consistent with the needs of California utilities; 2) to locate the facility in areas of high solarity with ground slope of less than 5 percent; and, 3) to complete the impact analysis of the project by the first quarter of 2010 so that, if approved, construction could be authorized in 2010 and beyond. The DEIS indicates that these objectives were considered in the comparison of alternatives as required under NEPA. EPA believes the purpose or objectives for this Project should not be limited, at the outset, to potentially preclude reasonable alternatives from being evaluated in the future. Rather, an appropriately defined Purpose Statement should ultimately inform the range of alternatives and subsequent analysis and demonstrate the need for the project itself. The SDEIS should revise the Project's objectives to not restrict the Project to a specific energy output or timeline, and to allow for a full evaluation of other alternatives.

Recommendation:

- Revise the Project's objectives to allow for a full evaluation of other alternatives in the SDEIS. For example, the objectives should not be so narrow as to be limited to a specific megawatt output or timeline.

Additionally, as indicated in our scoping comments, this section of the SDEIS should discuss the proposed Project in the context of the larger energy market that this Project would serve. While the DEIS states that the proposed Project "could help meet the explicit policy goals of the State of California and the Federal goals" (at pg. 2-7), the DEIS does not contain a discussion of the specific portion of Federal, State, or individual utility power provider needs that this Project would meet. We note the DEIS includes references to state and Federal renewable energy goals, highlighted by Executive Order 13212, the Energy Policy Act of 2005 and Secretarial Order 3285, as drivers for renewable energy projects such as the ISEGS. While the DEIS indicates the need for the proposed action has its basis in these Federal orders and laws that require government agencies to evaluate energy generation projects and facilitate the development of renewable energy sources, EPA does not believe the current Purpose and Need section fully describes the specific Federal, State, and individual utility power provider renewable energy targets, timelines, and underlying needs to which BLM is responding.

Based on our review of available information, it is our understanding that BLM has received over 470 renewable energy project applications, to date, with a projected capacity of 97,000 megawatts (MW) of electricity[1]. As the DEIS points out, the Energy Policy Act of 2005 requires the Department of Interior to approve at least 10,000 MW of renewable energy by 2015. Given that roughly 300 of the renewable energy applications BLM has received are for project locations in Region IX, EPA recommends that the SDEIS discuss whether all the applications, in total, may exceed the demonstrated Federal need for energy in 2015, 2020, and 2030, and how the ISEGS Project fits into this context.

Similarly, the SDEIS should also discuss how this Project fits into California's energy needs. We were pleased to see the discussion of state renewable goals and load growth in Appendix Air-1 – Greenhouse Gas Emissions. We also note that the renewable energy projects identified in the Cumulative Scenario (at pg. 5-11) may not all be approved for reasons described on page 5-3. The discussion of Project need in the SDEIS should build upon these discussions and include the latest estimates of renewable energy needs in California and the portion this Project would fulfill. The recent estimates included in Governor Schwarzenegger's December 29, 2009 press release[2] indicated California has 244 proposed renewable energy projects that could produce up to 70,000 MW of clean energy annually. Of the 244 projects, up to 53 are expected to apply for American Recovery and Reinvestment Act (ARRA) funding and to break ground by the end of 2010. Twenty-two of these projects could generate power at utility-sized levels of larger than 200 MW, totalling more than 9,000 MW. The SDEIS should discuss how these figures relate to California's 2010, 2015, and 2020 renewable energy goals and further clarify what proportion of the State's renewable energy targets this Project would help achieve. If the ISEGS may provide power to customers in Nevada, the SDEIS should include a similar discussion of Nevada's Renewable Portfolio Standards, as well. EPA believes this context is imperative for decision makers and the public to have, in light of the large number of projects moving forward.

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[1] "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

[2] "Governor Schwarzenegger Announces 244 Proposed Renewable Energy Projects Throughout State", Office of the Governor, Press Release, December 29, 2009. http://gov.ca.gov/press-release/14092/

Presumably, some number of renewable energy facilities will be constructed pursuant to the joint Department of Energy (DOE)/BLM Programmatic Solar DEIS effort as well as the Desert Renewable Energy Conservation Plan (DRECP) process. It would be helpful to know the likely locations, construction timing, and generation capacities of such facilities relative to the proposed Project. Finally, given that Southern California Edison and Pacific Gas and Electric have apparently signed power purchase agreements for 100 MW and 300 MW, respectively (at pg. 4-8), the SDEIS should discuss the overall renewable energy targets and timelines for these utility power providers and how the ISEGS Project fits into this context.

Recommendations:

- Fully describe the specific Federal and State renewable energy targets, timelines, and underlying needs to which BLM is responding, and explain how the Project meets those needs in the context of the many renewable energy project applications in the Desert Southwest and California.
- To the extent practicable, the SDEIS should discuss how many of the total renewable energy applications received by BLM are likely to proceed pursuant to the joint Department of Energy (DOE)/BLM Programmatic Solar DEIS effort and the Desert Renewable Energy Conservation Plan (DRECP) process, and the level of energy production those applications represent.
- Include discussion of the overall renewable energy targets and timeline for Southern California Edison and Pacific Gas and Electric and how this Project would contribute to their renewable energy portfolios.
- Further describe the utility purchases of power and provide a description of how the power would be bought, sold, and used so that the reader can better evaluate the tradeoffs between resource protection and power generation.

Project Independent Utility

The SDEIS should clearly demonstrate the independent utility of the Project within its current geographic limits as it relates to the need for the Project. If the Project need cannot be met without future planned improvements, such as the 36 mile transmission line between the existing Eldorado Substation in Nevada and the proposed new Ivanpah Substation in California (at pg. 3-13), the scope of the Project should be expanded accordingly, since these would be considered connected and similar actions (40 CFR 1508.25). In that case, the NEPA evaluation should include the full extent of the planned Project, including the necessary transmission lines and how it will operate. This broader scope should be applied to the identification and evaluation of project alternatives that may be less environmentally damaging. EPA believes this is the most effective way to address indirect and cumulative environmental impacts. The ISEGS DEIS indicates that a separate EIS is currently under preparation for the transmission line project (at pg. 3-13). We were pleased to note the qualitative discussion of resource impacts from the transmission line project in the Cumulative Scenario Chapter; however, if the ISEGS Project cannot meet its Purpose and Need without the transmission line project (thereby qualifying it as a connected action), the SDEIS should address both projects together. Generally, funding or constraints of project staging and construction should not be used as a basis for segmenting the evaluation of environmental impacts under NEPA.

The DEIS indicates that "in order to accommodate the total anticipated 1,400 MW load generation by ISEGS and five other planned renewable energy generation projects in the region, the California Independent System Operator (California ISO) has indentified approximately 36 miles of transmission line within California and Nevada that would need to be upgraded from 115 kV to 220 kV" (at pg. 3-13). EPA recommends that the SDEIS describe the current capacity of the existing transmission line. The SDEIS should also include a discussion of the existing transmission capacity compared to the future capacity after the upgrade. If excess capacity exists on the current transmission line, the SDEIS should consider an alternative that does not rely on the upgrade.

Recommendations:

- Demonstrate the independent utility of the ISEGS Project within its current geographic limits as it relates to the need for the Project. If the Project need cannot be met without future planned improvements, the scope of the Project should be expanded accordingly, such as including a full analysis of future improvements to the full extent of the planned Project, including the necessary transmission lines and how it will operate, since these would be considered connected and similar actions (40 CFR 1508.25).
- EPA recommends that the SDEIS disclose: 1) the current available capacity of the existing 115 kV transmission line; 2) the estimated capacity of the 220 kV transmission line in future years; and 3) to what degree the line is capable of accommodating additional renewable energy generated in the Project's vicinity in California and Nevada.
- Discuss whether the 400-MW ISEGS Project or a reduced sized alternative could be accommodated with the existing 115 kV transmission line. If such an alternative is feasible, BLM should include such an alternative as part of the Alternatives Analysis in the SDEIS.

Alternatives Analysis

Reasonable Range of Alternatives

The DEIS presents only the Proposed Action Alternative and a No-Action Alternative. EPA believes that the alternatives analysis needs to be expanded in the SDEIS to include a full analysis of a reasonable range of alternatives.

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). All reasonable alternatives that fulfill the purpose of the project's purpose and need should be evaluated in detail, including alternatives outside the legal jurisdiction of the BLM (Council on Environmental Quality's (CEQ) Forty Questions[3], #2a and #2b). The more alternatives considered, the greater the

[3]Forty Most Asked Questions Concerning CEQ's NEPA Regulations, 40 CFR Parts 1500-1508, Federal Register, Vol. 46, No. 55, March 23, 1981.

possibility of avoiding significant impacts. *"In determining a reasonable range of alternatives, the focus is on what is "reasonable" rather than on whether the proponent or applicant likes or is itself capable of carrying out a particular alternative. Reasonable alternatives include those that are practical and feasible from the technical and economic standpoint and using common sense, rather than simply desirable from the standpoint of the applicant."* (CEQ Forty Questions, #2a)

For NEPA purposes, the ISEGS DEIS indicates "alternatives identified must be consistent with BLM's purpose and need for the action under consideration, which include consideration of the applicant's objectives" (at p. 4-4). For reasons stated earlier, EPA believes BLM's current Purpose and Need statement is too narrow. Further, the Applicant's objectives were ultimately synthesized into the three previously mentioned objectives, which EPA believes unduly constrain the viability of alternatives.

Based on these 'project' objectives, the DEIS identifies and eliminates 22 other alternatives from further evaluation because they do not meet BLM's Purpose and Need or the project objectives. Each alternative was described and a qualitative reason for elimination was provided. Examples of the qualitative rationale for elimination included:

- "An alternative site on BLM land with a pending application for a renewable project is not considered as a viable alternative unless the other application is rejected or withdrawn, or if the application is from BrightSource, the ISEGS applicant" (at pg. 4-11)
- "(The) alternative does not appear to offer substantial environmental advantages over the proposed site" (at pg. 4-15)
- "(The alternative) would not eliminate significant impacts of the project without creating significant impacts of its own" (at pg. 4-43)
- "(The alternative) would not reduce or eliminate impacts that occur at the proposed site" (at pg. 4-49)

We also note that all technologies not proprietary to the Applicant were eliminated from further consideration. Additionally, while we do commend the addition of an analysis of a Private Land Alternative based on input BLM had previously received, we note that a combination of smaller land parcels that could generate 400 MW of renewable energy was dismissed in part because: "To meet the alternative site criteria allowing development of a project the same size as the proposed ISEGS project, approximately 4,000 acres of land would be required" (at p. 4-21). As for a Reduced Acreage alternative, the DEIS states that Condition of Certification BIO-18 would achieve the same objective as the Reduced Acreage alternative, and, therefore, this alternative was not considered further. We recommend that the SDEIS include a full analysis of the Reduced Acreage alternative to provide a comparison of environmental and economic impacts to inform decision making. We also encourage a full analysis of an alternative that combines a Reduced Acreage on-site alternative with renewable energy production off-site on disturbed lands in order to maximize energy efficiencies while minimizing environmental impacts. Similarly, we recommend that the Supplemental DEIS fully evaluate a Private Land Alternative that combines larger private land parcels with previously disturbed public lands.

While the DEIS includes a qualitative discussion of the reasons for eliminating alternatives, it does not identify a clear set of quantitative criteria that were used to screen all

alternatives in a similar manner. For example, no criteria outlining a cut-off point for competitively priced renewable energy, minimal plant efficiency rates, level of air, water, or habitat impacts were provided. If such criteria were used in the California Energy Commission's Preliminary Staff Assessment, the criteria and resulting quantification of impacts should be incorporated into the SDEIS. Also, it is unclear how unquantified environmental impacts (such as a reduction of air pollutants, reduced water use, reduced impacts to endangered species) may have been considered in the alternatives analysis. Similarly, it is unclear which alternatives may have been eliminated as a result of objective #3 and the lack of sufficient time to conduct adequate environmental evaluations.

Recommendations:

- Provide a clear discussion of the reasons for the elimination of alternatives that are not evaluated in detail and provide a clear set of quantitative criteria to screen all alternatives. The potential environmental impacts of each alternative should be quantified to the greatest extent practicable (e.g., acres of wetlands impacted, tons per year of emissions produced, etc.). For example, the SDEIS should include a matrix that rates each of the alternatives on each of the selection criteria and include this information in the Executive Summary. The matrix should also include a description of whether or not an alternative met each of the Project's objectives.
- Clearly identify the economic criteria used for analyzing alternatives. As appropriate, fully consider alternatives rejected in the earlier analysis. The SDEIS should also include a concise summary of the cost-benefit analysis of the Proposed Project and the various alternatives. This information should also be included in the Executive Summary.
- Include analysis to substantiate the claim that Condition of Certification BIO-18 would achieve the same objective as the Reduced Acreage alternative.
- Discuss how unquantified environmental impacts (such as a reduction of air pollutants) have been determined in the environmental analysis.
- Discuss which alternatives were eliminated as a result of project objective #3 and the lack of sufficient time to conduct adequate environmental evaluations.
- Include a full analysis of the Reduced Acreage alternative to provide a comparison of environmental and economic impacts to inform decision making. We also encourage a full analysis of an alternative that combines a Reduced Acreage on-site alternative with renewable energy production off-site on disturbed lands, and that maximizes energy efficiencies while minimizing environmental impacts.

Consideration of Disturbed Site Alternatives

The DEIS indicates the "ISEGS project would have major impacts to the biological resources of the Ivanpah Valley, substantially affecting many sensitive plant and wildlife species and eliminating a broad expanse of relatively undisturbed Mojave Desert habitat" (at pg. 6.2-1). As additional alternatives are considered for evaluation in the SDEIS, as well for future projects, EPA continues to recommend the identification of locations that have been previously disturbed or contaminated. The SDEIS should discuss the criteria BLM used to identify the ISEGS site as a suitable location for renewable energy. Specifically, the SDEIS should include the full array of criteria that BLM uses to compare sites, such as previous disturbance, protected species, habitat

values, proximity to infrastructure, energy potential, etc. The SDEIS should discuss any methods or tools BLM has used to identify and compare locations for siting renewable energy facilities.

EPA supports the development of solar and other forms of renewable energy within Solar Energy Zones (SEZ) and other locations. As a Cooperating Agency for the joint DOE/BLM Solar Programmatic DEIS, and in comments on individual state efforts such California's DRECP, EPA will continue to urge BLM to consider which energy source has the potential, at each specified location, to generate the greatest amount of power with the least environmental impact. For example, if the location of a SEZ overlaps with an optimum location for wind energy development, consider whether the development of solar energy at that location would likely result in greater or lesser adverse environmental impacts than would be expected from the generation of the same or a greater amount of power from wind energy at that location. We urge BLM and DOE to ensure that the outcome of the Solar Programmatic DEIS does not discourage or preclude the development of other renewable energy sources in locations where such development may be more appropriate, in terms of efficiency and relative environmental impacts, than development of solar energy.

Although we support BLM in its efforts to identify the SEZs, we also recognize that there are other alternatives and venues that may be preferable from an ecological perspective. For example, the EPA has worked closely with the DOE's National Renewable Energy Laboratory (NREL) to develop maps[4] 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,[5] 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[6] to encouraging reuse of EPA-tracked lands[7] into clean and renewable energy production facilities. EPA has developed a Renewable Energy Interactive Mapping Tool[8] 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:

- EPA strongly encourages BLM to promote the siting of renewable energy projects on

[4] 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.

[5] For additional information on EPA's RE-Powering America's Land, please use the following weblink: http://www.epa.gov/renewableenergyland/index.htm

[6] See Internet site: http://www.epa.gov/renewableenergyland/docs/repower_contaminated_land_factsheet.pdf

[7] EPA tracks abandoned mine lands, Brownfields, Resource Conservation and Recovery Act (RCRA) sites, Federal Superfund Sites, and Non-Federal Superfund Sites.

[8] 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.

disturbed, degraded, and contaminated sites, before considering large tracts of undisturbed public lands.

- The SDEIS should discuss any tools BLM is using to prepare the alternatives analysis for this Project, including the use of the Renewable Energy Interactive Mapping Tool.
- SDEIS should include information regarding all criteria used to evaluate the ISEGS site and alternatives.

Biological and Aquatic Resources

EPA is concerned about the potential impact to approximately 2,000 ephemeral water segments on the site, which could result in direct or indirect impacts to wildlife functions and values provided by 198 acres of waters of the State (at pg. 6.2-1). The Project area is located in the Ivanpah hydrologic unit of the South Lahontan Watershed. All drainage from surrounding mountains and alluvial fans collects in closed basins in the Ivanpah Valley. Ivanpah Dry Lake, a water of the Unites States, is located approximately 2 miles east and downslope of the Project area. The Project area is located on a broad bajada that extends from the base of the Clark Mountains to the western shoreline of Ivanpah Lake. Numerous ephemeral washes occur throughout the broad, coalescing alluvial fans that convey storm water runoff from the mountains toward Ivanpah Lake. The washes range in size from small features (1-4 feet) to large broad washes over 85 feet wide (at pg. 6.2-13).

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.

According to the ISEGS DEIS, construction of the proposed Project is expected to result in direct loss of ephemeral waters on the site. In addition, the proposed Project will degrade the functions of waters through the placement of road crossings, heliostats, fencing, and diversion channels to divert flow around constructed facilities (at pg. 6.2-59). Further, a scour analysis conducted to evaluate the potential of heliostat failure predicted the failure of more than 4,000 heliostats in a 10-year storm alone (at pg. 6-9-28).

The SDEIS should commit to the use of natural washes, in their present location and natural form and with adequate natural buffers, for flood control to the maximum extent practicable. Because placement of heliostats would result in erosion, migration of channels and local scour, heliostats should not be placed in washes, to minimize direct and indirect impacts to the washes. 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. The SDEIS should demonstrate that downstream flows will not be disrupted due to proposed changes to any natural washes nor the excavation of large amounts of sediment.

We also note that the Project area has increased by about 673 acres from 3,400 to 4,073 acres, comparing the Applicant's initial plans in the Application for Certification (AFC) to the

current plan of development. The first increase of 300 acres is associated with the increase in spacing between heliostats in order to avoid shading. The second increase in the Project area of 365 acres is a result of the proposed stormwater detention ponds. These have since been eliminated from the Applicant's proposal without any re-adjustment downward in the Project area (at pg. 6.2-8). The SDEIS should apply this acreage to reduce the size of the Project and thus, reduce the environmental impacts on the Project site. For example, there are high densities of rare plants on the project site that should be avoided. In addition, facilities should be located outside of waters. The SDEIS should provide additional details, including acreage or number of species protected, as a result of these reduced size alternatives. This analysis should be incorporated into the conceptual avoidance approach described at page 6.2-41. Avoidance of sensitive plant species should be an important consideration in the design and configuration of the heliostat layouts.

Finally, EPA is also concerned about the indirect impacts to Ivanpah Dry Lake. As mentioned above, the ephemeral waters traversing the Project site originate in the Clark Mountains and drain to Ivanpah Dry Lake, a water of the United States. The DEIS fails to assess the indirect impacts to Ivanpah Dry Lake from the proposed Project. Indirect effects could include, but are not limited to: 1) changes in hydrology and sediment transport into Ivanpah Dry Lake; 2) increases in volume and velocity of polluted stormwater from impervious surfaces on the Project site; 3) decrease in water quality from the impairment of ecosystem services such as water filtration, groundwater recharge, and attenuation of floods; 4) disruption of hydrological and ecological connectivity from the Clark Mountains to Ivanpah Dry Lake; and 5) decreases in biodiversity and ecosystem stability. Reducing the scope of the project by 365 acres and, thereby, reducing potential discharges into waters should reduce the indirect effects to Ivanpah Dry Lake.

Recommendations:

- To minimize direct and indirect impacts, such as erosion, migration of channels, and local scour, do not place heliostats in washes.
- Commit to the use of natural washes, in their present location and natural form and including adequate natural buffers, for flood control to the maximum extent practicable ..
- Demonstrate that downstream flows will not be disrupted due to proposed changes to any natural washes or the excavation of large amounts of sediment.
- Minimize the number of road crossings over washes in order to minimize erosion, migration of channels, and scour. Road crossings should be designed to provide adequate flow through during large storm events.
- Reduce the size of the Project by the 365 acres that are no longer needed for detention ponds in order to avoid high densities of rare plants and other environmental impacts.
- Locate facilities outside of waters. Estimate acreages or number of species protected as a result of these reduced Project size alternatives.
- Reduce the scope of the Project and discharges into waters, as described above, to reduce indirect effects to Ivanpah Dry Lake, a water of the United States.

Groundwater Resources

The SDEIS should further describe groundwater availability for this Project and other projects within the region, as well as the uncertainty regarding potential cumulative impacts on groundwater resources. Given the potential for adverse impacts from pumping groundwater, it is important that all monitoring and mitigation information be provided to the public and decision makers. The Proposed Project would permanently eliminate over 4,000 acres of wildlife habitat. In the arid Mojave Desert, habitat and the springs are critically important for several special status species that rely on water sources and wetland vegetation communities.

Recommendations:

- EPA recommends the SDEIS clearly demonstrate whether there is sufficient groundwater for the lifetime of this Project and other reasonably foreseeable projects in the study area. Specifically, all existing and foreseeable projects identified in Tables 2 and 3 of the Cumulative Impacts Chapter should be reflected in the Soil and Water Resources Chapter Table 12 (at pg. 6.9-31) and Table 15 (at pg. 6.9-41), and the SDEIS should include estimated water use during construction and operation. We also recommend that the SDEIS address what measures would be taken, and by whom, should groundwater resources in the basin become overextended due to additional growth, continued drought, and the utilization of existing or pending water rights in the basin(s).
- The SDEIS should provide additional documentation to support the assumption that the proposed Southern Nevada Supplemental Airport will use water supplied by the Las Vegas Valley Water District. If this is not certain, estimates of water use should be included in Table 15 to ensure sufficient groundwater is available.
- To clarify the regulatory structure for protecting groundwater, we recommend the SDEIS describe the water right permitting process and the roles of all parties involved in protecting beneficial uses, human health, and the environment. This would include, for example, describing whether water right permits include special conditions; measures to mitigate direct, indirect, and cumulative impacts; and provisions for monitoring and adaptive management.
- EPA recommends the cumulative impacts analysis for groundwater include a discussion of the potential effect of future climate change on the proposed Project and groundwater development.
- EPA recommends that the ground water monitoring program be clearly defined and include a mitigation section for water resources. The ground water monitoring plan should describe the location of the monitoring wells and discuss contingency actions in the event of detection of contamination. The monitoring program should also assess the impacts to vegetation, wildlife, and aquatic resources. Funds to implement the monitoring program should be established and monitoring should be conducted on a regular basis. The FEIS, and ultimately the Record of Decision (ROD), should include a commitment to the monitoring program and funding for the program.

Air Quality

Mitigation Measures

EPA commends BLM for incorporating fugitive dust control measures to limit particulate matter (PM10) impacts. We agree with the statement on page 6.1-28 that a solar renewable energy project with a 30 to 40 year life located in an ozone and PM10 nonattainment area, and just upwind of other ozone and PM10 nonattainment areas, should address its contribution to the potentially ongoing nonattainment of the PM 10 and ozone standards. For these reasons, we support the additional mitigation measures to address ozone precursors that are discussed on page 6.1-28. We also were pleased at the inclusion of mitigation measure AQ-SC2 which would require the development of an Air Quality Construction Mitigation Plan (AQCMP) as well as engine requirements for diesel equipment specified by mitigation measure AQ-SC5.

EPA supports incorporating mitigation strategies to reduce or minimize fugitive dust emissions as well as more stringent emission controls for PM and ozone precursors for construction-related activity. All applicable state and local requirements and the additional and/or revised measures listed below should be included in the SDEIS in order to reduce impacts associated with PM and toxic emissions from construction-related activities:

Recommendations:

Due to the serious nature of the PM_{10} and 8-hour ozone conditions in the Mojave Desert Air Basin and in neighboring Clark County, EPA recommends that the best available control measures (BACM) for these pollutants be implemented at all times and that the SDEIS and the FEIS incorporate the Construction Emissions Mitigation Plan. These measures should also be incorporated into the ROD. We recommend that all applicable requirements under local rules and the following additional measures be incorporated into a Construction Emissions Mitigation Plan.

Fugitive Dust Source Controls:

- Stabilize open storage piles and disturbed areas by covering and/or applying water or chemical/organic dust palliative where appropriate. This applies to both inactive and active sites, during workdays, weekends, holidays, and windy conditions.
- Install wind fencing, and phase grading operations, where appropriate, and operate water trucks for stabilization of surfaces under windy conditions.
- When hauling material and operating non-earthmoving equipment, prevent spillage, and limit speeds to 15 miles per hour (mph). Limit speed of earth-moving equipment to 10 mph.

Mobile and Stationary Source Controls:

- Reduce use, trips, and unnecessary idling from heavy equipment.
- Maintain and tune engines per manufacturer's specifications to perform at California Air Resources Board (CARB) and/or EPA certification, where applicable, levels and to perform at verified standards applicable to retrofit technologies. Employ periodic, unscheduled inspections to limit unnecessary

idling and to ensure that construction equipment is properly maintained, tuned, and modified consistent with established specifications. CARB has a number of mobile source anti-idling requirements. See their website at: http://www.arb.ca.gov/msprog/truck-idling/truck-idling.htm

- Prohibit any tampering with engines and require continuing adherence to manufacturer's recommendations
- If practicable, lease new, clean equipment meeting the most stringent of applicable Federal or State Standards.
- Utilize EPA-registered particulate traps and other appropriate controls where suitable, to reduce emissions of diesel particulate matter and other pollutants at the construction site.

Administrative controls:

- Identify all commitments to reduce construction emissions and incorporate these reductions into the air quality analysis to reflect additional air quality improvements that would result from adopting specific air quality measures.
- Identify where implementation of mitigation measures is rejected based on economic infeasibility.
- Prepare an inventory of all equipment prior to construction, and identify the suitability of add-on emission controls for each piece of equipment before groundbreaking. (Suitability of control devices is based on: whether there is reduced normal availability of the construction equipment due to increased downtime and/or power output, whether there may be significant damage caused to the construction equipment engine, or whether there may be a significant risk to nearby workers or the public.) Meet CARB diesel fuel requirement for off-road and on-highway (i.e., 15 ppm), and where appropriate use alternative fuels such as natural gas and electric.
- Develop a construction traffic and parking management plan that minimizes traffic interference and maintains traffic flow.
- Identify sensitive receptors in the project area, such as children, elderly, and infirm, and specify the means by which you will minimize impacts to these populations. For example, locate construction equipment and staging zones away from sensitive receptors and fresh air intakes to buildings and air conditioners.

Greenhouse Gases

EPA commends BLM for including a substantive discussion on greenhouse gases as well as estimates of carbon dioxide emissions from the construction of the proposed Project. We recommend that the SDEIS discuss the potential impacts of climate change on the Project as well as any mitigation measures that could reduce the Project's air emissions.

Recommendation:

- Identify specific mitigation measures needed to 1) protect the Project from the effects of climate change, 2) reduce the Project's adverse air quality effects, and/or 3) promote pollution prevention or environmental stewardship.

Endangered Species and Other Species of Concern

Up to 4,073 acres of desert tortoise habitat could be permanently impacted by the proposed Project. Long-term impacts may occur as a result of permanent loss of habitat, increased predation, and habitat fragmentation. The DEIS states that a Biological Assessment has been prepared that analyzes the potential impacts, and the U.S. Fish and Wildlife Service (USFWS) is preparing a Biological Opinion (pg. 2-18). Additionally, the DEIS indicates that BLM continues to engage with the California Department of Fish and Game (CDFG), USFWS, the California Energy Commission (CEC), and the Applicant to finalize details of a compensatory mitigation proposal.

Recommendations:

- EPA recommends BLM include the outcome of its consultation with the U.S. Fish and Wildlife Service and the Biological Opinion, if completed, in the SDEIS. Provide analysis of impacts on, and mitigation for, covered species, including:
    - Baseline conditions of habitats and populations of the covered species;
    - A clear description of how avoidance, mitigation and conservation measures will protect and encourage the recovery of the covered species and their habitats in the project area;
    - Monitoring, reporting and adaptive management efforts to ensure species and habitat conservation effectiveness.
- Incorporate complete information on the compensatory mitigation proposals (including quantification of acreages, estimates of species protected, costs to acquire compensatory lands, etc.) and analyze the environmental and economic trade-offs of acquiring the off-site lands versus reducing the size of on-site alternatives for equivalent protection.
- Include discussion of CDFG's ultimate compensation ratio recommendation for this Project and how their recommendation compares economically and environmentally to CEC's and BLM's proposed ratios.

The Project site supports diverse flora, including numerous special-status plant species. Eight special status plant species would be directly impacted by the construction of the Project. CEC staff consider impacts to five of these to be significant under the California Environmental Quality Act (CEQA), whereas BLM only considers one of these as sensitive. As the DEIS indicates on page 6.2-37, "the recent push for renewable energy development on private and public lands in the Mojave Desert region has put many of its special-status plants under far more immediate threat of local extinctions." Further, there is also a high diversity of wildlife on the site which would be impacted (at pg. 6.2.-15).

Proposed designs for the Project should avoid and minimize impacts to all federally threatened and endangered species, as well as BLM species of concern and State species of concern. In addition to desert tortoise, the site of the proposed Project includes sensitive species such as bighorn sheep, the American badger, and the golden eagle, among others. Any mitigation measures that result from consultation with the US Fish and Wildlife Service to protect sensitive biological resources should be included in the FEIS and, ultimately, the ROD. While the DEIS describes mitigation measures for potential impacts to sensitive species, it does not provide a clear commitment to implement these measures. The FEIS should also clearly articulate under which

alternatives sensitive biological resources, including the desert tortoise, bighorn sheep and American badger, would be least impacted and to what extent impacts can be mitigated.

Recommendations:

- EPA recommends the SDEIS consider alternatives to the proposed vegetation maintenance regime. The current proposal includes mowing to 12 -18 inches to provide clearance for heliostat function. This would likely suppress vegetation through carbohydrate starvation, reducing its water use, and discouraging reproduction by seed. Mowing is likely to promote proliferation of non-native invasive weeds.
- A clear commitment to implement mitigation measures to avoid and minimize adverse effects to the habitat of the desert tortoise and other sensitive species should be made in the SDEIS and, ultimately, the ROD.
- Mitigation measures that result from consultation with the US Fish and Wildlife Service to protect sensitive biological resources should be included in the FEIS and, ultimately, the ROD

The SDEIS should indicate what measures will be taken to protect important wildlife habitat areas from potential adverse effects of proposed Project. We encourage habitat conservation alternatives that avoid and protect high value habitat and create or preserve linkages between habitat areas to better conserve the covered species. The DEIS indicates that "CDFG has noted that wildlife corridors are present through and adjacent to the ISEGS site, and have expressed concern that the project could adversely affect bighorn sheep" (at pg. 6.2-26). The SDEIS should address wildlife movement impacts associated with the proposal, and present mitigating measures to maintain wildlife movement at specific locations in the vicinity of the Project site, especially where wildlife movement already occurs.

Recommendations:

- Incorporate goals and objectives developed for the California Missing Linkages Report and the California Essential Habitat Connectivity Project and identify how Project alternatives have been designed to allow for continued wildlife movement:
  http://www.dot.ca.gov/hq/env/bio/program_efforts.htm
  http://scwildlands.org/missinglinks/reports/download_missinglinkages.htm
- Use data developed for the statewide California Wildlife Action Plan and the Nevada Wildlife Action Plan to inform proposed wildlife crossings and mitigation. Identify in the SDEIS the specific design changes proposed to avoid resources. Both wildlife action plans address at-risk species and provides range maps.
  http://www.dfg.ca.gov/wildlife/WAP/
  http://www.wildlifeactionplans.org/nevada.html

Cumulative Impacts Analysis

While we acknowledge the identification of the reasonably foreseeable projects mentioned in the DEIS and the qualitative discussion of cumulative impacts in each resource chapter, the DEIS does not fully assess and quantify cumulative impacts associated with the

Project, and does not adequately link the Project's effects to the health of the affected resources. Cumulative impacts are defined in the CEQ NEPA regulations as the impact on the environment that results from the incremental impact of the action when added to the other past, present, and reasonable foreseeable future actions, regardless of what agency (Federal or non-Federal) or person undertakes such actions (40 CFR 1508.7).

EPA recommends that the SDEIS follow the guidance developed by the California Department of Transportation (Caltrans), the Federal Highway Administration (FHWA), and EPA for cumulative impact analysis, as it can be applied to non-road projects. The SDEIS and all future environmental analyses related to renewable energy, transmission, and transportation projects in the region should provide a comprehensive description of the associated elements of all foreseeable future actions. Specifically, the SDEIS should disclose to the public the cumulative impacts that are anticipated, when the impacts of the Project are considered along with those of all of the energy projects (e.g. the 1,000 MW Cogentrix Solar Services project, the 700 MW combined NextLight solar trough projects, the 500 MW natural gas Ivanpah Energy Center, the two 125 MW Wind Energy power plant projects) and transportation projects (e.g. the DesertXpress High Speed Train System, California-Nevada Interstate Maglev Train, proposed Ivanpah Supplemental airport and its associated road network) in the Project vicinity. "Cumulative impacts can result from individually minor but collectively significant actions taking place over a period of time" (40 CFR Part 1508.7). Even if impacts from the Project, itself, are considered insignificant, the SDEIS and FEIS must address whether there are "collectively significant actions" when multiple, reasonably foreseeable projects are considered together. Incorporating this thorough analysis as part of this Project will help provide the context necessary to evaluate project related impacts into the future. This analysis should be summarized as part of the Cumulative Impacts Chapter so decision makers do not have to piece together elements of the analysis from different sections of the 1,200 page DEIS.

For example, the DEIS acknowledges that the Project, in combination with the present and future projects, would result in cumulative air quality effects, but concludes that the Project would not substantially contribute to the cumulative air quality impacts after implementation of staff's recommended mitigation measures (at p. 6.1-33). The analysis is insufficient, however, in that it did not discuss the cumulative localized contributions to air emissions from concurrent construction or operations of the multiple projects described in the cumulative impacts analysis. The localized cumulative air quality impacts of such a scenario should be considered reasonably foreseeable and the SDEIS should discuss the impacts of multiple construction projects overlapping.

Further, according to the DEIS, the cumulative impacts associated with the proposed Project are "a substantial contributor to the cumulative loss of Ivanpah Valley's native Mojave Desert plant and wildlife communities, including the threatened desert tortoise and other special-status species" (at pg. 6.2-71). The cumulative impacts discussion in the Biological Resource chapter does not quantify the cumulative effects to, for example, desert tortoise habitat from reasonably forseeable projects. The joint Caltrans, FHWA, and EPA guidance recommends the use of quantitative data and analysis, especially when impacts to aquatic or biological resources are involved, because such data can be critical to identifying avoidance and mitigation measures and preparing permit applications.

Recommendations:

- Conduct a thorough cumulative impact assessment for the SDEIS. EPA recommends using the California Department of Transportation Indirect and Cumulative Impacts Analysis, which is co-authored by EPA and is applicable to impact analyses for both road and non-road projects. This guidance can be found at [http://www.dot.ca.gov/ser/cumulative_guidance/purpose.htm] and [http://www.dot.ca.gov/ser/Growth-related_IndirectImpactAnalysis/gri_guidance.htm]. The guidance will assist in identifying cumulative impacts and preparing an analysis that is sound and well documented. The results of this analysis should be summarized in the revised Cumulative Impacts Chapter.
- The SDEIS should provide a substantive discussion of, and quantify where possible, the cumulative effects of the project when considered with other past, present, or reasonably foreseeable projects, regardless of what agency or person undertakes those actions (see 40 CFR Section 1508.7). The document should also propose mitigation for all cumulative impacts, and clearly state the lead agency's mitigation responsibilities and the mitigation responsibilities of other entities.

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 analysed in the draft EIS, which could reduce the environmental impacts of the action. The identified additional information, data, analyses, 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 analysed in the draft EIS, which should be analysed in order to reduce the potentially significant environmental impacts. EPA believes that the identified additional information, data, analyses, 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.