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Bureau of Land Management

PLAN AMENDMENT/FINAL EIS FOR THE BLYTHE SOLAR POWER PROJECT

Volume 1 of 2

August 2010

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United States Department of the Interior
Bureau of Land Management

Plan Amendment / Final EIS for the Blythe Solar Power Project

For the

Palm Springs – South Coast Field Office
Palm Springs, California

August 2010

John R Kalish
John R. Kalish
Field Manager

August 20, 2010
Date

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In reply refer to:
CACA 048811

August 20, 2010

Dear Reader:

Enclosed is the Proposed Resource Management Plan-Amendment/Final Environmental Impact Statement (PA/FEIS) for the California Desert Conservation Area (CDCA) Plan and Blythe Solar Power Project (BSPP). The Bureau of Land Management (BLM) prepared the PA/FEIS in consultation with cooperating agencies, taking into account public comments received during the National Environmental Policy Act (NEPA) process. The proposed decision on the plan amendment would add the BSPP site to those identified in the current CDCA Plan, as amended, for solar energy production. The proposed decision on the PA is whether to add the BSPP site to those identified in the CDCA Plan, as amended, for solar energy production. The proposed decision on the BSPP is whether to approve with modification issuance of the right-of-way grant applied for by Palo Verde Solar I, LLC.

This PA/FEIS for the BSPP has been developed in accordance with NEPA and the Federal Land Policy and Management Act of 1976. The PA is largely based on the preferred alternative in the Draft Resource Management Plan-Amendment/Draft Environmental Impact Statement (DRMP-A/DEIS), which was released on March 19,2010. The PA/FEIS for the BSPP contains the proposed plan and project decisions, a summary of changes made between the DRMP-A/DEIS and PA/FEIS, an analysis of the impacts of the decisions, a summary of written comments received during the public review period for the DRMP-A/DEIS and responses to comments.

The BLM will be accepting additional public comment on the PA/FEIS within 30 days after the Environmental Protection Agency publishes the Notice of Availability in the Federal Register. Comments can be sent to Allison Shaffer, Project Manager, by mail: 1201 Bird Center Drive, Palm Springs, CA, 92264; phone: (760) 833-7100; or email CAPSSolarBlythe@blm.gov. All substantive comments will be reviewed and responded to in the Record of Decision.

Pursuant to BLM's planning regulations at 43 Code of Federal Regulations (CFR) 1610.5-2, any person who participated in the planning process for the PA and has an interest that is or may be adversely affected by that planning decision may protest approval of that planning decision within 30 days from the date the Environmental Protection Agency (EPA) publishes its notice of availability for the PA/FEIS in the *Federal Register*. Unlike the planning decision, issuance of the proposed right-of-way grant is an implementation decision that is not subject to protest under the BLM planning regulations.

For further information on filing a protest, please see the accompanying protest regulations in the pages that follow (Attachment 1). The regulations specify the required elements in a protest. Protesting parties should take care to document all relevant facts and, as much as possible, reference or cite the planning documents or available planning records (e.g., meeting minutes or summaries, correspondence, etc.). To aid in ensuring the completeness of the protest, a protest checklist is attached to this letter (labeled as Attachment 2).

All protests must be in writing and mailed to one of the following addresses:

Regular Mail:
Director (210)
Attention: Brenda Hudgens-Williams
P.O. Box 66538
Washington, D.C. 20035

Overnight Mail or Other Delivery:
Director (210)
Attention: Brenda Hudgens-Williams
1620 L Street, N.W., Suite 1075
Washington, D.C. 20036

Before including your address, phone number, e-mail address, or other personal identifying information in your comment, you should be aware that your entire comment - including your personal identifying information - may be made publicly available at any time. While you can ask us in your comment to withhold your personal identifying information from public review, we cannot guarantee that we will be able to do so.

Emailed and faxed protests will not be accepted as valid protests unless the protesting party also provides the original letter by either regular or overnight mail postmarked by the close of the protest period. Under these conditions, the BLM will consider the emailed or faxed protest as an advance copy and will afford it full consideration. If you wish to provide the BLM with such advance notification, please direct faxed protests to the attention of Brenda Hudgens-Williams - BLM Protest Expeditor at 202-912-7129, and emailed protests to Brenda Hudgens-Williams@blm.gov.

The BLM Director will make every attempt to promptly render a decision on each valid protest. The decision will be in writing and will be sent to the protesting party by certified mail, return receipt requested. The decision of the BLM Director shall be the final decision of the Department of the Interior. Responses to protest issues will be compiled in a Director's Protest Resolution Report that will be made available to the public following issuance of the decisions.

Upon resolution of all protests, the BLM may issue a Record of Decision (ROD) adopting the Approved PA and making a decision regarding issuance of the right-of-way grant for the BSPP. Copies of the ROD will be mailed or made available electronically to all who participated in this NEPA process and will be available to all parties through the "Planning" page of the BLM national website (*http://www.blm.gov/planning*), or by mail upon request.

Sincerely,

John R. Kalish
Field Manager

Palm Springs South Coast Field Office

Blythe Solar Power Project

Plan Amendment/Final Environmental Impact Statement

Lead Agency: Bureau of Land Management (BLM)
Palm Springs / South Coast Field Office (PSSCFO)
Palm Springs, California

For further information, contact:
Allison Shaffer, Project Manager PSSCFO -
1201 Bird Center Drive, Palm Springs, CA 92262

Abstract

This Plan Amendment/Final Environmental Impact Statement (PA/FEIS) addresses the possible United States Bureau of Land Management (BLM) approval of an amendment to the *California Desert Conservation Area Plan* (CDCA Plan) to allow for solar energy and of a right-of-way (ROW) grant to lease land managed by the BLM for construction, operation and decommissioning of a solar electricity generation facility. The Agency Preferred Alternative covers approximately 7,025 acres (ac), managed by the BLM, and would generate 1000 megawatts (MW) of electricity annually. The PA/FEIS identifies impacts of the Agency Preferred Alternative, including impacts related to biological resources, cultural resources, land use, visual resources, and hydrology, water quality, and water use. Many of these adverse impacts can be avoided or substantially reduced based on compliance with applicable laws, ordinances, regulations and standards, and compliance with measures provided in this PA/FEIS.

Chapter 2.0 discusses the Blythe Solar Power Project (BSPP) (1000 MW on approximately 7,025 ac), a reconfigured 1,000 MW Alternative (1,000 MW on approximately 7,175 ac), a 750 MW Alternative (750 MW on approximately 5,825ac), the No Action Alternative (No ROW Grant and No CDCA Plan Amendment), the No Project Alternative (No ROW Grant and Amend the CDCA Plan for No Solar), and the No Project Alternative (No ROW Grant and Amend the CDCA Plan for Other Solar). Chapter 3.0 describes the existing conditions on and in the vicinity of the project site. Chapter 4.0 describes the potential adverse environmental impacts expected under each of the Alternatives, including the Agency Preferred Alternative.

The Field Manager of the PSSCFO has the authority for site management of future activities related to the ROW grant and is the BLM Authorized Officer for this FEIS.

Relationship to the Blythe Solar Power Project Staff Assessment and Draft Environmental Impact Statement

In accordance with the National Environmental Policy Act (NEPA), Federal Land Policy and Management Act (FLPMA), and California Environmental Quality Act (CEQA), the Bureau of Land Management (BLM) and the California Energy Commission (CEC) cooperatively prepared a Staff Assessment (SA) and Draft Environmental Impact Statement (DEIS) as a joint environmental analysis (SA/DEIS) to evaluate environmental impacts of the project described in the right-of-way application filed with the BLM by Palo Verde Solar I[1] (Applicant) for the Blythe Solar Power Project (BSPP or proposed action). A Plan Amendment to the California Desert Conservation Area (CDCA) Plan would be required in order for the BLM to authorize the project. Therefore this document evaluates the Plan Amendment and the BSPP.

The SA/DEIS satisfies NEPA, FLPMA and CEQA requirements. However, the format of the SA/DEIS differs from the format typically used for EISs prepared by the BLM. Therefore, this proposed Plan Amendment/Final EIS (PA/FEIS) has been prepared as a stand-alone document to provide the reader with a more familiar EIS format.

During this process, the Applicant provided information to the CEC (including, but not limited to, the Application for Certification, data responses and other related information) that informed best management practices, applicant proposed measures and mitigation measures that were included in the SA/DEIS. For purposes of this NEPA analysis, due to the evolution of such information throughout the environmental review process, measures initially proposed as “applicant proposed measures” are included as Mitigation Measures where applicable rather than as part of the Project Description.

The SA/DEIS provides the basis for the analyses presented in this PA/FEIS. The following table correlates the applicable SA/DEIS chapters to the PA/FEIS chapters provided herein.

[1] Chevron Energy Solutions and Solar Millennium have a joint development agreement. Chevron Energy Solutions applied for the Right of Way for Blythe Solar Power Project. To facilitate the permitting of the Blythe Solar Power Project (BSPP), the Applicant is requesting that the Energy Commission issue one License to a Project- specific company. The company for BSPP is Palo Verde Solar I, LLC a wholly owned subsidiary of Solar Millennium and the single Applicant for the BSPP.

PROPOSED PA/FEIS AND SA/DEIS CORRELATION CHART

PA/FEIS Chapter	SA/DEIS Chapter
Chapter 1 Introduction	A. Introduction
Chapter 2 Proposed Action and Alternatives	B. Description of the Proposed Project and Alternatives D.1 Facility Design D.3 Power Plant Efficiency D.4 Power Plant Reliability D.5 Transmission System Engineering E. General Conditions
Chapter 3: Affected Environment	
3.1 Introduction	C. Environmental Analysis
3.2 Air Resources	C.1 Air Quality
3.3 Global Climate Change	C.1 Air Quality
3.4 Cultural Resources	C.3 Cultural Resources and Native American Values
3.5 Environmental Justice	C.8 Socioeconomic and Environmental Justice
3.6 Lands and Realty	C.6 Land Use, Recreation, and Wilderness
3.7 Livestock and Grazing	Not applicable
3.8 Mineral Resources	D.2 Geology, Paleontology, and Minerals
3.9 Multiple Use Classes	C.6 Land Use, Recreation, and Wilderness
3.10 Noise	C.7 Noise and Vibration
3.11 Paleontological Resources	D.2 Geology, Paleontology, and Minerals
3.12 Public Health Safety	C.4 Hazardous Materials Management C.5 Health and Safety C.11 Transmission Line Safety and Nuisance C.13 Waste Management C.14 Worker Safety and Fire Protection
3.13 Recreation	C.6 Land Use, Recreation, and Wilderness
3.14 Social Economics	C.8 Socioeconomic and Environmental Justice
3.15 Soils Resources	C.9 Soil and Water Resources
3.16 Special Designations	C.6 Land Use, Recreation, and Wilderness
3.17 Transportation and Public Access – OHV	C.10 Traffic and Transportation
3.18 Vegetation Resources	C.2 Biological Resources
3.19 Visual Resources	C.12 Visual Resources
3.20 Water Resources	C.9 Soil and Water Resources
3.21 Wild Horse and Burros	Not applicable
3.22 Wildland and Fire Ecology	C.2 Biological Resources
3.23 Wildlife Resources	C.2 Biological Resources C.14 Worker Safety and Fire Protection
Chapter 4: Environmental Consequence	C. Environmental Analysis
4.1 Introduction	Not applicable
4.2 Impacts on Air Resources	C.1 Air Quality
4.3 Impacts to Global Climate Change	C.1 Air Quality
4.4 Impacts on Cultural Resources	C.3 Cultural Resources and Native American Values
4.5 Impacts on Environmental Justice	C.8 Socioeconomic and Environmental Justice
4.6 Impacts on Lands and Realty	C.6 Land Use, Recreation, and Wilderness
4.7 Impacts on Mineral Resources	D.2 Geology, Paleontology, and Minerals
4.8 Impacts on Multiple Use Classes	C.6 Land Use, Recreation, and Wilderness
4.9 Impacts on Noise	C.7 Noise and Vibration
4.10 Impacts on Paleontological Resources	D.2 Geology, Paleontology, and Minerals

PROPOSED PA/FEIS AND SA/DEIS CORRELATION CHART (Continued)

PA/FEIS Chapter	SA/DEIS Chapter
4.11 Impacts on Public Health Safety	C.4 Hazardous Materials Management C.5 Health and Safety C.11 Transmission Line Safety and Nuisance C.13 Waste Management C.14 Worker Safety and Fire Protection
4.12 Impacts on Recreation	C.6 Land Use, Recreation, and Wilderness
4.13 Social and Economic Impacts	C.8 Socioeconomic and Environmental Justice
4.14 Impacts on Soils Resources	C.9 Soil and Water Resources
4.15 Impacts on Special Designations	C.6 Land Use, Recreation, and Wilderness
4.16 Impacts on Transportation and Public Access - Off-Highway Vehicle Resources	C.10 Traffic and Transportation
4.17 Impacts on Vegetation Resources	C.2 Biological Resources
4.18 Impacts on Visual Resources	C.12 Visual Resources
4.19 Impacts on Water Resources	C.9 Soil and Water Resources
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EXECUTIVE SUMMARY

ES.1 Background and Organization

In August 2007, the United States Bureau of Land Management (BLM) California Desert District and the California Energy Commission (CEC) and entered into a Memorandum of Understanding (MOU) to jointly develop the environmental analysis documentation for solar thermal projects which are under the jurisdiction of both agencies. Consistent with that MOU, the BLM and the CEC prepared a joint environmental compliance document to address the requirements of the National Environmental Policy Act (NEPA) and the California Environmental Quality Act (CEQA) for the Blythe Solar Power Project (BCPP). Specifically, a Staff Assessment/Draft Environmental Impact Statement (SA/DEIS) was prepared and was circulated for agency and public review and comment between March 19, 2010, and June 17, 2010. The SA/DEIS is incorporated by reference in this Plan Amendment/Final Environmental Impact Statement (PA/FEIS).

The BLM and the CEC prepared separate final documents for compliance with NEPA and CEQA, respectively. Specifically, the BLM prepared this PA/FEIS for the BSPP. The SA/DEIS was the primary reference used in preparing this FEIS. The SA/DEIS is incorporated by reference in this FEIS. The comments received on the DEIS are addressed in this PA/FEIS. After the publication of this PA/FEIS, the BLM will prepare a Record of Decision (ROD) regarding the proposed action (Agency Preferred Alternative). The publication of the ROD in the Federal Register is the final step required of the BLM to meet the requirements of NEPA for the BSPP.

ES.2 Lead Agencies' Roles and Approvals

The BLM's authority for the proposed action includes the Federal Land Policy and Management Act (FLPMA) of 1976, Section 211 of the Energy Policy Act, and BLM's Solar Energy Development Policy. The FLPMA authorizes the BLM to issue right-of-way (ROW) grants for renewable energy projects. BLM's authority also extends to the BLM lands in the Palm Springs/South Coast Field Office, which are governed by the California Desert Conservation Area Plan (1980, as amended) (CDCA Plan). Because the CDCA Plan would need to be amended to allow the BSPP on the proposed site, BLM would also oversee that CDCA Plan amendment process for the project.

The CEC has the exclusive authority to certify the construction, modification, and operation of thermal electric power plants in California which generate 50 or more MW. The CEC certification is in lieu of any permit required by State, regional, or local agencies. The CEC must review power plant Applications for Certification (AFCs) to assess potential environmental impacts and compliance with applicable laws, ordinances, regulations, and standards (LORS). The CEC analyses regarding the BSPP in the SA/DEIS were prepared in accordance with the requirements of CEQA.

ES.3 Purpose and Need

BLM Purpose and Need

NEPA guidance published by the Council on Environmental Quality (CEQ) states that environmental impact statements' Purpose and Need section "shall briefly specify the underlying purpose and need to which the agency is responding in proposing the alternatives including the proposed action" (40 CFR 1502.13). The following discussion sets forth the purpose of and need for the action as required under NEPA.

The BLM's purpose and need for the BSPP is to respond to the application of Palo Verde Solar I[1] (Applicant) under Title V of the Federal Land Policy and Management Act of 1976 (FLPMA) (43 U.S.C. 1701 et seq.) for a ROW grant to construct, operate, maintain and decommission a solar thermal facility on public lands in compliance with FLPMA, BLM ROW regulations, and other applicable Federal laws. The BLM will decide whether to approve, approve with modification, or deny issuance of a ROW grant to Palo Verde Solar I for the proposed BSPP. The BLM's action also will include consideration of a concurrent amendment of the California Desert Conservation Area (CDCA) Plan of 1980, as amended. The CDCA Plan, while recognizing the potential compatibility of solar generation facilities on public lands, requires that all sites associated with power generation or transmission that are not identified in the CDCA Plan to be added to it through the land use plan amendment process. CDCA boundaries are shown on Figure 1. The BSPP site is within the CDCA, but is not identified in the CDCA Plan for solar power generation. Therefore, if the BLM decides to approve the issuance of a ROW grant, the CDCA Plan amendment also would be required.

In conjunction with FLPMA, BLM authorities include:

1. Executive Order 13212, dated May 18, 2001, which mandates that agencies act expediently and in a manner consistent with applicable laws to increase the "production and transmission of energy in a safe and environmentally sound manner."

2. The Energy Policy Act of 2005 (EPAct 05 or EPAct), Section 211 of which states: "It is the sense of the Congress that the Secretary of the Interior should, before the end of the 10-year period beginning on the date of enactment of this Act, seek to have approved non-hydropower renewable energy projects located on public lands with a generation capacity of at least 10,000 megawatts of electricity."

[1] Chevron Energy Solutions and Solar Millennium have a joint development agreement. Chevron Energy Solutions applied for the Right of Way for Blythe Solar Power Project. To facilitate the permitting of the Blythe Solar Power Project (BSPP), the Applicant is requesting that the BLM issue one right of way grant to a Project- specific company. The company for BSPP is Palo Verde Solar I, LLC a wholly owned subsidiary of Solar Millennium and the single Applicant for the BSPP.

3. Secretarial Order 3285, dated March 11, 2009, which “establishes the development of renewable energy as a priority for the Department of the Interior.”

Department of Energy Purpose and Need

The Applicant has applied to the Department of Energy (DOE) for a loan guarantee under Title XVII of the Energy Policy Act of 2005 (EPAct 05), as amended by Section 406 of the American Recovery and Reinvestment Act of 2009, P.L. 111-5 (the “Recovery Act”) for Solar Power Units 1 and 2 of the BSPP. DOE is a cooperating agency on this EIS pursuant to an MOU between DOE and BLM signed in January 2010. The purpose and need for action by DOE is to comply with its mandate under EPAct by selecting eligible projects that meet the goals of the Act.

EPAct 2005 established a Federal loan guarantee program for eligible energy projects, and was amended by the Recovery Act to create Section 1705 authorizing a new program for rapid deployment of renewable energy projects and related manufacturing facilities, electric power transmission projects, and leading edge biofuels projects. The primary purposes of the Recovery Act are job preservation and creation, infrastructure investment, energy efficiency and science, assistance to the unemployed, and State and local fiscal stabilization. The Section 1705 Program is designed to address the current economic conditions of the nation, in part, through renewable energy, transmission and leading edge biofuels projects.

Energy Commission Project Objectives

The CEQA guidelines require a clearly written statement of objectives to guide the lead agency in developing a reasonable range of alternatives and aid decision-makers in preparing findings or a statement of overriding considerations. CEQA specifies that the statement of objectives should include the underlying purpose of the project (Section 15126.6(a)). After considering the objectives set out by the applicant, the Energy Commission identified the following basic project objectives, which are used to evaluate the viability of alternatives in accordance with CEQA:

1. To construct a utility-scale solar energy project of up to 1,000 MW and interconnect directly to the CAISO Grid while minimizing additions to electrical infrastructure; and

2. To locate the facility in areas of high solar insolation.

3. In addition, when considering retention or elimination of alternative renewable technologies, in addition to evaluating the likelihood of reducing or eliminating the potential impacts of Blythe Solar Power Project at its proposed site, staff evaluated whether alternative technologies could meet the following key project objectives:

4. To provide clean, renewable electricity and to assist Southern California Edison (SCE) in meeting its obligations under California’s Renewable Portfolio Standard Program (RPS);

5. To assist SCE in reducing its greenhouse gas emissions as required by the California Global Warming Solutions Act; and

6. To contribute to the achievement of the 33% renewables RPS target set by California’s governor and legislature

7. To complete the review process in a timeframe that would allow the applicant to start construction or meet the economic performance guidelines by December 31, 2010 to potentially qualify for the 2009 ARRA cash grant in lieu of tax credits for certain renewable energy projects.

ES.4 Proposed Action and Plan Amendment

The BSPP is a privately-proposed solar power generating facility and bundled double circuit 230 kV power transmission line (gen-tie) that would be located on Federal land managed by the BLM in the California inland desert, approximately eight miles west of the city of Blythe and three miles north of the Interstate-10 freeway (see, Figure 1). The Applicant is seeking a right-of-way (ROW) grant for approximately 9,400 acres. Construction and operation of the BSPP would disturb a total of about 7,025 acres. Remaining acreage that would not be disturbed may not be part of the ROW grant.

The BSPP would include the construction and operation of four adjacent, independent, identical power block units (Units) of 250 MW nominal capacity each for a total nominal capacity of 1,000 MW commercial solar parabolic trough generating station and ancillary facilities (see Figures 2a and 2b). The BSPP would be constructed in four phases. The first two phases, BSPP Units 1 and 2, are designed to provide a combined total of approximately 500 MW of electricity and would occupy an estimated 1600 acres each; the third and fourth phases, BSPP Units 3 and 4, would provide a combined total of approximately 500 MW of electricity and occupy an estimated 1200 acres each (see Figure 3 for a solar unit detail). The BSPP would be connected to Southern California Edison's planned Colorado River Substation, which would be located approximately five miles southwest of the BSPP area, via the proposed gen-tie line, a bundled double circuit 230 kV transmission line.

The Applicant did not request a CDCA Plan amendment directly. Nonetheless, the BLM has determined that a CDCA Plan amendment would be required if a ROW were granted for a solar power generating facility on the proposed site. Regardless of whether the proposed project is approved, the BLM could elect to amend the CDCA Plan. Consequently, the following range of outcomes of the BLM's potential CDCA Plan amendment process is as follows:

PA1 – The CDCA Plan (1980, as amended) would be amended to identify the footprint of the BSPP site as suitable for the proposed type of solar energy development. (This is the proposed land use plan amendment.)

PA2 – The CDCA Plan (1980, as amended) would not be amended. (This is No Action Alternative A, discussed below.)

PA3 – The CDCA Plan (1980, as amended) would be amended to identify the BSPP application area as unsuitable for any type of solar energy development. (This is a no project alternative called "No Action Alternative B" and is discussed below.)

PA4 – The CDCA Plan (1980, as amended) would be amended to identify the BSPP application area as suitable for any type of solar energy development. (This is a no project alternative called "No Action Alternative C" and is discussed below.)

ES.5 Connected/Cumulative Actions

Telecommunications and Telemetry

The BSPP would have telecommunications service from Frontier Communications, the telecommunications service providers for the Blythe area. Voice and data communications would be provided by a new twisted pair telecommunications cable. The routing for this cable would follow the routing of the redundant telecommunications line from the project to at the Colorado River Substation. The routing for each of these lines would be adjacent to the Black Rock Road, and the site access road. Wireless telecom equipment would be used to support communication with staff dispersed throughout the site. The BSPP would utilize electronic telemetry systems to control equipment and facilities operations over the site.

Natural Gas Pipeline

A new four-inch diameter, 9.8-mile long natural gas pipeline would be constructed to connect the project to an existing Southern California Gas (SCG) pipeline situated south of I-10. Approximately eight miles would be within the plant site boundary and two miles outside the plant site boundary. The line would be buried with a minimum three feet of cover depending on location. The gas line route would begin at an existing SCG line 1,800 feet south of I-10 and traverse directly north to the site where it would provide fuel for operating the HTF system.

Construction of the gas pipeline would be built to SCG standards and would take approximately three to six months. Most major pieces of pipeline construction equipment would remain along the pipeline ROW during construction with storage and staging of equipment and supplies located at the site or other acceptable site selected by SCG at the time construction is underway. Excavated earth material would be stored within the construction ROW.

Distribution Line

Construction power would be provided to the site from the SCE 12.47 kV distribution line routed to the site from SCE's distribution poles one mile east of BSPP at the corner of Sixth Avenue and Davis Street.[2] The BSPP would include construction of a 12.47 kV internal distribution system and step down transformers to provide power as needed for construction operations.[3]

Cumulative Scenario

There are a large number of renewable energy and other projects proposed throughout the California desert that were identified as potentially contributing to cumulative environmental impacts. Those cumulative projects are discussed in detail in Section 4.1.4, Cumulative Scenario Approach.

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2 The distribution line would be wholly owned and operated by SCE. It would be used to provide power during the construction phase of the proposed action. SCE would retain the facility after construction is complete.

3 During the operational phase of the proposed action, power would be provided by the BSPP.

ES.6 Alternatives to the Proposed Action

Table ES-1 summarizes the BSPP, the Agency Preferred Alternative, the other Alternatives evaluated in this PA/FEIS. The BSPP is the originally proposed action. All of these Alternatives are described in detail in Chapter 2, Proposed Action and Alternatives.

TABLE ES-1
SUMMARY OF ALTERNATIVES EVALUATED IN THE PA/FEIS

Alternative	Comments
Proposed Action 1,000 MW; 7,025 acres disturbed BLM amends CDCA Plan for BSPP	This is the BSPP and was the original proposed action; it also is the Agency Preferred Alternative.
Reconfigured Alternative 1,000 MW (same as BSPP) 7,175 acres disturbed (150 acres more than the BSPP) BLM amends CDCA Plan for Reconfigured Alternative	This is a reconfigured project that would use the same technology as the BSPP to generate the same energy output, but would relocate Unit 3 to a location approximately 0.8 mile south of Solar Unit 2 to reduce impacts related to a major unnamed dry wash that flows through the proposed site along the southwestern side.
Reduced Acreage Alternative 750 MW (75 percent of MW of the BSPP); 4,750 acres disturbed (1,200 acres less than the BSPP) BLM amends CDCA Plan for Reduced Acreage Alternative	This is a reduced project that would develop only three of the four units proposed under the BSPP. The same solar trough technology would be used as for the BSPP.
No Action Alternative A: BLM does not approve the ROW Grant for the BSPP BLM does not amend the CDCA Plan	This No Action Alternative was evaluated in the SA/DEIS under both CEQA and NEPA.
No Action Alternative B BLM does not authorize the ROW grant for the BSPP; BLM amends the CDCA Plan to make the project site unavailable for any type of solar energy development.	This No Action Alternative was evaluated in the SA/DEIS under NEPA only. This is not a typical “No Action” Alternative because the BLM would take action to amend the CDCA Plan under this Alternative. However, it was evaluated because it provided an opportunity for the BLM to consider the effects of not approving the ROW grant application and also amending the CDCA Plan to make the specific BSPP site unavailable for future solar development.
No Action Alternative C BLM does not authorize the ROW grant for the BSPP; BLM amends the CDCA Plan to make the project site available for any type of solar energy development.	This No Action Alternative was evaluated in the SA/DEIS under NEPA only. This is not a typical “No Action” Alternative because the BLM would take action to amend the CDCA Plan under this Alternative. However, it was evaluated because it provided an opportunity for the BLM to consider the effects of not approving the ROW grant application and also amending the CDCA Plan to make the specific BSPP site available for future solar development.

ES.7 Affected Environment

The BSPP would be located on public land managed by the BLM approximately three miles north of the I-10 freeway, and eight miles west of the City of Blythe, California. The proposed action includes a 230-kilovolt (kV) transmission line that would interconnect with the regional grid at Southern California Edison's (SCE) planned Colorado River Substation about five miles southwest of the plant site. The Applicant has applied for a right-of-way (ROW) grant from BLM for approximately 9,400-acres of flat desert terrain. Within these 9,400 acres, construction and operation would disturb approximately 7,025 acres. Remaining acreage that would not be disturbed would not be part of the ROW grant.

The site is located within the within the Palo Verde Mesa of the Sonoran Desert region of southeastern California, an alluvial-filled basin that is bounded by the Mojave Desert to the north and by the McCoy Mountains, Little Maria Mountains, and Big Maria Mountains to the west, northwest, and northeast, respectively, extending southwest to the Palo Verde Mountains. The Palo Verde Mesa is bounded by the Palo Verde Valley to the east, which is generally formed by flood plain deposits of the Colorado River. The unique position of the region at the junction with the Neotropic ecozone to the south contributes to the presence of a number of rare and endemic plants and vegetation communities specially adapted to this bi-modal rainfall pattern, and not found elsewhere in California. These include microphyll woodlands, palm oases, and a number of summer annuals that only germinate after a significant warm summer rain. Although the region supports numerous perennial species, including a wide variety of cacti, more than half of the region's plant species are herbaceous annuals, which reveal themselves only during years of suitable precipitation and temperature conditions.

The project site contains a variety of vegetation types including Sonoran creosote bush scrub, desert saltbush scrub, arrowweed scrub, tamarisk scrub, agricultural areas, disturbed areas, developed areas, ornamental areas, and open channel areas. Several ephemeral desert washes traverse the project site and convey flows during and following a substantial rainfall. The vegetation community in the washes is classified as Sonoran creosote bush scrub and also contains sparse stands of mesquite and tamarisk. The ephemeral washes generally contain a greater vegetative diversity and density than the creosote bush scrub habitat outside the washes. A variety of wildlife occupies the habitats on and in the vicinity of the project site.

ES.8 Environmental Consequences

Table ES-2 summarizes the environmental impacts that would occur as a result of the BSPP, the Agency Preferred Alternative, and Alternatives by environmental parameter. (Tables ES-3 through ES-22 are provided following the last page of text in this Executive Summary.) The tables also identify the mitigation measures, project features, and other measures included in the Alternatives to avoid or substantially reduce the adverse impacts of those Alternatives. The unavoidable adverse impacts that would remain after mitigation are also summarized briefly in these tables.

TABLE ES-2
SUMMARY OF IMPACTS BY ALTERNATIVE

Resource	ALTERNATIVES					
	Proposed Action	**Reconfigured Alternative**	**Reduced Alternative**	**No Action Alternative A**	**No Action Alternative B**	**No Action Alternative C**
Air	• *Construction*: NOx=102 tons/yr; VOC=12 tons/yr; CO=58 tons/yr; PM10=103 tons/yr; PM2.5=21 tons/yr; and Sox=0.2 tons/yr • *Operations*: NOx= 7 tons/yr; VOC=36 tons/yr; CO=16 tons/yr; PM10=76 tons/yr; PM2.5=10; tons/yr; and Sox=0.1 tons/yr • *Decommissioning*: Comparable in type and magnitude, but likely to be lower than, the construction emissions	Similar to the Proposed Action	Approximately 25% less than the Proposed Action	No Impact	No Impact	Similar to the Proposed Action
Global Climate Change	• *Construction*: GHG: 103,900 CO_2-Equivalent and loss in carbon uptake of about 8,806 MT of CO_2 per year due to vegetation removal • *Operations*: 14,789 CO_2-Equivalent • *Decommissioning*: Comparable in type and magnitude, but likely to be lower than, the construction emissions	Similar to the Proposed Action	Approximately 25% less than the Proposed Action	No Impact	No Impact	Similar to the Proposed Action
Cultural	• 210 known sites (30 prehistoric and 180 historic) • Possibly additional resources yet to be discovered during construction • The integrity of setting and integrity of feeling of the two known built-environment resources located within this area			No Impact	No Impact	Similar to the Proposed Action
Environ-mental Justice	No Impact	Same as Proposed Action	Same as Proposed Action	Same as Proposed Action	Same as Proposed Action	Same as Proposed Action
Lands and Realty	• Minimal and mitigable impacts to designated corridors and Interstate 10 from overhead gen-tie power line and underground pipeline crossing. • No impacts to existing uses.	Similar to the Proposed Action	Similar to the Proposed Action	Likely delayed impact similar to the Proposed Action. Required acreage could be less, approximately the same, or more than the Proposed Action.	No impact, or impact specific to a future use other than solar energy generation.	Similar to the Proposed Action. Required acreage could be less, approximately the same, or more than the Proposed Action.
Livestock Grazing	No Impact	Same as Proposed Action	Same as Proposed Action	Same as Proposed Action	Same as Proposed Action	Same as Proposed Action

TABLE ES-2 (Continued)
SUMMARY OF IMPACTS BY ALTERNATIVE

	ALTERNATIVES					
Resource	**Proposed Action**	**Reconfigured Alternative**	**Reduced Alternative**	**No Action Alternative A**	**No Action Alternative B**	**No Action Alternative C**
Minerals	No Impact	Same as Proposed Action	Same as Proposed Action	Same as Proposed Action	Same as Proposed Action	Same as Proposed Action
Multiple Use Classes	• *Construction*: 5,952 acres affected. • *Operations*: restriction of multiple use opportunities on the site to a single dominant use.	Impacts to MUC-L lands same as Proposed Action; construction would impact 6,102 acres.	Impacts to MUC-L lands same as Proposed Action; construction would impact 4,752 acres.	No Impact; similar impacts if other utility-scale solar power facilities built in future.	No Impact.	Same as Proposed Action.
Noise	• *Construction*: short-term elevated noise levels would occur associated with high pressure steam blow. • *Operations*: Long-term operational noise levels would be approximately 40 dBA Leq at the nearest sensitive receptor.	Similar to the Proposed Action	Slightly less than the Proposed Action	Similar to the Proposed Action	Similar to the Proposed Action	Similar to the Proposed Action
Paleonto-logical	• *Construction*: Damage and/or destruction of paleontological resources; possible net gain to the science of paleontology depending on fossils found. • *Operations*: No Impact. • *Decommissioning*: No Impact.	Same as Proposed Action	Similar but reduced proportionate to size of alternative	No negative impact or potential benefits to science of paleontology. Long term impacts likely similar to Proposed Action.	No negative impact or potential benefits to science of paleontology. Impacts similar to the Proposed Action likely to occur in other locations.	Similar to the Proposed Action
Public Health & Safety	• *Construction*: Risks to public health and contamination associated with construction equipment; safety risk of encountering unexploded munitions; risks of encountering abandoned mined lands. • *Operations*: large quantities of natural gas and Therminol VP1 would be used; no short- or long-term adverse human health effects are expected; risks of encountering abandoned mined lands; transmission line safety and nuisance hazards; traffic and transportation safety, including aviation safety; impacts to public and private airfields; and worker safety and fire protection impacts; and impacts associated with geologic hazards.	Similar to the Proposed Action	Similar to the Proposed Action	Similar to the Proposed Action	Similar to the Proposed Action	Similar to the Proposed Action

TABLE ES-2 (Continued)
SUMMARY OF IMPACTS BY ALTERNATIVE

Resource	ALTERNATIVES					
	Proposed Action	**Reconfigured Alternative**	**Reduced Alternative**	**No Action Alternative A**	**No Action Alternative B**	**No Action Alternative C**
Recreation	• *Construction*: impacts from noise, fugitive dust, and truck and other vehicle ingress and egress to the construction site. • *Operations*: site not available for recreational use; minimal impacts to other lands in the vicinity of the proposed site due to increased usage. • *Decommissioning*: dust and noise impacts similar to construction; after decommissioning area would be reclaimed for recreational use.	Would disturb approximately 150 more acres than Proposed Action. Operation, maintenance, and closure similar to Proposed Action.	Similar but reduced proportionate to size of alternative.	Similar to the Proposed Action.	Potential impacts could range from no impact to greater impact, depending on future site use.	Similar but reduced/increased proportionate to size of future development.
Social & Economics	• *Construction:* Employment of 604 workers (average) and 1,004 workers (peak). Most, if not all, expected to live within two hours of site. • Any temporary lodging demand met by existing housing or lodging. No new housing or motel development induced. • Total direct construction spending benefits of $406 million on labor and $60 million on materials. • Additional total indirect and induced spending benefits of $330 million and 462 jobs. • *Operations:* Annual employment of 221 workers of which at least 75% expected to live within two hours of site. • Any in-migration housing demand met by existing housing. No new housing growth induced. • Annual direct spending benefits of $9.4 million on labor and $9.6 million on materials. • Additional total indirect and induced spending benefits of $9.2 million and 74 jobs. • *Decommission:* Temporary spending and employment benefit from deconstruction and site restoration work. Subsequent long term adverse impact from lost project jobs and spending.	Same as Proposed Action	Similar but reduced proportionate to size of alternative	Similar to the Proposed Action	No Impact	Similar to the Proposed Action

TABLE ES-2 (Continued)
SUMMARY OF IMPACTS BY ALTERNATIVE

Resource	ALTERNATIVES					
	Proposed Action	**Reconfigured Alternative**	**Reduced Alternative**	**No Action Alternative A**	**No Action Alternative B**	**No Action Alternative C**
Soils	• *Construction*: total earth movement of approximately 8.3 million cubic yards. • Wind erosion generated soil loss of 71 tons per acre per year (Gunsight Series), 81 tons per acre per year (Cipriano Series), and 553 tons per acre per year (Aco Series). • Water erosion generated soil loss of 0.92 tons per acre per year (Gunsight Series), 4.63 tons per acre per year (Cipriano Series), and 0.51 tons per acre per year (Aco Series). • *Operations*: Wind erosion generated soil loss of 38 tons per acre per year (Gunsight Series), 49 tons per acre per year (Cipriano Series), and 296 tons per acre per year (Aco Series). • Water erosion generated soil loss of 0.84 tons per acre per year (Gunsight Series), 1.46 tons per acre per year (Cipriano Series), and 0.23 tons per acre per year (Aco Series).	Similar to Proposed Action	Peak construction: same as Proposed Action. Long term construction: less than Proposed Action. Operation: less than Proposed Action.	No impact; potential for similar impacts in other locations.	No impact; potential for similar impacts in other locations.	Similar to Proposed Action
Special Designations	No Impact	No Impact	No Impact	No Impact	No Impact	No Impact
Transpor-tation and Public Access – Off Highway Vehicle Resources	• *Construction*: temporary disturbance to motorized vehicles on local routes; traffic hazards from construction worker commuting and parking; increased traffic from construction activities; damage to roadways • *Operations*: increased opportunities for vandalism, illegal cross-county use and other disruptive behavior from off-highway vehicles (OHV); closure of the McCoy Wash to OHV users. • No impact to overall access for wilderness recreation; some impact to sightseeing and day use touring by OHV users; loss of access to site for two private land owners.	Similar to Proposed Action; closure of one additional spur road, and impacts to an additional 8.5 miles of open routes.	Similar to Proposed Action; no impacts to two spur roads and impacts to OHV open routes decreased to approximately one mile.	No impact to OHV routes and values; similar impacts to transportation.	No impact to OHV routes and values; similar impacts to transportation.	Similar impacts as Proposed Action.

TABLE ES-2 (Continued)
SUMMARY OF IMPACTS BY ALTERNATIVE

Resource	ALTERNATIVES					
	Proposed Action	**Reconfigured Alternative**	**Reduced Alternative**	**No Action Alternative A**	**No Action Alternative B**	**No Action Alternative C**
Vegetation	• *Construction*: 7,025 acres vegetation communities lost; 592 acres ephemeral drainages lost; 6 special status plant species impacted	*Construction*: 5,548 acres vegetation communities lost; 413 acres ephemeral drainages lost; 4 special status plant species impacted	*Construction*: 4,165 acres vegetation communities lost; 245 acres ephemeral drainages lost; 1-4 special status plant species impacted	Short term: no impact Long term: Similar to Proposed Action	No Impact	Short term: no impact Long term: Similar to Proposed Action
Visual	• *Construction*: Mitigable short-term impacts from construction lighting and visible dust plumes; adverse effects from large-scale visual disturbance in the landscape. • *Operations*: Adverse and unavoidable impacts from glint and glare, and visual disturbance for dispersed recreational viewers in surrounding mountains. • *Decommissioning*: Mitigable short-term impacts prior to successful restoration.	Similar to the Proposed Action, but reconfigured alternative would slightly increase the field of view occupied by the BSPP from several KOPs.	Similar to the Proposed Action; the visual contrast remains the same for ground-level KOPs, but would be slightly reduced from elevated viewpoints.	No Impact	No Impact	Future solar energy development could be expected to affect visual resources to the same degree and extent as referenced in the Proposed Action.
Water	• *Construction and Operation:* Pumping/Consumption of 22,100 ac-ft of groundwater, a fraction of which would be indirectly drawn from the Colorado River via aquifer seepage. • Mitigable alteration of stormwater flows and drainage, including re-routing of existing flowpaths • Mitigable water quality effects including use of heavy machinery and sedimentation during construction, and use of septic system, evaporation ponds, and spill cleanup facilities during operation. • *Decommissioning*: Mitigable water quality effects due to use of heavy machinery and re-grading of site to match adjacent topography.	Similar to the Proposed Action	Approximately 25% less than Proposed Action for groundwater consumption, similar to the Proposed Action for all others.	No Impact	No Impact	Similar to the Proposed Action

TABLE ES-2 (Continued)
SUMMARY OF IMPACTS BY ALTERNATIVE

Resource	Proposed Action	Reconfigured Alternative	Reduced Alternative	No Action Alternative A	No Action Alternative B	No Action Alternative C
	ALTERNATIVES					
Wild Horse & Burros	No Impact	Same as Proposed Action	Same as Proposed Action	Same as Proposed Action	Same as Proposed Action	Same as Proposed Action
Wildland Fire Ecology	• *Construction*: Slight increase in threat of wildland fires in area • *Operations*: threat of wildland fire similar to current situation	Similar to Proposed Action	Similar to Proposed Action	Short term: no impact Long term: Similar to Proposed Action	No Impact	Short term: no impact Long term: Similar to Proposed Action
Wildlife	• *Construction*: 7,025 acres wildlife habitat lost; 9 special status wildlife species impacted • *Operations*: disruption of migratory patterns; death or injury to individuals from striking powerlines, mirrors, arrays, poles or being struck by vehicles; increased predation.	*Construction*: 5,548 acres wildlife habitat lost; 9 special status wildlife species impacted on 23% fewer acres than Proposed Action *Operations*: Similar to Proposed Action	*Construction*: 4,165 acres wildlife habitat lost; 9 special status wildlife species impacted on 40% fewer acres than Proposed Action *Operations*:Similar to Proposed Action	Short term: no impact Long term: Similar to Proposed Action	No Impact	Short term: no impact Long term: Similar to Proposed Action

ES.9 Areas of Controversy and Issues for Resolution

Based on input received from agencies, organizations, Native Americans and Tribal Governments, and members of the general public during the scoping for the SA/DEIS and in comments on the SA/DEIS, several areas of controversy related to the BSPP are:

- Opposition to the placement of a large solar project on essentially undisturbed desert land
- Support for locating renewable energy projects in urban or previously-developed areas
- Concern regarding the impacts of this large project on biological and cultural resources
- Concern regarding GHG emissions and climate change
- Concern regarding the range of alternatives considered

Extensive comments were received during the scoping process for the BSPP. The scoping process and public input received during that process are provided in detail in Appendix C, Scoping Report.

ES.10 Organizations and Persons Consulted

In addition to the scoping and SA/DEIS public review processes, the BLM has been consulting and coordinating with public agencies who may be requested to take action on the BSPP. Consultation and coordination is summarized below.

Native American Consultation and Coordination

A key part of a cultural resources analysis under NEPA, CEQA and Section 106 of the National Historic Preservation Act of 1966 (NHPA) is to determine which of the cultural resources that a proposed or alternative action may affect are important or historically significant. In accordance with 36 CFR Part 800.14(b), Programmatic Agreements (PAs) are used for the resolution of adverse effects for complex project situations and when effects on historic properties or resources eligible for or listed in the National Register of Historic Places (National Register) cannot be fully determined prior to approval of an undertaking. The BLM is preparing a PA in consultation with the Advisory Council on Historic Preservation (ACHP), the State Historic Preservation Officer (SHPO), the CEC, interested tribes (including tribal governments as part of government-to-government consultation), and other interested parties. The PA will govern the continued identification and evaluation of historic properties (eligible for the National Register) and historical resources (eligible for the California Register of Historic Places), as well as the resolution of any effects that may result from the BSPP. The consultation with the ACHP, SHPO and Native American Tribal Governments for the BSPP is ongoing.

United States Fish and Wildlife Service

The BLM permit, consultation, and conferencing with the United States Fish and Wildlife Service (USFWS) required for the BSPP is to comply with the Federal Endangered Species Act (ESA) for potential take of the Desert tortoise (*Gopherus agassizii*). Because Federal agency action has been identified for the BSPP project, ESA Section 7 consultation/conferencing between the BLM and USFWS is required prior to any take authorization for the BSPP from the USFWS. The BLM has submitted a Biological Assessment (BA) for take of this species to the USFWS for the BSPP. The process of consultation with USFWS for the BSPP is ongoing.

California Department of Fish and Game

Consultation with the California Department of Fish and Game (CDFG) is anticipated for possible impacts to waters of the State. It is possible CDFG will determine that a Lake and Streambed Alteration Agreement may be required for the BSPP for the impacts to jurisdictional State waters. The process of consultation with CDFG for the BSPP is ongoing.

ES.11 Public Participation

Scoping activities were conducted by the BLM in compliance with the requirements of NEPA for the BSPP. Many of these scoping activities were conducted jointly with the CEC. The BLM's scoping activities are described in detail in the Final Scoping Report, which is provided in Appendix C. The scoping report documents the Notice of Intent, the scoping meetings, workshops, and the comments received during scoping.

ES.12 Comments and Responses

The BLM and CEC distributed the joint SA/DEIS for the BSPP for public and agency review and comment between March 19, 2010, and June 17, 2010. Ten comment letters were received. PA/FEIS Appendix I includes all of the written comment letters received by the BLM in response to the NOA. Section 5.5, Public Comment Process, provides responses to common and individual comments

TABLE ES-3
SUMMARY OF IMPACTS ON AIR RESOURCES BY ALTERNATIVE

Alternatives	Impacts	Mitigation Measures, Project Design Features, and Other Measures – See Appendix G	Unavoidable Adverse Impacts After Mitigation
Proposed Action • BSPP • CDCA Plan Amendment	Emissions of NOx and VOC from the BSPP could contribute (if left unmitigated) to higher ozone levels in the region. The emissions of NOx and SOx from BSPP could contribute (if left unmitigated) to higher PM2.5 levels in the region; however, the region is in attainment with PM2.5 standards and the low level of NOx and SOx emissions from the BSPP would not result in an increase such to cause non-attainment. The BSPP would reduce fossil-fuel fired power plant electrical generation by displacing the need for their operation; however, the exact nature and location of such reductions is not known. Impacts associated with criteria air pollutants. usually are (although not always) cumulative by nature.	AQ-SC1, AQ-SC2, AQ-SC3, AQ-SC4, AQ-SC5, AQ-SC6, AQ-SC8 AQ-1, AQ-2, AQ-3, AQ-4, AQ-5, AQ-6, AQ-7, AQ-9, AQ-10, AQ-11, AQ-12, AQ-13, AQ-14, AQ-15. AQ-16, AQ-17, AQ-18, AQ-19, AQ-20, AQ-21, AQ-22, AQ-23, AQ-24, AQ-25, AQ-26, AQ-27, AQ-28, AQ-29, AQ-30, AQ-31, AQ-32, AQ-33, AQ-34, AQ-35, AQ-36, AQ-37, AQ-38, AQ-39, AQ-40, AQ-41, AQ-42, AQ-43, AQ-44, AQ-45, AQ-46, AQ-47, AQ-48, AQ-49, AQ-50, AQ-51, AQ-52, AQ-53, AQ-54, AQ-55, AQ-56, AQ-57, AQ-58, AQ-59, AQ-60, AQ-61, AQ-62, AQ-63, AQ-64	None.
Reconfigured Alternative • 1,000 MW (same as BSPP) • 7,175 acres disturbed (150 acres more than the BSPP) • BLM amends CDCA Plan for Reconfigured Alternative	Essentially the same as the proposed action. The increase in footprint of 150 acres would have a minimally greater effect than the proposed action.	Same as BSPP	Same as BSPP
Reduced Acreage Alternative • 750 MW (75 percent of MW of the BSPP); • 4,750 acres disturbed (1,200 acres less than the BSPP) • BLM amends CDCA Plan for Reduced Acreage Alternative	Peak construction impacts would be the same as the proposed action. Long term construction impacts would be less than the BSPP. Operation impact levels would be reduced relative to the BSPP.	Same as BSPP	Same as BSPP
No Action Alternative A: • BLM does not approve the ROW Grant for the BSPP • BLM does not amend the CDCA Plan	• No impacts • No impacts	None	None

TABLE ES-3 (Continued)
SUMMARY OF IMPACTS ON AIR RESOURCES BY ALTERNATIVE

Alternatives	**Impacts**	**Mitigation Measures, Project Design Features, and Other Measures – See Appendix G**	**Unavoidable Adverse Impacts After Mitigation**
No Action Alternative B • BLM does not authorize the ROW grant for the BSPP; • BLM amends the CDCA Plan to make the project site unavailable for any type of solar energy development.	• No impacts • No adverse impacts from future solar development; however, impacts to air quality could result from the development of other renewable energy projects (i.e., wind) or other uses allowable under Multiple Use Class L.	• None • To be determined (TBD)	• None • TBD
No Action Alternative C • BLM does not authorize the ROW grant for the BSPP; • BLM amends the CDCA Plan to make the project site available for any type of solar energy development.	• No impacts • Impacts could result from, CDCA Plan amendment and would be analyzed as a part of the related permitting process. Impacts could be comparable to, greater or less than those of the proposed action, depending on the nature and intensity of the proposed use.	• None • To be determined (TBD)	• None • To be determined (TBD)

TABLE ES-4
SUMMARY OF IMPACTS RELATING TO GLOBAL CLIMATE CHANGE BY ALTERNATIVE

Alternatives	Impacts	Mitigation Measures, Project Design Features, and Other Measures	Unavoidable Adverse Impacts After Mitigation
Proposed Action • BSPP • CDCA Plan Amendment	Construction activities would result in short-term, unavoidable increases in vehicle and equipment emissions, including GHGs; land clearing and vegetation removal clearing of land and complete removal would reduce the ongoing natural carbon uptake by vegetation. Primary fuel (solar energy) is GHG-free; however, emissions from some natural gas, gasoline and diesel fuel use; sulfur hexafluoride emissions could leak from electrical equipment. Decommissioning-related emissions would be similar to, be less than, from construction. Overall, BSPP would benefit climate change conditions by offsetting up to about 2,100,000 MWh/yr of CO2e-emitting power from existing or conventional fossil fuel power plants. Climate change could result in a suite of additional potential changes that could affect the natural environment, in a manner that is relevant to the BSPP.	None required.	None.
Reconfigured Alternative • 1,000 MW (same as BSPP) • 7,175 acres disturbed (150 acres more than the BSPP) • BLM amends CDCA Plan for Reconfigured Alternative	Essentially the same as the BSPP	Same as BSPP.	Same as BSPP.
Reduced Acreage Alternative • **7**50 MW (75 percent of MW of the BSPP); • 4,750 acres disturbed (1,200 acres less than the BSPP) • BLM amends CDCA Plan for Reduced Acreage Alternative	Essentially the same as the BSPP, except that this Alternative would not alter the potential effects of climate change on mitigation lands, drainage and flooding, or water resources availability.	Same as BSPP.	Same as BSPP.

TABLE ES-4 (Continued)
SUMMARY OF IMPACTS RELATING TO GLOBAL CLIMATE CHANGE BY ALTERNATIVE

Alternatives	Impacts	Mitigation Measures, Project Design Features, and Other Measures	Unavoidable Adverse Impacts After Mitigation
No Action Alternative A:			
• BLM does not approve the ROW Grant for the BSPP	• No adverse impacts; benefit from leaving existing carbon sequestration value in place.	• None	• None
• BLM does not amend the CDCA Plan	• Comparable to, greater or less than BSPP, depending on ultimate use consistent with CDCA Plan.	• None	• None
No Action Alternative B			
• BLM does not authorize the ROW grant for the BSPP;	• No adverse impacts; benefit from leaving existing carbon sequestration value in place.	• None	• None
• BLM amends the CDCA Plan to make the project site unavailable for any type of solar energy development.	• Comparable to, greater or less than BSPP, depending on ultimate use consistent with CDCA Plan	• TBD	• TBD
No Action Alternative C			
• BLM does not authorize the ROW grant for the BSPP;	• No adverse impacts; benefit from leaving existing carbon sequestration value in place.	• None	• None
• BLM amends the CDCA Plan to make the project site available for any type of solar energy development.	• Comparable to, greater or less than BSPP, depending on ultimate development.	• TBD	• TBD

TABLE ES-5
SUMMARY OF IMPACTS ON CULTURAL RESOURCES BY ALTERNATIVE

Alternatives	Impacts	Mitigation Measures, Project Design Features, and Other Measures	Unavoidable Adverse Impacts After Mitigation
Proposed Action • BSPP • CDCA Plan Amendment	210 known archaeological sites (30 prehistoric and 180 historic), and possibly additional resources yet to be discovered during construction, located within the full extent of the proposed action's below-grade impacts and above-grade impacts would be adversely affected by the BSPP. The integrity of setting and integrity of feeling of the two known built-environment resources located within this area also would be adversely affected by the BSPP. No impacts on cultural resources are anticipated from operation, or closure and decommissioning.	CUL-1, CUL-2, CUL-3, CUL-4, CUL-5, CUL-6, CUL-7, CUL-8, CUL-9, CUL-10, CUL 11, CUL-12, CUL-13, CUL-14, CUL-15, CUL-16, CUL-17, CUL-18, CUL-19 BLM-CUL-1: The Applicant shall contribute to a program to document three cultural landscapes described in Chapter 3.4 that will, in part, be impacted by the BSPP. These areas: (1) a Prehistoric Trails Network Cultural Landscape (PTNCL), (2) a Desert Training Center California-Arizona Maneuver Area Cultural Landscape (DTCCL), and (3) a Prehistoric Quarries Archaeological District (PQAD). The Applicant will follow the documentation program by contributing to the preparation of National Register of Historic Places (NRHP) nominations for the PTNCL, DTCCL and PQAD if the BLM determines, after reviewing the documentation, that they are eligible for the NRHP. BLM-CUL-2: If significant or potentially significant cultural resources cannot be avoided, the Applicant will retain a qualified Cultural Resources Specialist to prepare and implement a Historic Property Treatment Plan (HPTP) for the affected resources. The HPTP may include protocols for affected resources including data recovery, research design, and treatment measures. The Principal Investigator for the HPTP program will meet the minimum Principal Investigator qualifications under the Secretary of Interior's Standards for Archaeology. BLM-CUL-3: A designated Cultural Resources Specialist will provide input to construction and operation training programs for employees to enhance awareness regarding the protection of cultural resources. The designated specialist or a qualified cultural resources monitor will be available during construction to inspect and evaluate any finds of potentially significant buried cultural material. The Cultural Resources Specialist will coordinate with the Applicant's construction manager and environmental compliance manager to stop all work in the vicinity of the find until it can be assessed. The Cultural Resources Specialist will also contact the BLM. If the discovery is determined to be not significant through consultation with the BLM, work will be allowed to continue. BLM-CUL-4: All discoveries will be documented on Department of Parks and Recreation forms (Form DPR 523) and filed with the California Historical Resources Information System (CHRIS) Eastern Information Center housed at the University of California, Riverside.	Cultural resources damaged or destroyed by construction of the proposed action, even if subjected to mitigation, would be permanently lost from the archaeological record. This would make the cultural resources unavailable for future study to address future research needs when more advanced investigative techniques and methods of analysis might be available

TABLE ES-5 (Continued)
SUMMARY OF IMPACTS ON CULTURAL RESOURCES BY ALTERNATIVE

Alternatives	Impacts	Mitigation Measures, Project Design Features, and Other Measures	Unavoidable Adverse Impacts After Mitigation
		BLM-CUL-5: If, in consultation with the BLM, a discovery is determined to be significant, a mitigation plan will be prepared and carried out in accordance with the Programmatic Agreement. If the resources cannot be avoided, a data recovery plan will be developed to ensure collection of sufficient information to address archaeological or historical research questions. BLM-CUL-6: A professional technical report will be prepared documenting assessment and data recovery investigations. The report will describe the methods and materials collected and will provide conclusions regarding the results of the investigations. The report will be submitted to the curatorial facility housing the collected archaeological materials, as well as the appropriate California Historical Resources Information System center and BLM Palm Springs-South Coast Field Office. BLM-CUL-7: Cultural material collected as part of an assessment or data recovery mitigation will be curated at a qualified curation facility. Field notes and other pertinent materials will be curated along with the archaeological collection. Curation costs shall be the responsibility of the Applicant. BLM-CUL-8: If human remains are encountered during construction, potentially destructive activities in the vicinity of the find will be stopped. The Cultural Resources Specialist will immediately notify the Principal Investigator, who will contact the BLM. The Applicant will ensure that any such remains are treated in a respectful manner and that applicable state and federal laws are followed. If human remains of Native American origin, associated funerary objects, sacred objects or objects of cultural patrimony are discovered on federal land, the provisions of the Native American Graves Protection and Repatriation Act will be followed. BLM-CUL-9: The Applicant will provide worker environmental awareness program (WEAP) training during construction to assist in worker compliance with cultural resource protection procedures. The training will include photographs of a variety of historic and prehistoric artifacts and will include a description of the specific steps to be taken in the event of an unanticipated discovery of cultural material, including human remains.	

TABLE ES-5 (Continued)
SUMMARY OF IMPACTS ON CULTURAL RESOURCES BY ALTERNATIVE

Alternatives	Impacts	Mitigation Measures, Project Design Features, and Other Measures	Unavoidable Adverse Impacts After Mitigation
Reconfigured Alternative • 1,000 MW (same as BSPP) • 7,175 acres disturbed (150 acres more than the BSPP) • BLM amends CDCA Plan for Reconfigured Alternative	Cultural resources inventory for the Reconfigured Alternative would include 210 archaeological sites. Impacts would be similar to BSPP, though reduced in proportion to reduction in number of known sites.	Same as BSPP	Same as BSPP
Reduced Acreage Alternative • 750 MW (75 percent of MW of the BSPP); • 4,750 acres disturbed (1,200 acres less than the BSPP) • BLM amends CDCA Plan for Reduced Acreage Alternative	Cultural resources inventory would include 166 archaeological sites. Impacts would be similar to BSPP, though reduced in proportion to reduction in number of known sites.	Same as BSPP	Same as BSPP
No Action Alternative A: • BLM does not approve the ROW Grant for the BSPP • BLM does not amend the CDCA Plan	• None • None	• None • None	• None • None
No Action Alternative B • BLM does not authorize the ROW grant for the BSPP; • BLM amends the CDCA Plan to make the project site unavailable for any type of solar energy development.	• None • None	• None • None	• None • None
No Action Alternative C • BLM does not authorize the ROW grant for the BSPP; • BLM amends the CDCA Plan to make the project site available for any type of solar energy development.	• None • Similar to BSPP, although varying in proportion to amount of grading, maintenance or other earth disturbance required.	• None • TBD	• None • TBD

TABLE ES-6
SUMMARY OF IMPACTS ON ENVIRONMENTAL JUSTICE BY ALTERNATIVE

Alternatives	Impacts	Mitigation Measures, Project Design Features, and Other Measures	Unavoidable Adverse Impacts After Mitigation
Proposed Action • BSPP • CDCA Plan Amendment	No direct, indirect or cumulative impact, either short-term or long-term, on Environmental Justice.	None	None
Reconfigured Alternative • 1,000 MW (same as BSPP) • 7,175 acres disturbed (150 acres more than the BSPP) • BLM amends CDCA Plan for Reconfigured Alternative	Same as BSPP	Same as BSPP	Same as BSPP
Reduced Acreage Alternative • 750 MW (75 percent of MW of the BSPP); • 4,750 acres disturbed (1,200 acres less than the BSPP) • BLM amends CDCA Plan for Reduced Acreage Alternative	Same as BSPP	Same as BSPP	Same as BSPP
No Action Alternative A: • BLM does not approve the ROW Grant for the BSPP • BLM does not amend the CDCA Plan	Same as BSPP	Same as BSPP	Same as BSPP
No Action Alternative B • BLM does not authorize the ROW grant for the BSPP; • BLM amends the CDCA Plan to make the project site unavailable for any type of solar energy development.	Same as BSPP	Same as BSPP	Same as BSPP
No Action Alternative C • BLM does not authorize the ROW grant for the BSPP; • BLM amends the CDCA Plan to make the project site available for any type of solar energy development.	Same as BSPP	Same as BSPP	Same as BSPP

TABLE ES-7
SUMMARY OF IMPACTS ON LANDS AND REALTY BY ALTERNATIVE

Alternatives	Impacts	Mitigation Measures, Project Design Features, and Other Measures	Unavoidable Adverse Impacts After Mitigation
Proposed Action • BSPP • CDCA Plan Amendment	Minimal impacts to the designated corridors, slight constraint to future use To I-10 from overhead and underground crossings	Federal Highway Administration (FHA), California Department of Transportation (CalTrans), industry standards (SOPs) and best management practices (BMPs)	Land not being available for other uses during the life of the BSPP. After decommissioning, the land would be available for other future uses
Reconfigured Alternative • 1,000 MW (same as BSPP) • 7,175 acres disturbed (150 acres more than the BSPP) • BLM amends CDCA Plan for Reconfigured Alternative	Same as the proposed action.	Same as BSPP	Same as BSPP
Reduced Acreage Alternative • 750 MW (75 percent of MW of the BSPP); • 4,750 acres disturbed (1,200 acres less than the BSPP) • BLM amends CDCA Plan for Reduced Acreage Alternative	Same as the proposed action.	Same as BSPP	Same as BSPP
No Action Alternative A: • BLM does not approve the ROW Grant for the BSPP • BLM does not amend the CDCA Plan	• No impacts • Could be similar to proposed action as another application for a different solar facility or other use including wind power could be filed.	• None • TBD	• None • TBD
No Action Alternative B • BLM does not authorize the ROW grant for the BSPP; • BLM amends the CDCA Plan to make the project site unavailable for any type of solar energy development.	• No impacts • Impacts could result from, CDCA Plan amendment and would be analyzed as a part of the related permitting process. Impacts could be comparable to, greater or less than those of the proposed action, depending on the nature and intensity of the p**roposed future use.**	• None • TBD	• None • TBD

TABLE ES-7 (Continued)
SUMMARY OF IMPACTS ON LANDS AND REALTY BY ALTERNATIVE

Alternatives	Impacts	Mitigation Measures, Project Design Features, and Other Measures	Unavoidable Adverse Impacts After Mitigation
No Action Alternative C • BLM does not authorize the ROW grant for the BSPP; • BLM amends the CDCA Plan to make the project site available for any type of solar energy development.	• No impacts • Impacts could result from, CDCA Plan amendment and would be analyzed as a part of the related permitting process. Impacts could be comparable to, greater or less than those of the proposed action, depending on the nature and intensity of the proposed use.	• None • TBD	• None • TBD

TABLE ES-8
SUMMARY OF IMPACTS ON MINERAL RESOURCES BY ALTERNATIVE

Alternatives	Impacts	Mitigation Measures, Project Design Features, and Other Measures	Unavoidable Adverse Impacts After Mitigation
Proposed Action • BSPP • CDCA Plan Amendment	No direct, indirect or cumulative impact, either short-term or long-term, on Mineral Resources.	None	None
Reconfigured Alternative • 1,000 MW (same as BSPP) • 7,175 acres disturbed (150 acres more than the BSPP) • BLM amends CDCA Plan for Reconfigured Alternative	Same as BSPP	Same as BSPP	Same as BSPP
Reduced Acreage Alternative • 750 MW (75 percent of MW of the BSPP); • 4,750 acres disturbed (1,200 acres less than the BSPP) • BLM amends CDCA Plan for Reduced Acreage Alternative	Same as BSPP	Same as BSPP	Same as BSPP
No Action Alternative A: • BLM does not approve the ROW Grant for the BSPP • BLM does not amend the CDCA Plan	Same as BSPP	Same as BSPP	Same as BSPP
No Action Alternative B • BLM does not authorize the ROW grant for the BSPP; • BLM amends the CDCA Plan to make the project site unavailable for any type of solar energy development.	Same as BSPP	Same as BSPP	Same as BSPP
No Action Alternative C • BLM does not authorize the ROW grant for the BSPP; • BLM amends the CDCA Plan to make the project site available for any type of solar energy development.	Same as BSPP	Same as BSPP	Same as BSPP

TABLE ES-9
SUMMARY OF IMPACTS ON MULTIPLE USE CLASSES BY ALTERNATIVE

Alternatives	Impacts	Mitigation Measures, Project Design Features, and Other Measures	Unavoidable Adverse Impacts After Mitigation
Proposed Action • BSPP • CDCA Plan Amendment	• No changes in the MUC classification. • Restrict multiple use opportunities for life of project. • Multiple use opportunities could be available upon decommissioning	None	None
Reconfigured Alternative • 1,000 MW (same as BSPP) • 7,175 acres disturbed (150 acres more than the BSPP) • BLM amends CDCA Plan for Reconfigured Alternative	Same as the proposed action.	Same as BSPP	Same as BSPP
Reduced Acreage Alternative • 750 MW (75 percent of MW of the BSPP); • 4,750 acres disturbed (1,200 acres less than the BSPP) • BLM amends CDCA Plan for Reduced Acreage Alternative	Same as the proposed action.	Same as BSPP	Same as BSPP
No Action Alternative A: • BLM does not approve the ROW Grant for the BSPP • BLM does not amend the CDCA Plan	• No impacts • Could be similar to proposed action as another application for a different solar facility or other use including wind power could be filed.	• None • TBD	• None • TBD
No Action Alternative B • BLM does not authorize the ROW grant for the BSPP; • BLM amends the CDCA Plan to make the project site unavailable for any type of solar energy development.	• No impacts • Impacts could result from, CDCA Plan amendment and would be analyzed as a part of the related permitting process. Impacts could be comparable to, greater or less than those of the proposed action, depending on the nature and intensity of the proposed future use.	• None • TBD	• None • TBD
No Action Alternative C • BLM does not authorize the ROW grant for the BSPP; • BLM amends the CDCA Plan to make the project site available for any type of solar energy development.	• No impacts • Impacts could result from, CDCA Plan amendment and would be analyzed as a part of the related permitting process. Impacts could be comparable to, greater or less than those of the proposed action, depending on the nature and intensity of the proposed use.	• None • TBD	• None • TBD

TABLE ES-10
SUMMARY OF IMPACTS ON NOISE BY ALTERNATIVE

Alternatives	Impacts	Mitigation Measures, Project Design Features, and Other Measures	Unavoidable Adverse Impacts After Mitigation
Proposed Action • BSPP • CDCA Plan Amendment	Noise impacts associated with the proposed action could be created by short-term construction activities, including “high pressure steam blow” and construction equipment typical of industrial projects. Operational noise level at receptor LT would be 40 dBA Leq, which is acceptable under the Riverside County Code Short-term closure and decommissioning noise levels would be less than expected for construction, since no high pressure steam blows would be required, but in other respects are anticipated to be comparable to construction noise levels. No cumulative noise impact.	NOISE-1, NOISE-2, NOISE-3, NOISE-4, NOISE-5, NOISE-6, NOISE-7	Short-term, construction-related exceedance of Riverside County noise regulations: The exceedance would be an increase of 16 dBA for the 69 month construction period.
Reconfigured Alternative • 1,000 MW (same as BSPP) • 7,175 acres disturbed (150 acres more than the BSPP) • BLM amends CDCA Plan for Reconfigured Alternative	Due to an incrementally longer construction period, the same types of construction activity, and substantially similar operation and maintenance-related and closure and decommission-related requirements as the BSPP, noise would be slightly greater than, but substantially similar to, the BSPP.	Same as BSPP	Comparable to BSPP
Reduced Acreage Alternative • 750 MW (75 percent of MW of the BSPP); • 4,750 acres disturbed (1,200 acres less than the BSPP) • BLM amends CDCA Plan for Reduced Acreage Alternative	Reduced total construction-, operation- and decommissioning-related activity (and therefore noise) on the site by roughly 25 percent; however, peak construction impacts could be same as the proposed action, since construction activity levels would likely be similar. Operations-related noise levels would be reduced, since only three of the four proposed units would be operated and maintained. Given the reduced amount of equipment to dismantle and reduction in acreage to be restored, closure and decommission-relating impacts also would be reduced relative to the BSPP.	Same as BSPP	Comparable, although slightly reduced, relative to BSPP
No Action Alternative A: • BLM does not approve the ROW Grant for the BSPP • BLM does not amend the CDCA Plan	• None • None	• None • None	• None • None

TABLE ES-10 (Continued)
SUMMARY OF IMPACTS ON NOISE BY ALTERNATIVE

Alternatives	Impacts	Mitigation Measures, Project Design Features, and Other Measures	Unavoidable Adverse Impacts After Mitigation
No Action Alternative B • **B**LM does not authorize the ROW grant for the BSPP; • BLM amends the CDCA Plan to make the project site unavailable for any type of solar energy development.	• None • TBD, depending on ultimate development or use of the site.	• None • TBD	• None • TBD
No Action Alternative C • BLM does not authorize the ROW grant for the BSPP; • BLM amends the CDCA Plan to make the project site available for any type of solar energy development.	• None • TBD, depending on ultimate use or development of the site.	• None • TBD	• None • TBD

TABLE ES-11
SUMMARY OF IMPACTS ON PALEONTOLOGICAL RESOURCES BY ALTERNATIVE

Alternatives	Impacts	Mitigation Measures, Project Design Features, and Other Measures	Unavoidable Adverse Impacts After Mitigation
Proposed Action • BSPP • CDCA Plan Amendment	Construction could damage or destroy paleontological resources, fossils and potentially high-sensitivity materials. As the value of paleontological resources is predicated on their discovery within a specific geological host unit, construction of the BSPP could result in a net gain to the science of paleontology by allowing fossils that would not otherwise have been found to be recovered, identified, studied, and preserved. Operation, future decommissioning and closure would not adversely impact paleontological resources because the ground disturbed during these activities would already have been disturbed. A cumulative net gain to the science of paleontology could result by allowing fossils that would not otherwise have been found to be recovered, identified, studied, and preserved. Cumulative impacts would be neutral (no fossils encountered) or positive (fossils encountered, preserved and identified).	PAL-1, PAL-2, PAL-3, PAL-4, PAL-5, PAL-6, PAL-7	Mitigation measures could not avoid or reduce fossil disturbance associated with drilled shaft foundations; however, the volume of disturbance and probability of encountering fossil resources would be low in comparison to the grading and excavation activities.
Reconfigured Alternative • 1,000 MW (same as BSPP) • 7,175 acres disturbed (150 acres more than the BSPP) • BLM amends CDCA Plan for Reconfigured Alternative	Same as BSPP	Same as BSPP	Same as BSPP
Reduced Acreage Alternative • 750 MW (75 percent of MW of the BSPP); • 4,750 acres disturbed (1,200 acres less than the BSPP) • BLM amends CDCA Plan for Reduced Acreage Alternative	Same as BSPP	Same as BSPP	Same as BSPP
No Action Alternative A: • BLM does not approve the ROW Grant for the BSPP • BLM does not amend the CDCA P**lan**	• No adverse impacts; no gain to the science of paleontology. • None	None	None

TABLE ES-11 (Continued)
SUMMARY OF IMPACTS ON PALEONTOLOGICAL RESOURCES BY ALTERNATIVE

Alternatives	Impacts	Mitigation Measures, Project Design Features, and Other Measures	Unavoidable Adverse Impacts After Mitigation
No Action Alternative B • BLM does not authorize the ROW grant for the BSPP; • BLM amends the CDCA Plan to make the project site unavailable for any type of solar energy development.	• No adverse impacts; no gain to the science of paleontology. • TBD, depending on ultimate use or development of the site. Resulting impacts could be comparable to, greater or less than the BSPP.	• None • TBD	• None • TBD
No Action Alternative C • BLM does not authorize the ROW grant for the BSPP; • BLM amends the CDCA Plan to make the project site available for any type of solar energy development.	• No adverse impacts; no gain to the science of paleontology. • TBD, depending on ultimate use or development of the site. Resulting impacts could be comparable to, greater or less than the BSPP.	• None • TBD	• None • TBD

TABLE ES-12
SUMMARY OF IMPACTS ON PUBLIC HEALTH AND SAFETY BY ALTERNATIVE

Alternatives	Impacts	Mitigation Measures, Project Design Features, and Other Measures	Unavoidable Adverse Impacts After Mitigation
Proposed Action • BSPP • CDCA Plan Amendment	*Hazardous Waste* Limited risk of spills or other releases Limited risk of fire and/or possible explosion risk due to natural gas usage Marginal risk of Therminol migration or fire No long or short term adverse health impacts expected (i.e., cancer) *Non-hazardous Waste* Generation of solid waste, liquid waste *Unexploded Ordnance* Could be present posing a safety risk to the workers *Abandoned Mined Lands* Two on site, one near site posing a safety risk to the workers *Transmission Line Safety and Nuisance* Aviation safety Hazardous and nuisance shocks Electric and magnetic field (EMF) exposure *Traffic and Transportation Safety* Aviation safety from upward plumes from cooling systems; glint/glare, interference with communication systems, and attraction of birds to evaporation ponds *Roadway Safety* Transport of oversized equipment and hazardous materials *Worker Safety and Fire Protection* Exposure o loud noises, moving equipment, hazardous materials, dust, trenches, and confined space entry and egress	*Hazardous* Engineering and administrative controls part of proposed action Implementation of National Fire Protection Association (NFPA) code 85A requires both the use of double-block and bleed valves for gas shut off and automated combustion controls; natural gas pipelines must be designed to meet the appropriate level of California Public Utilities Commission (CPUC) General Order 112 standards and 49 CFR 192 standards; compliance with constructed and operated in accordance with the Federal Department of Transportation (DOT) regulations; applicant proposed safety management plan Isolation valves would be placed throughout the system designed to automatically block off sections if a loss of pressure is detected HAZ-1, HAZ-2, HAZ-3, HAZ-4, HAZ-5, HAZ-6, Public Health-1, SOIL&WATER-18 *Non-hazardous* Recycling and appropriate disposal at Class III landfill for solid waste, appropriate LORS, transport , and treatment. Development of Construction Waster Management Plan WASTE-1, WASTE-2, WASTE-3, WASTE-4, WASTE-5, WASTE-6, WASTE-7, WASTE-8, WASTE-9, WASTE-10 *Unexploded Ordnance* BLM-PHS-1 *Abandoned Mined Lands* BLM-PHS-2 *Transmission Line Safety and Nuisance* Compliance with FAA safety analysis recommendations Grounding measures	*Hazardous Waste* Accidental release could occur and could cause an airborne or waterborne risk to the human environment *Unexploded Ordnance* Risk of accidental or unintentional detonation of UXO

TABLE ES-12 (Continued)
SUMMARY OF IMPACTS ON PUBLIC HEALTH AND SAFETY BY ALTERNATIVE

Alternatives	Impacts	Mitigation Measures, Project Design Features, and Other Measures	Unavoidable Adverse Impacts After Mitigation
	Geologic Hazards Groundshaking Secondary Earthquake Hazards; Hydrocompaction; and Corrosive Soils *Erosion* Exposure from rainfall and high winds *Site Security* Malicious mischief, vandalism, or domestic/foreign terrorist attacks to electrical infrastructure from	TLSN-1, TLSN-2, TLSN-3, TLSN-4, TLSN-5 *Traffic and Transportation Safety* TRANS-6, TRANS-7, TRANS-8, TRANS-9, TRANS-10, TRANS-11 *Worker Safety and Fire Protection* Development of a Construction Safety and Health Program and Operations and Maintenance Safety and Health Program; develop and implement a fire prevention program and fund capital improvements and staffing for the RCFD WORKER SAFETY-1, WORKER SAFETY-2, WORKER SAFETY-3, WORKER SAFETY-4, WORKER SAFETY-5, WORKER SAFETY-6, WORKER SAFETY-7, WORKER SAFETY-8, WORKER SAFETY-9 *Geologic Hazards* Structural designs consistent with the California Building Code Implementation of recommendations in geotechnical report *Erosion* Utilize Construction Water Quality Best Management Practices (BMPs) and implement SWPP CIVIL-1, CIVIL-2, CIVIL-3, CIVIL-4, STRUC-1,GEO-1, SOIL&WATER-1 *Site Security* HAZ-5, HAZ-6	
Reconfigured Alternative • 1,000 MW (same as BSPP) • 7,175 acres disturbed (150 acres more than the BSPP) • BLM amends CDCA Plan for Reconfigured Alternative	Same as the proposed action.	Same as BSPP	Same as BSPP

TABLE ES-12 (Continued)
SUMMARY OF IMPACTS ON PUBLIC HEALTH AND SAFETY BY ALTERNATIVE

Alternatives	Impacts	Mitigation Measures, Project Design Features, and Other Measures	Unavoidable Adverse Impacts After Mitigation
Reduced Acreage Alternative • 750 MW (75 percent of MW of the BSPP); • 4,750 acres disturbed (1,200 acres less than the BSPP) • BLM amends CDCA Plan for Reduced Acreage Alternative	Similar to the proposed action.	Same as BSPP	Same as BSPP
No Action Alternative A: • BLM does not approve the ROW Grant for the BSPP • BLM does not amend the CDCA Plan	• No impacts • Could be similar to proposed action as another application for a different solar facility or other use including wind power could be filed.	• None • TBD	• None • TBD
No Action Alternative B • BLM does not authorize the ROW grant for the BSPP; • BLM amends the CDCA Plan to make the project site unavailable for any type of solar energy development.	• No impacts • Impacts could result from, CDCA Plan amendment and would be analyzed as a part of the related permitting process. Impacts could be comparable to, greater or less than those of the proposed action, depending on the nature and intensity of the proposed future use.	• None • BD	• None • TBD
No Action Alternative C • BLM does not authorize the ROW grant for the BSPP; • BLM amends the CDCA Plan to make the project site available for any type of solar energy development.	• No impacts • Impacts could result from, CDCA Plan amendment and would be analyzed as a part of the related permitting process. Impacts could be comparable to, greater or less than those of the proposed action, depending on the nature and intensity of the proposed use.	• None • TBD	• None • TBD

TABLE ES-13
SUMMARY OF IMPACTS ON RECREATION BY ALTERNATIVE

Alternatives	**Impacts**	**Mitigation Measures, Project Design Features, and Other Measures**	**Unavoidable Adverse Impacts After Mitigation**
Proposed Action • BSPP • CDCA Plan Amendment	*On-Site* Could disrupt dispersed recreational activities on site which would be available upon decommissioning *Off-Site* Degradation of nearby lands by displaced recreational users migrating to other areas. Increased use of LTVAs Beneficial impacts upon decommissioning	See Section 4.12, *Impacts on Recreation*. BLM-REC-1, BLM-REC-2, BLM-REC-3, BLM-REC-4, BLM-REC-5	Unavoidable adverse impacts on recreation resources by permanent removal of vegetation, landforms, and other nature features of the characteristic landscape for the life of the BSPP or until decommissioning and restoration occurs.
Reconfigured Alternative • 1,000 MW (same as BSPP) • 7,175 acres disturbed (150 acres more than the BSPP) • BLM amends CDCA Plan for Reconfigured Alternative	Same as the proposed action.	Same as BSPP	Same as BSPP
Reduced Acreage Alternative • 750 MW (75 percent of MW of the BSPP); • 4,750 acres disturbed (1,200 acres less than the BSPP) • BLM amends CDCA Plan for Reduced Acreage Alternative	Same as the proposed action.	Same as BSPP	Same as BSPP
No Action Alternative A: • **B**LM does not approve the ROW Grant for the BSPP • BLM does not amend the CDCA Pla**n**	• No impacts • Could be similar to proposed action as another application for a different solar facility or other use including wind power could be filed.	• None • TBD	• None • TBD
No Action Alternative B • BLM does not authorize the ROW grant for the BSPP; • BLM amends the CDCA Plan to make the project site unavailable for any type of solar energy development.	• No impacts • Impacts could result from, CDCA Plan amendment and would be analyzed as a part of the related permitting process. Impacts could be comparable to, greater or less than those of the proposed action, depending on the nature and intensity of the proposed future use.	• None • TBD	• None • TBD

TABLE ES-13 (Continued)
SUMMARY OF IMPACTS ON RECREATION BY ALTERNATIVE

Alternatives	Impacts	Mitigation Measures, Project Design Features, and Other Measures	Unavoidable Adverse Impacts After Mitigation
No Action Alternative C • BLM does not authorize the ROW grant for the BSPP; • BLM amends the CDCA Plan to make the project site available for any type of solar energy development.	• No impacts • Impacts could result from, CDCA Plan amendment and would be analyzed as a part of the related permitting process. Impacts could be comparable to, greater or less than those of the proposed action, depending on the nature and intensity of the proposed use.	• None • TBD	• None • TBD

TABLE ES-14
SUMMARY OF IMPACTS ON ECONOMICS BY ALTERNATIVE

Alternatives	Impacts	Mitigation Measures, Project Design Features, and Other Measures	Unavoidable Adverse Impacts After Mitigation
Proposed Action • BSPP • CDCA Plan Amendment	Considerable direct construction-related economic benefits for workers and local businesses providing materials and services for construction. Considerable indirect and induced economic benefits for the local and eastern Riverside County economies from subsequent spending of workers' and construction businesses' income within the local and regional economy. Most likely would benefit food, retail, lodging, real estate, and medical related businesses. Positive, but short-term, contribution toward supporting local business and maintaining the economic vitality of the City of Blythe and neighboring communities. BSPP-related in-migration could affect the social character of the local study area; however, few people are expected to relocate to the area as a result of the BSPP. Operations are expected to directly employ 221 full-time employees, which would create indirect and induced secondary employment in the region. Workers' wages and salaries would have long-term positive impact. Annual expenditures of the BSPP were assumed to be $9.6 million for materials, equipment, and supplies; and $9.4 million in payroll annually. Direct economic impact associated with discontinuation of the solar energy generation site would result in job losses for the operations workforce. Cumulative labor demand would likely range between 5,000 FTE minimum 11,360 FTE maximum and represent more than half the region's currently forecasted future skilled construction labor force. Given estimated availability of lodging and possible rental housing, it is expected that there would be adequate and suitable housing to meet anticipated temporary housing demand. Therefore, no major adverse social or economic impacts would be expected to result.	None	None

TABLE ES-14 (Continued)
SUMMARY OF IMPACTS ON ECONOMICS BY ALTERNATIVE

Alternatives	Impacts	Mitigation Measures, Project Design Features, and Other Measures	Unavoidable Adverse Impacts After Mitigation
Reconfigured Alternative • 1,000 MW (same as BSPP) • 7,175 acres disturbed (150 acres more than the BSPP) • BLM amends CDCA Plan for Reconfigured Alternative	Comparable to the BSPP	Same as BSPP	Same as BSPP
Reduced Acreage Alternative • 750 MW (75 percent of MW of the BSPP); • 4,750 acres disturbed (1,200 acres less than the BSPP) • BLM amends CDCA Plan for Reduced Acreage Alternative	Construction spending and employment for the Reduced Acreage Alternative would be expected to be lower than for the BSPP; social and economic impacts would be similarly reduced.	Same as BSPP	Same as BSPP
No Action Alternative A: • BLM does not approve the ROW Grant for the BSPP • BLM does not amend the CDCA Plan	• None • The social and economic impacts associated with the proposed action would likely only be delayed by selecting No Action Alternative A, since this region of the United States has extremely positive characteristics for solar power generation.	• None • Comparable to BSPP, but later in time	• None • Comparable to BSPP but later in time
No Action Alternative B • BLM does not authorize the ROW grant for the BSPP; • BLM amends the CDCA Plan to make the project site unavailable for any type of solar energy development.	• None • TBD, depending on ultimate use or development of the site. Impacts of other (non-solar) renewable energy development could be comparable to the BSPP.	• None • TBD	• None • TBD
No Action Alternative C • BLM does not authorize the ROW grant for the BSPP; • BLM amends the CDCA Plan to make the project site available for any type of solar energy development.	• None • TBD, depending on ultimate use or development of the site. Impacts of other solar energy project could be comparable to the BSPP.	• None • TBD	• None • TBD

TABLE ES-15
SUMMARY OF IMPACTS ON SOILS RESOURCES BY ALTERNATIVE

Alternatives	Impacts	Mitigation Measures, Project Design Features, and Other Measures	Unavoidable Adverse Impacts After Mitigation
Proposed Action • BSPP • CDCA Plan Amendment	Soils on the BSPP site have a low to very high hazard for wind erosion: if desert pavement is disturbed, underlying soils are subject to high levels of wind erosion. Soils on the eastern third of the site have the highest erosion rates for undisturbed, disturbed, and operational conditions. Water erosion considered negligible except for wash areas in the central portion of the site where soils are potentially more erosive due to higher silt content. Erosion rates would increase during operations, and then revert to its undisturbed erosion rate. Combined vegetation removal anticipated as a result of the numerous proposed utility-scale renewable energy projects, including the BSPP, could expose soils to higher wind-borne erosion rates than the area otherwise would be exposed to. This also could exacerbate runoff rates, especially during high intensity, short duration rainfall events	SOIL&WATER-1, SOIL&WATER 10, SOIL&WATER-11, SOIL&WATER-14, SOIL&WATER-15	Implementation of mitigation measures would not preclude all loss of soils due to erosion; some residual impact would remain
Reconfigured Alternative • 1,000 MW (same as BSPP) • 7,175 acres disturbed (150 acres more than the BSPP) • BLM amends CDCA Plan for Reconfigured Alternative	Essentially the same as the BSPP: 150 acre increase has only a minor effect on soils impacts.	Same as BSPP	Comparable to, perhaps slightly more than, the BSPP
Reduced Acreage Alternative • 750 MW (75 percent of MW of the BSPP); • 4,750 acres disturbed (1,200 acres less than the BSPP) • BLM amends CDCA Plan for Reduced Acreage Alternative	Peak construction impacts would be the same as the proposed action since construction activity levels are estimated to be similar. Long term construction impacts would be less since the construction period would be reduced. Operation impact levels would be reduced since only three of the four proposed units would be built and operated.	Same as BSPP	Comparable to, perhaps slightly less than the BSPP
No Action Alternative A: • BLM does not approve the ROW Grant for the BSPP • BLM does not amend the CDCA Plan	• None • TBD, depending on use or development of the site consistent with the CDCA Plan	• None • TBD	• None • TBD

TABLE ES-15 (Continued)
SUMMARY OF IMPACTS ON SOILS RESOURCES BY ALTERNATIVE

Alternatives	Impacts	Mitigation Measures, Project Design Features, and Other Measures	Unavoidable Adverse Impacts After Mitigation
No Action Alternative B • BLM does not authorize the ROW grant for the BSPP; • BLM amends the CDCA Plan to make the project site unavailable for any type of solar energy development.	• None • TBD, depending on ultimate development or use of the site	• None • TBD	• None • TBD
No Action Alternative C • BLM does not authorize the ROW grant for the BSPP; • BLM amends the CDCA Plan to make the project site available for any type of solar energy development.	• None • TBD, depending ultimate development or use of the site	• None • TBD	• None • TBD

TABLE ES-16
SUMMARY OF IMPACTS ON SPECIAL DESIGNATIONS BY ALTERNATIVE

Alternatives	Impacts	Mitigation Measures, Project Design Features, and Other Measures	Unavoidable Adverse Impacts After Mitigation
Proposed Action • BSPP • CDCA Plan Amendment	No Impacts	None	None
Reconfigured Alternative • 1,000 MW (same as BSPP) • 7,175 acres disturbed (150 acres more than the BSPP) • BLM amends CDCA Plan for Reconfigured Alternative	No impacts	Same as BSPP	Same as BSPP
Reduced Acreage Alternative • **7**50 MW (75 percent of MW of the BSPP); • 4,750 acres disturbed (1,200 acres less than the BSPP) • BLM amends CDCA Plan for Reduced Acreage Alternativ**e**	No impacts	Same as BSPP	Same as BSPP
No Action Alternative A: • BLM does not approve the ROW Grant for the BSPP • BLM does not amend the CDCA Plan	No impacts	None	None
No Action Alternative B • BLM does not authorize the ROW grant for the BSPP; • BLM amends the CDCA Plan to make the project site unavailable for any type of solar energy development.	No impacts	None	None
No Action Alternative C • BLM does not authorize the ROW grant for the BSPP; • BLM amends the CDCA Plan to make the project site available for any type of solar energy development.	No impacts	None	None

TABLE ES-17
SUMMARY OF IMPACTS ON TRANSPORTATION AND PUBLIC ACCESS – OFF HIGHWAY VEHICLE USE BY ALTERNATIVE

Alternatives	Impacts	Mitigation Measures, Project Design Features, and Other Measures	Unavoidable Adverse Impacts After Mitigation
Proposed Action • BSPP • CDCA Plan Amendment	*OHV Routes* Impact approximately 7 miles of OHV (i.e., one major route and two small spurs) Temporary disruption to the user of OHV route along linear facilities Closure of McCoy Wash to OHV use *Transportation* Increased traffic on local roadways Transport of equipment that exceed roadway load or size limits	Applicant-recommended staggered travel times for construction workers Transport large equipment complaint with CalTrans See Section 4.16 Impacts on Transportation and Public Access - Off Highway Vehicle Resources. BLM-OHV-1 and BLM-OHV-2. TRANS-1,4 TRANS-2, TRANS-3, TRANS-4, TRANS-5	Closure of McCoy wash to OHV use but would become available upon decommissioning. None related to Transportation
Reconfigured Alternative • 1,000 MW (same as BSPP) • 7,175 acres disturbed (150 acres more than the BSPP) • BLM amends CDCA Plan for Reconfigured Alternative	*OHV Routes* Greater than proposed action. Impact approximately 8.5 miles of OHV Other impacts similar to proposed action *Transportation* Similar to proposed action	Same as BSPP	Same as BSPP
Reduced Acreage Alternative • 750 MW (75 percent of MW of the BSPP); • 4,750 acres disturbed (1,200 acres less than the BSPP) • BLM amends CDCA Plan for Reduced Acreage Alternative	*OHV Routes* Less than proposed action. Impact approximately 1 mile of OHV Other impacts similar to proposed action *Transportation* Similar to proposed action	Same as BSPP	Same as BSPP
No Action Alternative A: • BLM does not approve the ROW Grant for the BSPP • BLM does not amend the CDCA Plan	• No impacts • Could be similar to proposed action as another application for a different solar facility or other use including wind power could be filed.	• None • TBD	• None • TBD

4 Energy Commission staff note that with the implementation of TRANS-1, parking arrangements may be modified. The BLM concurs with this.

TABLE ES-17 (Continued)
SUMMARY OF IMPACTS ON TRANSPORTATION AND PUBLIC ACCESS – OFF HIGHWAY VEHICLE USE BY ALTERNATIVE

Alternatives	Impacts	Mitigation Measures, Project Design Features, and Other Measures	Unavoidable Adverse Impacts After Mitigation
No Action Alternative B • BLM does not authorize the ROW grant for the BSPP; • BLM amends the CDCA Plan to make the project site unavailable for any type of solar energy development.	• No impacts • Impacts could result from, CDCA Plan amendment and would be analyzed as a part of the related permitting process. Impacts could be comparable to, greater or less than those of the proposed action, depending on the nature and intensity of the proposed future use.	• None • TBD	• None • TBD
No Action Alternative C • BLM does not authorize the ROW grant for the BSPP; • BLM amends the CDCA Plan to make the project site available for any type of solar energy development.	• No impacts • Impacts could result from, CDCA Plan amendment and would be analyzed as a part of the related permitting process. Impacts could be comparable to, greater or less than those of the proposed action, depending on the nature and intensity of the proposed use.	• None • TBD	• None • TBD

TABLE ES-18
SUMMARY OF IMPACTS ON VEGETATION RESOURCES BY ALTERNATIVE

Alternatives	Impacts	Mitigation Measures, Project Design Features, and Other Measures	Unavoidable Adverse Impacts After Mitigation
Proposed Action • BSPP • CDCA Plan Amendment	Construction, operation and decommissioning of the BSPP would have direct and indirect impacts on: • 592.4 acres of ephemeral drainages • 58.2 acres of Stabilized and partially Stabilized Dunes • 6,364.6 acres of Sonoran creosote bush scrub (including disturbed) • 4.4acres of agricultural land • 4.9 acres of developed land • 7,024.5 acres of special status plants BSPP would contribute to cumulative impacts to total loss of 11,871 acres of Sonoran creosote scrub and 2,971 acres of desert dry wash woodland.	Based on a desert dry wash woodland mitigation ratio of 3:1, 525 acres Based on an un-vegetated, ephemeral dry wash mitigation ratio of 1:1, 8 acres Based on a vegetated ephemeral swale (big galleta grass association) mitigation ratio of 1.5:1, 550 acres The following mitigation measures also apply: BIO-1, BIO-2, BIO-3, BIO-4, BIO-5, BIO-6, BIO-7, BIO-8, BIO-14, BIO-19, BIO-22, BIO-23, BIO-28 BLM BIO-7a: The Applicant shall ensure that monitoring accomplished under BIO-7 and other mitigating measures use available climatalogical data when analyzing project effects or resource trends.	Under the technology proposed in the three alternatives, the Proposed Action, Reconfigured Alternative, and Reduced Acreage Alternative, natural vegetation communities and individuals and local populations of special status plants not otherwise avoided under proposed mitigating measures would be lost from the BSPP sites, totaling 7,025 acres, 5,548 acres, and 4,165 acres, respectively. Despite mitigating measures, the chance of invasion and spread of weeds and the chance of human-caused wildfires would persist to the areas surrounding the BSPP, threatening the surrounding vegetation and special status plant species.
Reconfigured Alternative • 1,000 MW (same as BSPP) • 7,175 acres disturbed (150 acres more than the BSPP) • BLM amends CDCA Plan for Reconfigured Alternative	Construction, operation and decommissioning of this Alternative would have direct and indirect impacts on: • 413.3 acres of ephemeral drainages • 37 acres of Stabilized and partially Stabilized Dunes • 5,134.7 acres of Sonoran creosote bush scrub (including disturbed) • 0 acres of agricultural land • 0 acres of developed land • 25%fewer acres than BSPP	Desert dry wash woodland: 555 acres Unvegetated, ephemeral dry wash: 4 acres Vegetated ephemeral swale (big galleta grass association): 360 acres	Same as BSPP
Reduced Acreage Alternative • 750 MW (75 percent of MW of the BSPP); • 4,750 acres disturbed (1,200 acres less than the BSPP) • BLM amends CDCA Plan for Reduced Acreage Alternative	Construction, operation and decommissioning of this Alternative would have direct and indirect impacts on: • 245 acres of ephemeral drainages • 37 acres of Stabilized and partially Stabilized Dunes • 3,920 acres of Sonoran creosote bush scrub (including disturbed) • 0 acres of agricultural land • 0 acres of developed land • 25% fewer acres than Reconfigured Alternative	Desert dry wash woodland: 93 acres Unvegetated, ephemeral dry wash: 3 acres Vegetated ephemeral swale (big galleta grass association): 317 acres	Same as BSPP

TABLE ES-18 (Continued)
SUMMARY OF IMPACTS ON VEGETATION RESOURCES BY ALTERNATIVE

Alternatives	Impacts	Mitigation Measures, Project Design Features, and Other Measures	Unavoidable Adverse Impacts After Mitigation
No Action Alternative A: • BLM does not approve the ROW Grant for the BSPP • BLM does not amend the CDCA Plan	• None • None	• None • None	• None • None
No Action Alternative B • BLM does not authorize the ROW grant for the BSPP; • BLM amends the CDCA Plan to make the project site unavailable for any type of solar energy development.	• None • None	• None • None	• None • None
No Action Alternative C • BLM does not authorize the ROW grant for the BSPP; • BLM amends the CDCA Plan to make the project site available for any type of solar energy development.	• None • None	• None • None	• None • None

TABLE ES-19
SUMMARY OF IMPACTS ON VISUAL RESOURCES BY ALTERNATIVE

Alternatives	Impacts	Mitigation Measures, Project Design Features, and Other Measures	Unavoidable Adverse Impacts After Mitigation
Proposed Action • BSPP • CDCA Plan Amendment	Construction activities would result in a high degree of visual contrast within the landscape, generate of large quantities of airborne dust and include nighttime lighting. Operations-phase impacts would relate to light and glare, lighting, glint and glare from the mirrors, and glare from power block buildings, administrative buildings, and transmission lines; these impacts could affect users of specially-designated lands. Short-term decommissioning impacts would be comparable to construction; long-term decommissioning related impacts would be beneficial. Cumulatively, synergistic visual impacts for travelers along I-10, as well as visual impacts to dispersed recreational users in the surrounding mountains.	VIS-1, VIS-2, VIS-3, VIS-4, TRAN-9, AQ-SC3 BLM-VIS-1: The project owner shall paint power blocks structures and other vertical construction shadow gray as shown on the BLM Color Chart. The backs of solar troughs shall also be color treated to minimize color contrasts.	Visual impacts to surrounding viewer groups (all KOPs) from sunlight reflected off of the parabolic mirrors (glare). Visual impacts to dispersed recreational users in the McCoy, Big Maria, and Little Maria Mountains due to the size and scale of the BSPP. Non-conformance with VRM Class II objectives from KOP No. 8. Unavoidable and adverse cumulative impacts for travelers along I-10 and dispersed recreational users in the McCoy, Big Maria, and Little Maria Mountains and wilderness.
Reconfigured Alternative • 1,000 MW (same as BSPP) • 7,175 acres disturbed (150 acres more than the BSPP) • BLM amends CDCA Plan for Reconfigured Alternative	Comparable to the BSPP	Comparable to the BSPP	Comparable to the BSPP
Reduced Acreage Alternative • 750 MW (75 percent of MW of the BSPP); • 4,750 acres disturbed (1,200 acres less than the BSPP) • BLM amends CDCA Plan for Reduced Acreage Alternative	Comparable to the BSPP	Comparable to the BSPP	Comparable to the BSPP
No Action Alternative A: • BLM does not approve the ROW Grant for the BSPP • BLM does not amend the CDCA Plan	• None • None	• None • None	• None • None

TABLE ES-19 (Continued)
SUMMARY OF IMPACTS ON VISUAL RESOURCES BY ALTERNATIVE

Alternatives	Impacts	Mitigation Measures, Project Design Features, and Other Measures	Unavoidable Adverse Impacts After Mitigation
No Action Alternative B • BLM does not authorize the ROW grant for the BSPP; • BLM amends the CDCA Plan to make the project site unavailable for any type of solar energy development.	• None • None	• None • None	• None • None
No Action Alternative C • BLM does not authorize the ROW grant for the BSPP; • BLM amends the CDCA Plan to make the project site available for any type of solar energy development.	• None • TBD, depending on ultimate use or development of the site	• None • TBD	• None • TBD

TABLE ES-20
SUMMARY OF IMPACTS ON WATER RESOURCES BY ALTERNATIVE

Alternatives	Impacts	Mitigation Measures, Project Design Features, and Other Measures	Unavoidable Adverse Impacts After Mitigation
Proposed Action • BSPP • CDCA Plan Amendment	Soil erosion: See above. Groundwater: • Extraction during construction (about 820 ac-ft/yr) and operation (600 ac-ft/yr) would exceed the subsurface inflow from these sources and could thus place the basin into overdraft conditions if not balanced via increased subsurface inflow from the Colorado River. Total groundwater expected to be extracted from the PVMGB by the BSPP from construction through operation is approximately 22,100 ac-ft. The PVMGB has approximately 5,000,000 acre-feet in storage. The total amount extracted equates to approximately 0.44 percent of the available water in storage. This impact to the basin groundwater storage is minor. • Groundwater level declines of five feet or more would be located at a distance of less than 1,100 feet from the proposed production well. The closest existing well is located a distance of 9,000 feet from this well. • Potential for groundwater quality impacts appears low. Surface Water Hydrology: BSPP would alter natural stormwater drainages and use BMPs to reduce potentially significant impacts related to concentrated drainage and ensuing soil erosion and sediment transport offsite. Surface Water Quality: A Drainage Erosion and Sedimentation Control Plan would be required prior to onsite operations and would reduce the potential for increased sediment loads. Potential spills would be managed through hazardous materials management.	WATER-1, WATER-2, WATER-3, WATER-4, WATER-5, WATER-6, WATER-7, WATER-8, WATER-9, WATER-10, WATER-11, WATER-12, WATER-13, WATER-14, WATER-15, WATER-16, and WATER-17 BLM-WATER-18: The proposed evaporation ponds shall be sized so as to maintain no less than one foot of freeboard during storm conditions. Specifically, the ponds shall be sized to accommodate operational discharges plus a 25-year storm event, with no less than one foot of freeboard.	As discussed previously, implementation of the BSPP and associated permit requirements and mitigation strategies would result in minor adverse impacts for the following categories: (1) surface water quality: minor reduction in water quality during construction, operation, and decommissioning; (2) groundwater quality: minor reduction in groundwater quality during construction, operation, and decommissioning; (3) groundwater level: relatively minor degree of reduction in water levels is expected during construction and operation; (4) drainage and flooding: minor changes during construction, operation, and decommissioning.
Reconfigured Alternative • 1,000 MW (same as BSPP) • 7,175 acres disturbed (150 acres more than the BSPP) • BLM amends CDCA Plan for Reconfigured Alternative	Soil Erosion: Construction activities would disturb site soils at the site and along the linear facilities route(s). It is at the time of this disturbance that there would be the highest potential for erosion, as well as associated effects including soil loss and increased sediment yields downstream from disturbed areas. Groundwater Basin Balance: Similar to the BSPP Groundwater Levels: Similar to the BSPP Groundwater Quality: Similar to the BSPP	Same as BSPP	Comparable to the BSPP

TABLE ES-20 (Continued)
SUMMARY OF IMPACTS ON WATER RESOURCES BY ALTERNATIVE

Alternatives	Impacts	Mitigation Measures, Project Design Features, and Other Measures	Unavoidable Adverse Impacts After Mitigation
	Surface Water Hydrology: Similar to the BSPP, except that flow from a significantly larger watershed would need to be collected and conveyed around the Reconfigured Alternative site. All existing washes within the smaller developed portion of the site would be eliminated by onsite grading and replaced with a system of engineered swales and channels. Surface Water Quality: Potentially significant water quality impacts could occur during operations if contaminated or hazardous materials used during operations were to contact stormwater and drain offsite. This Alternative would alter a larger number of natural stormwater drainages than the BSPP, and would impact surface water quality accordingly.		
Reduced Acreage Alternative • 750 MW (75 percent of MW of the BSPP); • 4,750 acres disturbed (1,200 acres less than the BSPP) • BLM amends CDCA Plan for Reduced Acreage Alternative	Soil Erosion: Similar to but somewhat less than those associated with the BSPP. Groundwater Basin Balance: Groundwater basin storage in the vicinity of the BSPP site could be impacted as a result of the construction and operational water use. The potential impact would be approximately 25 percent less than in the proposed action, since this alternative would use approximately 25 percent less water than the proposed action. Groundwater Levels: Impact expected to be about 25 percent less than the BSPP Groundwater Quality: Similar to, though somewhat less than, the BSPP Surface Water Hydrology: Similar to the proposed BSPP, except proportionately smaller in scale. Surface Water Quality: Similar to the BSPP	Same as BSPP	Comparable, but somewhat less than the BSPP
No Action Alternative A: • BLM does not approve the ROW Grant for the BSPP • BLM does not amend the CDCA Plan	• None • TBD, depending on ultimate use or development of the site	• None • TBD	• None • TBD

TABLE ES-20 (Continued)
SUMMARY OF IMPACTS ON WATER RESOURCES BY ALTERNATIVE

Alternatives	Impacts	Mitigation Measures, Project Design Features, and Other Measures	Unavoidable Adverse Impacts After Mitigation
No Action Alternative B • BLM does not authorize the ROW grant for the BSPP; • BLM amends the CDCA Plan to make the project site unavailable for any type of solar energy development.	• None • TBD, depending on ultimate use or development of the site	• None • TBD	• None • TBD
No Action Alternative C • BLM does not authorize the ROW grant for the BSPP; • BLM amends the CDCA Plan to make the project site available for any type of solar energy development.	• None • TBD, depending on ultimate use or development of the site	• None • TBD	• None • TBD

TABLE ES-21
SUMMARY OF IMPACTS ON WILDLAND FIRE ECOLOGY BY ALTERNATIVE

Alternatives	Impacts	Mitigation Measures, Project Design Features, and Other Measures	Unavoidable Adverse Impacts After Mitigation
Proposed Action • BSPP • CDCA Plan Amendment	Direct impacts of wildfire would include mortality of plants and wildlife and loss of forage and cover. Annual plants and burrowing wildlife would be less affected in the short term. Indirect impacts would result in changes to the vegetation communities and the wildlife supported by the communities. The spread of invasive plants, especially annual grasses, creates an increased potential for wildfires. Surface disturbing activities and vehicle use that promotes the introduction of invasive plants would increase the likelihood of larger fires in the future. Daily vehicle use associated with construction, operation and decommissioning of the BSPP could increase the risk of ignition. Climate change would result in a small but general increase in temperature, and could also result in an increase in the frequency of extreme weather events that could generate wildfires, such as increased frequency of drought and heat waves, during operation and maintenance of the BSPP. Wildfire suppression efforts would result in reduced particulate (PM10) production and visibility impairment from smoke and wild-blown dust. Short term impacts from fire suppression potentially would increase levels of particulate from surface disturbance of fire fighting equipment and operations. Fire fighting efforts would use minimal ground distributing techniques such as aerial fire suppression and ground crews with hand tools. Successful fire suppression efforts minimize the number of acres burned, and result in less vegetative loss, and thereby, less wind erosion of particulate matter. Cumulatively, increased human presence and disturbance caused by construction, operation and overall development could advance the rate of invasion by non-native vegetation and, thereby, contribute to fire fuel-loading that would burn with higher flames and hotter temperatures.	WORKER SAFETY-7 Mitigation Measures BIO-6, 7, 8, 14, which require a weed management plan; and BIO-19, and 23, which reduce exotic weeds, would reduce the incidence and size of wildfires and would tend to maintain the natural vegetation communities.	Fires have not been common or large in the NECO planning area in the past, but could increase as the invasive, non-native grass cover increases. Despite the Fire and Weed Control Programs that would be incorporated into any of the Action alternatives, the changes in vehicle use accessing the area for construction, operation, and maintenance and recreational vehicle access would increase the likelihood of wildfires in the BSPP Area to a slight, but unknown degree.

TABLE ES-21 (Continued)
SUMMARY OF IMPACTS ON WILDLAND FIRE ECOLOGY BY ALTERNATIVE

Alternatives	Impacts	Mitigation Measures, Project Design Features, and Other Measures	Unavoidable Adverse Impacts After Mitigation
Reconfigured Alternative • 1,000 MW (same as BSPP) • 7,175 acres disturbed (150 acres more than the BSPP) • BLM amends CDCA Plan for Reconfigured Alternative	Comparable to the BSPP	Same as BSPP	Comparable to the BSPP
Reduced Acreage Alternative • 750 MW (75 percent of MW of the BSPP); • 4,750 acres disturbed (1,200 acres less than the BSPP) • BLM amends CDCA Plan for Reduced Acreage Alternative	Comparable to the BSPP	Same as BSPP	Comparable to the BSPP
No Action Alternative A: • BLM does not approve the ROW Grant for the BSPP • BLM does not amend the CDCA Plan	Vehicle access to and through the BSPP Area would be similar and, therefore, fire incidence and size would be similar to the BSPP, because future solar development would not necessarily be precluded.	None	TBD
No Action Alternative B • BLM does not authorize the ROW grant for the BSPP; • BLM amends the CDCA Plan to make the project site unavailable for any type of solar energy development.	Potentially greater recreation-related vehicle access could occur in the long term as solar energy development projects would be precluded from the BSPP area. Such vehicle access in the long term would increase along present trends and increase the incidence of vehicle-related wildfires.	None	TBD
No Action Alternative C • BLM does not authorize the ROW grant for the BSPP; • BLM amends the CDCA Plan to make the project site available for any type of solar energy development.	Vehicle access to and through the BSPP Area would be similar and, therefore, fire incidence and size would be similar to the BSPP, because future solar development would not necessarily be precluded.	None	TBD

TABLE ES-22
SUMMARY OF IMPACTS ON WILDLIFE RESOURCES BY ALTERNATIVE

Alternatives	Impacts	Mitigation Measures, Project Design Features, and Other Measures	Unavoidable Adverse Impacts After Mitigation
Proposed Action • BSPP • CDCA Plan Amendment	BSPP would eliminate all habitat for wildlife within the BSPP site. BSPP would also directly and indirectly affect an extensive network of desert washes in the disturbance area, and would alter the hydrology of the area by re-routing these waterways through five engineered channels. Habitat types impacted by the proposed BSPP include upland habitat types such as Sonoran creosote bush scrub and stabilized and partially stabilized sand dunes, as well as desert dry wash woodlands and vegetated ephemeral swales. The BSPP would result in loss of habitat for desert tortoise, of spring foraging habitat for Nelson's bighorn sheep, and would degrade and fragment adjacent wildlife communities, decreasing regional connectivity and dispersal of resident wildlife. The BSPP is likely to promote the spread of invasive non-native plants, and subsidize desert tortoise predators such as common raven, coyotes, and feral dogs. Construction, operations, or maintenance activities could result in some death, harm, harassment, removal, or capture of wildlife, including eggs and nests which would constitute unavoidable loss of individual animals.	BIO-1, BIO-2, BIO-3, BIO-4, BIO-5, BIO-6, BIO-7, BIO-8, BIO-9, BIO-10, BIO-11, BIO-12, BIO-13, BIO-15, BIO-16, BIO-17, BIO-18, BIO-20, BIO-21, BIO-23, BIO-24, BIO-25, BIO-26, BIO-27, BIO-28 BLM BIO-7a: The Applicant shall ensure that monitoring accomplished under BIO-7 and other mitigating measures use available climatological data when analyzing project effects or resource trends. BLM BIO-21: The Project owner shall be responsible for providing adequate funding to install a water source, complete with an environmental assessment analyzing the impacts of the guzzler installation and operation, monitor and manage the water source for the life of the project. $100,000 is required to fulfill the terms of this condition; the excess shall be refunded to the Project owner. The Project owner shall provide financial assurances to the CDFG with copies of the document(s) to BLM, to guarantee that an adequate level of funding is available to implement the mitigation measures described in this condition. Security shall be in the amount of the initial estimate of $100,000.	Routes of wildlife movement along washes would be cut off and wildlife movement from the mountainous southwest to the northeast would be severely curtailed due to perimeter fencing and the impacted washes. Wildlife trailing along the fence to find a suitable route would be subject to increased vulnerability to predation. Gaps in fencing, if not maintained to standards could trap desert tortoises, badgers, kit foxes, burro deer, or Nelson's bighorn sheep. In addition to direct loss of habitat, the BSPP would fragment and degrade adjacent native wildlife communities, and could promote the spread of invasive non-native plants and increase the presence of desert tortoise predators such as ravens. These habitats provide foraging, cover, and/or breeding habitat for a variety of resident wildlife, including the state and federally-listed desert tortoise, American badger, desert kit fox, golden eagle, migratory birds, burrowing owl, Nelson's bighorn sheep, burro deer, and Mojave fringe-toed lizard. Under the technology proposed in the three BSPP alternatives, the Proposed Action, Reconfigured Alternative, and Reduced Acreage Alternative, the native wildlife communities would be lost, totaling 7,027 acres, 5,439 acres, and 4,165 acres respectively.
Reconfigured Alternative • 1,000 MW (same as BSPP) • 7,175 acres disturbed (150 acres more than the BSPP) • BLM amends CDCA Plan for Reconfigured Alternative	About 23 percent less impact than BSPP on desert tortoise, migratory birds, golden eagle, burrowing owl, and desert kit fox and American badger. Slight impact to future use as Nelson's bighorn sheep migration corridor in future; loss of 644 acres of spring foraging habitat. Otherwise similar to BSPP.	Same as BSPP	Comparable to, and perhaps slightly less than, the BSPP

TABLE ES-22 (Continued)
SUMMARY OF IMPACTS ON WILDLIFE RESOURCES BY ALTERNATIVE

Alternatives	Impacts	Mitigation Measures, Project Design Features, and Other Measures	Unavoidable Adverse Impacts After Mitigation
Reduced Acreage Alternative • 750 MW (75 percent of MW of the BSPP); • 4,750 acres disturbed (1,200 acres less than the BSPP) • BLM amends CDCA Plan for Reduced Acreage Alternative	About 40 percent less than BSPP for desert tortoise, migratory birds, golden eagle, burrowing owl, kit fox and American badger. Slight impact to future use as Nelson's bighorn sheep migration corridor; loss of 382 acres of spring foraging habitat. About 50 percent less impact than BSPP on ephemeral drainages. Otherwise similar to BSPP	Same as BSPP	Comparable to, and perhaps slightly less than, the BSPP
No Action Alternative A: • BLM does not approve the ROW Grant for the BSPP • BLM does not amend the CDCA Plan	None	None	None
No Action Alternative B • BLM does not authorize the ROW grant for the BSPP; • BLM amends the CDCA Plan to make the project site unavailable for any type of solar energy development.	None	None	None
No Action Alternative C • BLM does not authorize the ROW grant for the BSPP; • BLM amends the CDCA Plan to make the project site available for any type of solar energy development.	None	None	None

CHAPTER 1
Introduction and Purpose and Need

The March 2010 Staff Assessment /Draft Environmental Impact Statement (SA/DEIS) was a joint document published by the California Energy Commission (CEC) and the United States Bureau of Land Management (BLM). On April 7, 2010, the BLM and CEC determined that they would develop and publish separate final documents for compliance with NEPA and CEQA, respectively. The CEC issued a Revised Staff Assessment (RSA) in June2010 pursuant to CEQA, and the BLM has prepared this Proposed Plan Amendment/Final Environmental Impact Statement (PA/FEIS) pursuant to NEPA. Although the BLM and CEC no longer are publishing a joint document, these agencies continue to share staff expertise, information, and documentation in order to promote intergovernmental coordination at the local, state, and Federal levels. The SA/DEIS and RSA were the primary references used in preparing this PA/FEIS. The comments received on the SA/DEIS are addressed in this PA/FEIS. After the publication of this PA/FEIS, the BLM will prepare a Record of Decision (ROD) regarding the BSPP. The publication of the ROD in the Federal Register is the final step required of the BLM to meet the requirements of NEPA for the BSPP.

This PA/FEIS analyzes impacts of the project described in the right-of-way (ROW) application filed with the BLM by Palo Verde Solar I[1] (Applicant) for the Blythe Solar Power Project (BSPP or proposed action). (CACA 048811). The Regional Context is shown in Figure 1 (see Appendix A for all figures referenced in the PA/FEIS); the Proposed Site Layout and Solar Unit Detail is shown in Figures 2a, 2b, and 3. The PA/FEIS presents the potential effects of the BSPP and five alternatives on BLM-administered and other affected lands and resources. In this analysis, 23 alternatives to the proposed BSPP were developed and evaluated. These include four alternative sites, solar and renewable technologies, generation technologies using different fuels, and conservation/demand-side management. Of the 23 alternatives, two alternatives were determined to be potentially feasible by the BLM and CEC staff: the Reconfigured Alternative, which was defined by the applicant in response to a data request, and the Reduced Acreage Alternative that would generate 750 MW instead of the proposed 1,000 MW. The Reconfigured Alternative and Reduced Acreage Alternative are shown in Figure 4 and Figure 5 respectively. Additionally, three variations of the No Action/No Project Alternative are analyzed (see Chapter 2 for Proposed Action and Alternatives).

1 Chevron Energy Solutions and Solar Millennium have a joint development agreement. Chevron Energy Solutions applied for the Right of Way for Blythe Solar Power Project. To facilitate the permitting of the BSPP, the Applicant is requesting that the Energy Commission issue one License to a Project- specific company. The company for BSPP is Palo Verde Solar I, LLC, a wholly owned subsidiary of Solar Millennium and the single Applicant for the BSPP.

The Applicant has made various minor modifications to the BSPP since the Application for Certification (AFC) was submitted in August 2009. These minor changes are not reflected in the March 2010 SA/DEIS and reflect further definition of linear facilities and other changes required as a result of agency and other discussions. These revisions to the proposed project do not change conclusions reached about impacts on issues analyzed under NEPA. Project changes include:

1. Removal of the four Gas-Fired Heat Transfer Fluid (HTF) Heaters (one per Unit);
2. Addition of an On-site Concrete Batch Plant During Construction;
3. Addition of Evaporation Ponds to Process Industrial Wastewater Flows;
4. Revision to Construction Water Requirements, Number of Groundwater Wells, and Construction Water Storage Approach;
5. Finalization of the Gen-Tie Line Route to the Southern California Edison (SCE) Colorado River Substation;
6. Clarification on the Removal of the Existing On-site (Abandoned) Natural Gas Pipeline;
7. Changes to Layout of Project Facilities;
8. Revisions to Project Drainage System Construction Sequencing;
9. Clarification on the Paving of Black Rock Road;
10. Addition of a Temporary Construction Power Line from Off-Site;
11. Refinement of the Daily Construction Schedule;
12. Finalization of the Telecommunications Line;
13. Revised List of Water Treatment Chemicals; and
14. Addition of an On-site Fuel Depot

Publication in the Federal Register of the EPA's Notice of Availability (NOA) for the PA/FEIS will initiate a 30-day protest period on the proposed PA and a 30-day public review period on the FEIS. Any protest on the proposed PA must be filed with the Director of the BLM. Following resolution of any protests, BLM then may publish a Record of Decision (ROD) with respect to the Plan Amendment and the Project Application. The decision regarding the ROW grant is appealable to the Interior Board of Land Appeals upon issuance of the ROD.

1.1 Purpose and Need

1.1.1 BLM Purpose and Need

NEPA guidance published by the Council on Environmental Quality (CEQ) states that environmental impact statements' Purpose and Need section "shall briefly specify the underlying purpose and need to which the agency is responding in proposing the alternatives including the proposed action" (40 CFR 1502.13). The following discussion sets forth the purpose of and need for the action as required under NEPA.

The BLM's purpose and need for the BSPP is to respond to the Applicant's application under Title V of the Federal Land Policy and Management Act of 1976 (FLPMA) (43 U.S.C. 1701 et seq.) for a ROW grant to construct, operate, maintain and decommission a solar thermal facility on public lands in compliance with FLPMA, BLM ROW regulations, and other applicable Federal laws. The BLM will decide whether to approve, approve with modification, or deny issuance of a ROW grant to Palo Verde Solar I for the proposed BSPP. The BLM's action also will include consideration of a concurrent amendment of the California Desert Conservation Area (CDCA) Plan of 1980, as amended. The CDCA Plan, while recognizing the potential compatibility of solar generation facilities on public lands, requires that all sites associated with power generation or transmission that are not identified in the CDCA Plan to be added to it through the land use plan amendment process. CDCA boundaries are shown on Figure 1. The BSPP site is within the CDCA, but is not identified in the CDCA Plan for solar power generation. Therefore, if the BLM decides to approve the issuance of a ROW grant, the CDCA Plan amendment also would be required.

In conjunction with FLPMA, BLM authorities include:

1. Executive Order 13212, dated May 18, 2001, which mandates that agencies act expediently and in a manner consistent with applicable laws to increase the "production and transmission of energy in a safe and environmentally sound manner."

2. The Energy Policy Act of 2005 (EPAct 05 or EPAct), Section 211 of which states: "It is the sense of the Congress that the Secretary of the Interior should, before the end of the 10-year period beginning on the date of enactment of this Act, seek to have approved non-hydropower renewable energy projects located on public lands with a generation capacity of at least 10,000 megawatts of electricity."

3. Secretarial Order 3285, dated March 11, 2009, which "establishes the development of renewable energy as a priority for the Department of the Interior."

1.1.2 DOE Purpose and Need

The Applicant has applied to the Department of Energy (DOE) for a loan guarantee under Title XVII of the Energy Policy Act of 2005 (EPAct 05), as amended by Section 406 of the American Recovery and Reinvestment Act of 2009, P.L. 111-5 (the "Recovery Act") for Solar Power Units 1 and 2 of the BSPP. DOE is a cooperating agency on this EIS pursuant to an MOU between DOE and BLM signed in January 2010. The purpose and need for action by DOE is to comply with its mandate under EPAct by selecting eligible projects that meet the goals of the Act.

EPAct 2005 established a Federal loan guarantee program for eligible energy projects, and was amended by the Recovery Act to create Section 1705 authorizing a new program for rapid deployment of renewable energy projects and related manufacturing facilities, electric power transmission projects, and leading edge biofuels projects. The primary purposes of the Recovery Act are job preservation and creation, infrastructure investment, energy efficiency and science, assistance to the unemployed, and State and local fiscal stabilization. The Section 1705 Program is designed to address the current economic conditions of the nation, in part, through renewable energy, transmission and leading edge biofuels projects.

1.2 General Location and Map

The BSPP is a concentrated solar thermal electric generating facility with four adjacent, identical units of 250 megawatt (MW) nominal capacity each for a total nominal capacity of 1,000 MW. The BSPP would be located in the southern California inland desert, approximately eight miles west of the City of Blythe and three miles north of the Interstate-10 freeway in Riverside County, California (Figure 1).

As reflected in the ROW application filed with BLM, and subsequently designated as ROW # CACA 48811 for BLM record tracking, the proposed action is entirely on BLM-administered land, in Township 6 South, Ranges 21 and 22 East and Township 5 South, Range 22 East. The Applicant is seeking a ROW grant for approximately 9,400 acres. Construction and operation of the proposed action would disturb approximately 7,025 acres, including ancillary facilities outside the solar plant footprint. Remaining acreage that would not be disturbed will not be part of the ROW grant.

1.3 Major Authorizing Laws and Regulations

The primary agency-specific authorizing laws and regulations are summarized as follows:

1.3.1 BLM

BLM's authority and policy guidance for making a decision related to the proposed action flows from Section 1701 et. seq. of FLPMA, Section 211 of the Energy Policy Act of 2005 (EPAct 05) (119 Stat. 594, 600), and BLM's Solar Energy Development Policy of April 4, 2007. FLPMA authorizes BLM to issue ROW grants for systems for generation, transmission, and distribution of electric energy. Section 211 of the EPAct 05 states that the Secretary of the Interior should seek to have approved a minimum of 10,000 MW of renewable energy-generating capacity on public lands by 2015.

1.3.2 California Energy Commission

The CEC has the exclusive authority to certify the construction, modification, and operation of thermal electric power plants 50 MW or larger. The CEC certification is in lieu of any permit required by state, regional, or local agencies and by Federal agencies to the extent permitted by Federal law (Pub. Res. Code Section 25500). The CEC must review the power plant Application For Certification (AFC) to assess potential environmental impacts including potential impacts to public health and safety, potential measures to mitigate those impacts (Pub. Res. Code § 25519), and compliance with applicable governmental laws or standards (Pub. Res. Code § 25523 (d)). The CEC staff's analyses are prepared in accordance with Public Resources Code section 25500 et seq.; Title 20, California Code of Regulations section 1701 et seq.; and CEQA (Pub. Res. Code § 21000 et seq.; 14 Cal. Code Regs. § 15000 et seq.).

1.3.3 U.S. Fish and Wildlife Service

The United States Fish and Wildlife Service (USFWS) has jurisdiction over threatened and endangered species listed under the Endangered Species Act (ESA) (16 U.S.C. Section 1531 et seq.). Formal consultation with the USFWS under Section 7 of the ESA is required for any Federal action that may adversely affect a Federally-listed species. This consultation has been initiated through a request by BLM to initiate formal consultation and the submittal of a Biological Assessment (BA), which determines whether the proposed action is likely to adversely affect a listed species. Following review of the BA, the USFWS is expected to issue a Biological Opinion (BO), which will specify reasonable and prudent measures that must be implemented for any protected species.

1.3.4 U.S. Army Corps of Engineers

The United States Army Corps of Engineers (USACE) has jurisdiction to protect the aquatic ecosystem, including water quality and wetland resources, under Section 404 of the Clean Water Act. Under that authority, USACE regulates the discharge of dredged or fill material into waters of the United States, including wetlands, by reviewing proposed projects to determine whether they may impact such resources and, thereby, are subject to retain a Section 404 permit. Throughout the NEPA process, the BLM has provided information to the USACE to assist the agency in making a determination regarding its jurisdiction and the need for a Section 404 permit. The USACE has not made a final determination of jurisdiction for the BSPP.

1.3.5 California Department of Fish and Game

The California Department of Fish and Game (CDFG) protects fish and aquatic habitats within the State through regulation of modifications to streambeds, under Section 1602 of the Fish and Game Code. CDFG has interpreted the term “streambed” to encompass all portions of the bed, banks, and channel of any stream, including intermittent and ephemeral streams, extending laterally to the upland edge of riparian vegetation. In the case of vegetated ephemeral dry washes, such as those present on the BSPP site, this CDFG interpretation often results in an asserted geographic jurisdictional area that is much wider than the active channel of the stream and, therefore, much wider than the jurisdiction of the USACE. Section 1602(a) states that it is unlawful for an entity to “substantially divert or obstruct the natural flow of, or substantially change or use any material from the bed, channel, or bank of, any river, stream, or lake” without first notifying CDFG of that activity. If CDFG determines that the activity may substantially adversely affect an existing fish or wildlife resource, the entity will need to obtain a Lake or Streambed Alteration Agreement from the CDFG before it may commence the activity (Fish & Game Code Section 1602(a)(4)(B)). CDFG would include in the Lake or Streambed Alteration Agreement measures necessary to protect the affected resources (Id.). The BLM, CEC, and the Applicant have provided information to CDFG to assist in its determination of the impacts to streambeds, and identification of permit and mitigation requirements. The Applicant filed a Streambed Alteration Agreement with CDFG. The requirements of the Streambed Alteration Agreement will be included as a recommended mitigation measure.

CDFG also has the authority to regulate potential impacts to species that are protected under the California Endangered Species Act (CESA) (Fish and Game Code Section 2050, et seq.). When appropriate, the applicant will be required to file an Incidental Take Permit application. The requirements of the Incidental Take Permit will be included as a recommended mitigation.

1.4 Relationship of Proposed Action to BLM Policies, Plans, and Programs, and LUP Conformance Determination

BLM lands in the California Desert District are governed by the California Desert Conservation Area (CDCA) Plan. CDCA Plan boundaries are shown on Figure 1. The CDCA Plan, while recognizing the potential compatibility of solar generation facilities on public lands, requires that all sites associated with power generation or transmission not specifically identified in the CDCA Plan for a project site be considered through the Plan Amendment process.

The BSPP project site currently is classified as Multiple-Use Class L (Limited Use) Designation in the CDCA Plan. The Limited Use classification is intended to protect sensitive, natural, scenic, ecological and cultural resource values. Public lands classified as Limited Use are managed to provide for multiple use of resources at a lower intensity, ensuring that sensitive values are not significantly diminished. The construction, operation and decommissioning of a solar generating project on the proposed site would require the BLM to amend the CDCA Plan to allow solar energy generating activities in the Multiple Use Class L (Limited Use) on the BSPP site. The CDCA Plan amendment would restrict the use of the site to that solar use only.

Based on CDCA Plan Table 1, Multiple Use Class Guidelines, and Chapter 3, Energy Production and Utility Corridors Element, solar uses are conditionally allowed in the Multiple Use Class L designation contingent on the CDCA Plan amendment process and NEPA requirements being met for the proposed use. The BSPP site currently is not identified within the CDCA Plan for such use; therefore, a CDCA Plan amendment is required. This PA/FEIS meets the NEPA requirements for consideration of the proposed BSPP project.

1.4.1 Planning Criteria (BLM)

The CDCA planning criteria are the constraints and ground rules that guide and direct the development of the Plan Amendment. They ensure that the Plan Amendment is tailored to the identified issues and ensure that unnecessary data collection and analyses are avoided. They focus on the decisions to be made in the Plan Amendment, and will achieve the following:

> “Sites associated with power generation of transmission not identified in the Plan will be considered through the Plan Amendment process.”

Because the proposed facility is not currently identified within the CDCA, an amendment to identify the proposed facility within the CDCA is hereby proposed. Relevant guidelines are identified in Table 1, Multiple Use Class Guidelines, to the CDCA Plan (at page 15). As specified in the CDCA Chapter 7 Plan Amendment Process, there are three categories of Plan Amendments, including:

Category 1, for proposed changes that will not result in significant environmental impact or analysis through an EIS;

Category 2, for proposed changes that would require a significant change in the location or extent of a multiple-use class designation; and

Category 3, to accommodate a request for a specific use or activity that will require analysis beyond the Plan Amendment Decision.

Based on these criteria, approval of the proposed action would require a Category 3 amendment. This section summarizes the procedures necessary to evaluate the proposed Plan Amendment.

1.4.2 Statement of Plan Amendment

The Implementation section of the Energy Production and Utility Corridors Element of the CDCA lists a number of Category 3 amendments that have been approved since adoption of the CDCA Plan in 1980. An additional amendment is proposed to be added to this section of the CDCA, and would read "Permission granted to construct solar energy facility (proposed BSPP Project)."

Plan Amendment Process

The Plan Amendment process is outlined in Chapter 7 of the CDCA. In analyzing an applicant's request for amending or changing the plan, the BLM District Manager, Desert District, will:

1. Determine if the request has been properly submitted and if any law or regulation prohibits granting the requested amendment;
2. Determine if alternative locations within the CDCA are available that would meet the applicant's needs without requiring a change in the plan's classification, or an amendment to any plan element;
3. Determine the environmental effects of granting and/or implementing the applicant's request;
4. Consider the economic and social impacts of granting and/or implementing the applicant's request;
5. Provide opportunities for and consideration of public comment on the proposed amendment, including input from the public and from Federal, State, and local government agencies; and
6. Evaluate the effect of the proposed amendment on BLM management's desert-wide obligation to achieve and maintain a balance between resource use and resource protection.

Decision Criteria for Evaluation of a Proposed Plan Amendment

The Decision Criteria to be used for approval or disapproval of the proposed plan amendment require that the following determinations be made by the BLM Desert District Manager:

1. The proposed plan amendment is in accordance with applicable laws and regulations; and
2. The proposed plan amendment will provide for the immediate and future management, use, development, and protection of the public lands within the CDCA.

The BLM Desert District Manager will base the rationale for these determinations on the principles of multiple use, sustained yield, and maintenance of environmental quality as required in FLPMA.

Decision Criteria for Evaluation of Application

In addition to defining the required analyses and Decision Criteria for Plan Amendments, the Plan also defines the Decision Criteria to be used to evaluate future applications in the Energy Production and Utility Corridors Element of Chapter 3. These Decision Criteria include:

1. Minimize the number of separate rights-of-way by utilizing existing rights-of-way as a basis for planning corridors;
2. Encourage joint-use of corridors for transmission lines, canals, pipelines, and cables;
3. Provide alternative corridors to be considered during processing of applications;
4. Avoid sensitive resources wherever possible;
5. Conform to local plans whenever possible;
6. Consider wilderness values and be consistent with final wilderness recommendations;
7. Complete the delivery systems network;
8. Consider ongoing projects for which decisions have been made; and
9. Consider corridor networks which take into account power needs and alternative fuel resources.

1.5 Relationship of Proposed Action to Non-BLM Policies, Plans, and Programs

TABLE 1-1
GENERAL LAWS, ORDINANCES, REGULATIONS AND STANDARDS (LORS)

Applicable LORS	Description
GENERAL	
Federal	
Federal Land Policy and Management Act of 1976 (FLPMA) (43 United States Code [USC] Section 1761; 43 Code of Federal Regulations [CFR] part 1600.	Establishes public land policy; guidelines for administration; and provides for the management, protection, development, and enhancement of public lands. In particular, the FLPMA's relevance to the proposed project is that Title V, Section 501, establishes BLM's authority to grant rights-of-way for generation, transmission, and distribution of electrical energy (FLPMA 2001).
Bureau of Land Management – California Desert Conservation Area (CDCA) Plan, 1980 as Amended (BLM 1980)	The 25 million-acre CDCA contains over 12 million acres of public lands spread within the area known as the California Desert, which includes the following three deserts: the Mojave, the Sonoran, and a small portion of the Great Basin. The 12 million acres of public lands administered by the BLM are half of the CDCA. The CDCA Plan is a comprehensive, long-range plan with goals and specific actions for the management, use, development, and protection of the resources and public lands within the CDCA, and it is based on the concepts of multiple use, sustained yield, and maintenance of environmental quality. The plan's goals and actions for each resource are established in its 12 elements. Each element provides both a desert-wide perspective of the planning decisions for one major resource or issue of public concern and a more specific interpretation of multiple-use class guidelines for a given resource and its associated activities.

TABLE 1-1 (Continued)
GENERAL LAWS, ORDINANCES, REGULATIONS AND STANDARDS (LORS)

Applicable LORS	Description
GENERAL (cont.)	
Federal (cont.)	
Northern and Eastern Colorado Desert (NECO) Coordinated Management Plan	The NECO plan is a landscape-scale planning effort for most of the California portion of the Sonoran Desert ecosystem. The planning area encompasses over five million acres. The NECO Plan amended the CDCA plan in 2002 and is currently undergoing evaluation for further amendment. The CDCA Plan/NECO is related to the Draft Solar Energy Programmatic Environmental Impact Statement which is expected to be leased in 2011 and could give guidance as to how and where solar projects can be built on BLM lands.
California Desert Renewable Energy Conservation Plan (DRECP)	The DRECP is a Natural Community Conservation Plan that will help provide for effective protection and conservation of desert ecosystems while allowing for the appropriate development of renewable energy projects. Pursuant to DRECP, a joint Federal and State Renewable Energy Action Team (REAT) was established in 2008 by Executive Order S-14-08 and associated Memoranda of Understanding by and among several federal and state agencies. BLM is a voluntary participant in the REAT. The REAT's primary mission is to streamline and expedite the permitting processes for renewable energy projects, while conserving endangered species and natural communities at the ecosystem scale. Executive Order S-14-08 directs the REAT to achieve these twin goals in the Mojave and Colorado Desert regions through the DRECP. On May 19, 2010, the REAT announced the signing of an agreement to enable renewable energy projects proposed in the California Desert to address mitigation requirements through the use of a deposit account rather than having to individually undertake mitigation for each project. This newly-established deposit account is one tool among several that renewable energy project proponents can use to mitigate impacts.
Wild and Free-Roaming Horse and Burro Act (1971) (BLM 2009h)	The BLM protects, manages, and controls wild horses and burros under the authority of the Wild Free-Roaming Horses and Burros Act of 1971 (Act) to ensure that healthy herds thrive on healthy rangelands. The BLM manages these animals as part of its multiple-use mission under the 1976 Federal Land Policy and Management Act. One of the BLM's key responsibilities under the Act is to determine the "appropriate management level" (AML) of wild horses and burros on the public rangelands.
State	
California Environmental Quality Act (CEQA) (PRC Section 21000 et seq.); CEQA Guidelines (14 CCR Section 15000 et seq., Appendix G)	Requires public agencies in California to consider adverse direct, indirect and cumulative impacts on the environment before carrying out, authorizing or approving projects that could have such impacts, and to avoid or reduce significant environmental impacts when it is feasible to do so.
Local	
Riverside County General Plan and Vision,	The Land Use Element designates the general distribution, location, and extent of land uses, such as housing, business, industry, open space, agriculture, natural resources, recreation, and public/quasi-public uses. The Land Use section of the Palo Verde Valley Area Plan discusses the City of Blythe Airport Influence Area.
Land Use Element	The Land Use designation of the project area is "Open Space Rural."
Open Space-Rural	The Open Space Rural land use designation is applied to remote privately owned open space areas with limited access and a lack of public services.
Policies:	
LU 20.1	Require that structures be designed to maintain the environmental character in which they are located.
LU 20.4	Ensure that development does not adversely impact the open space and rural character of the surrounding area
Palo Verde Valley Area Plan – Land Use (2003)	Land uses, concentrations of population, and height of proposed development within this airport influence area are restricted in certain areas.
Blythe Airport Influence Area	There are a number of safety zones within the Blythe Airport Influence Area. The project would affect Zones E, D, C, and B1.

TABLE 1-1 (Continued)
GENERAL LAWS, ORDINANCES, REGULATIONS AND STANDARDS (LORS)

Applicable LORS	Description
GENERAL (cont.)	
Local (cont.)	
Land Use Designation	The project area is designated rural desert.
Multipurpose Open Space- LU Policies LU.20.1 and 20.4 noted above would also apply	Require that structures be designed to maintain the environmental character in which they are located. Ensure that development does not adversely impact the open space and rural character of the surrounding area
Riverside County Land Use Ordinance	Assigns zones to land within unincorporated areas in the County, describes land uses allowed in each zone, and generally includes direction for implementing the County General Plan.
Riverside County Airport Land Use Compatibility Plan	Contains land use compatibility guidelines for the Blythe Airport. The Riverside County Airport Land Use Commission (RCALUC) reviews major land use projects within the Airport Influence Area to determine if they are consistent with the Compatibility Plan adopted by the RCALUC for the airports environs.
AIR QUALITY	
Federal	
40 CFR Part 52	Nonattainment New Source Review (NSR) requires a permit, Best Available Control Technology (BACT) and Offsets. Permitting and enforcement is delegated to the Mojave Desert Air Quality Management District (MDAQMD). Prevention of Significant Deterioration (PSD) requires major sources or major modifications to major sources to obtain permits for attainment pollutants. The BSPP is a new source that does not have a rule listed emission source; thus, the PSD trigger levels are 250 tons per year for NOx, VOC, SOx, PM10, PM2.5 and CO.
40 CFR Part 60	New Source Performance Standards (NSPS), Subpart Dc Standards of Performance for Small Industrial-Commercial-Institutional Steam Generation Units. Establishes recordkeeping and reporting requirements for natural gas-fired steam-generating units. Subpart IIII Standards of Performance for Stationary Compression Ignition Internal Combustion Engines. Establishes emission standards for compression-ignition internal combustion engines, including emergency generator and fire water pump engines.
40 CFR Part 93	General Conformity requires a determination of conformity with the State Implementation Plan for a project that requires a Federal approval if the project's annual emissions are above specified levels.
State	
California Health and Safety Code (HSC) Sections 40910-40930	Permitting of source needs to be consistent with Air Resource Board (ARB) approved Clean Air Plans.
HSC Section 41700	Restricts emissions that would cause nuisance or injury.
Title 17 California Code of Regulations (CCR) Section 93115	Airborne Toxic Control Measure for Stationary Compression Ignition Engines limits the types of fuels allowed, establishes maximum emission rates, and establishes recordkeeping requirements on stationary compression ignition engines, including emergency generator and fire water pump engines.
Local (Mojave Desert Air Quality Management District, MDAQMD)	
Rule 201 and 203 Permits Required	Requires a Permit to Construct before construction of an emission source occurs. Prohibits operation of any equipment that emits or controls an air pollutant (such as XX) without first obtaining a permit to operate.
Rules 401, 402, and 403 Nuisance, Visible Emissions, Fugitive Dust	Limits visible, nuisance, and fugitive dust emissions and would be applicable to the construction period of the project.
Rule 404 Particulate Matter - Concentration	Limits the particulate matter concentration from stationary source exhausts.

TABLE 1-1 (Continued)
GENERAL LAWS, ORDINANCES, REGULATIONS AND STANDARDS (LORS)

Applicable LORS	Description
AIR QUALITY (cont.)	
Local (Mojave Desert Air Quality Management District, MDAQMD) (cont.)	
Rule 406 Specific Contaminants	Prohibits sulfur compound emissions in excess of 500 ppmv.
Rule 407 Liquid and Gaseous Air Contaminants	Prohibits carbon monoxide emissions in excess of 2,000 ppmv.
Rule 409 Combustion Contaminants	Limits the emissions from fossil fuel combustion.
Rule 431 Sulfur Content of Fuels	Limits the sulfur content of liquid fuels to no more than 0.5% by weight.
Rule 900 Standard of Performance for New Stationary Source	Incorporates the Federal NSPS (40 CFR 60) rules by reference.
Rule 1303 New Source Review	Specifies BACT/Offsets technology and requirements for a new emissions unit that has potential to emit any regulated pollutants.
Rule 1306 Electric Energy Generating Facilities	Describes actions to be taken for permitting of power plants that are within the jurisdiction of the CEC.
BIOLOGICAL RESOURCES	
Federal	
Federal Endangered Species Act (16 USC 1531 et seq.; 50 CFR Part 17, Section 17.1 et seq.)	Designates and protects Federally threatened and endangered plants and animals and designated critical habitats.
Clean Water Act (33 USC Sections 1251-1376; 40 CFR Section 330.5(a)(26))	Requires the permitting and monitoring of all discharges to surface water bodies. Section 404 requires a permit from the U.S. Army Corps of Engineers (USACE) for a discharge of dredged or fill materials into waters of the U.S., including wetlands. Section 401 requires an applicant for a Federal license or permit to conduct an activity that could result in a discharge to waters of the United States must provide the Federal agency with a certification from the applicable regional water quality control board (RWQCB) that any such discharge will comply with the Clean Water Act, including state and Federal water quality standards.
Eagle Act (50 CFR Section 22.26)	Would authorize limited take of bald eagles (Haliaeetus leucocephalus) and golden eagles (Aquila chrysaetos) under the Eagle Act, where the take is associated with, but not the purpose of an otherwise lawful activity, and cannot practicably be avoided.
Eagle Act (50 CFR Section 22.27)	Would provide for the intentional take of eagle nests where (i) necessary to alleviate a safety hazard to people or eagles; (ii) necessary to ensure public health and safety; (iii) the nest prevents the use of a human–engineered structure, or; (iv) the activity, or mitigation for the activity, will provide a net benefit to eagles. Only inactive nests would be allowed to be taken except in the case of safety emergencies.
Bald and Golden Eagle Protection Act (16 USC Section 668)	Protects bald eagles and golden eagles by prohibiting, except under certain specified conditions, the take, possession, and commerce of such birds. The 1972 amendments increased penalties for violating provisions of the Act or regulations issued pursuant thereto and strengthened other enforcement measures. Rewards are provided for information leading to arrest and conviction for violation of the Act.
Northern and Eastern Colorado Desert Coordinated Management Plan (NECO)	A regional amendment to the CDCA Plan approved in 2002, NECO protects and conserves natural resources while simultaneously balancing human uses in the northern and eastern portion of the Colorado Desert.
California Desert Protection Act of 1994 (CDPA)	An Act of Congress which established 69 wilderness areas, the Mojave National Preserve, expanded Joshua Tree and Death Valley National Monuments and redefined them as National Parks. Lands transferred to the National Park Service were formerly administered by the BLM and included substantial portions of grazing allotments, wild horse and burro Herd Management Areas, and Herd Areas.

TABLE 1-1 (Continued)
GENERAL LAWS, ORDINANCES, REGULATIONS AND STANDARDS (LORS)

Applicable LORS	Description
BIOLOGICAL RESOURCES (cont.)	
Federal (cont.)	
Migratory Bird Treaty (16 USC Sections 703-711)	Makes it unlawful to take or possess any migratory nongame bird (or any part of such migratory nongame bird) as designated in the Migratory Bird Treaty Act.
Executive Order 11312	Prevents and controls invasive species.
Wild Free-Roaming Horse and Burro Act (Public Law 92-195)	Protects wild horses and burros from capture, branding, harassment, and death, and manages them with the intent to achieve and preserve the natural ecological balance on public lands.
California Desert Conservation Area Plan	The California Desert Conservation Area (CDCA) comprises one of two national conservation areas established by Congress at the time of the passage of the Federal Land and Policy Management Act (FLPMA), which outlines how the BLM will manage public lands. Congress specifically provided guidance for the management of the CDCA and directed the development of the 1980 CDCA Plan.
Desert Tortoise (Mojave Population) Recovery Plan (USFWS 1994) and Draft Revised Recovery Plan (USFWS 2008a)	Describes a strategy for recovery and delisting of the desert tortoise.
State	
California Endangered Species Act of 1984 (Fish and Game Code Sections 2050-2098)	Protects California's rare, threatened, and endangered species.
Protected furbearing mammals (14 CCR Section 460)	Prohibits the take at any time of fisher, marten, river otter, desert kit fox and red fox.
14 CCR Sections 670.2 and 670.5	Lists the plants and animals of California that are declared rare, threatened, or endangered.
Fully Protected Species (Fish and Game Code Sections 3511, 4700, 5050, and 5515)	Designates certain species as fully-protected and prohibits the take of such species or their habitat unless for scientific purposes (see also California Code of Regulations Title 14, section 670.7).
Nest or Eggs (Fish and Game Code Section 3503)	Protects California's birds by making it unlawful to take, possess, or needlessly destroy the nest or eggs of any bird.
Birds of Prey (Fish and Game Code Section 3503.5	Protects birds of prey by making it unlawful to take, possess, or destroy any birds in the orders Falconiformes and Strigiformes or to take, possess, or destroy the nest or eggs of any such bird.
Migratory Birds (Fish and Game Code Section 3513)	Protects California's migratory birds by making it unlawful to take or possess any migratory nongame bird as designated in the Migratory Bird Treaty Act or any part of such migratory nongame birds.
Nongame mammals (Fish and Game Code Section 4150)	Makes it unlawful to take or possess any non-game mammal or parts thereof except as provided in the Fish and Game Code or in accordance with regulations adopted by the Fish and Game Commission.
Significant Natural Areas (Fish and Game Code Section 1930 et seq.)	Designates certain areas such as refuges, natural sloughs, riparian areas, and vernal pools as significant wildlife habitat.
California Environmental Quality Act (CEQA) (California Public Resources Code Section 21000 et seq.); CEQA Guidelines (14 CCR Section 15380)	CEQA defines rare species more broadly than the definitions for species listed under the state and Federal Endangered Species Acts. Under CEQA Guidelines Section 15830, species not protected through state or Federal listing but nonetheless demonstrable as "endangered" or "rare" under CEQA should also receive consideration in environmental analyses. Included in this category are many plants considered rare by the California Native Plant Society (CNPS) and some animals on the CDFG's Special Animals List.

TABLE 1-1 (Continued)
GENERAL LAWS, ORDINANCES, REGULATIONS AND STANDARDS (LORS)

Applicable LORS	Description
BIOLOGICAL RESOURCES (cont.)	
State (cont.)	
Streambed Alteration Agreement (Fish and Game Code Section 1600 et seq.)	Regulates activities that may divert, obstruct, or change the natural flow or the bed, channel, or bank of any river, stream, or lake in California designated by CDFG in which there is at any time an existing fish or wildlife resource or from which these resources derive benefit. Impacts to vegetation and wildlife resulting from disturbances to waterways are also reviewed and regulated during the permitting process.
California Native Plant Protection Act of 1977 (Fish and Game Code Section 1900 et seq.)	Designates state rare, threatened, and endangered plants.
California Desert Native Plants Act of 1981 (Food and Agricultural Code Section 80001 et seq.; California Fish and Game Code Sections 1925-1926)	Protects non-listed California desert native plants from unlawful harvesting on both public and private lands in Imperial, Inyo, Kern, Los Angeles, Mono, Riverside, San Bernardino, and San Diego counties. Unless issued a valid permit, wood receipt, tag, and seal by the commissioner or sheriff, harvesting, transporting, selling, or possessing specific desert plants is prohibited.
Porter-Cologne Water Quality Control Act (California Water Code Section 13000 et seq.)	Regulates discharges of waste and fill material to waters of the State, including “isolated” waters and wetlands.
Local	
Riverside County General Plan	Protection and preservation of wildlife for the maintenance of the balance of nature.
CULTURAL RESOURCES	
Federal	
Antiquities Act of 1906 16 USC Sections 431–433	Establishes criminal penalties for unauthorized destruction or appropriation of “any historic or prehistoric ruin or monument, or any object of antiquity” on Federal land; empowers the President to establish historical monuments and landmarks.
Archaeological Resources Protection Act of 1979 (ARPA) 16 USC 470aa et seq.	Protects archaeological resources from vandalism and unauthorized collection on public and Indian lands.
National Historic Preservation Act of 1966 (NHPA)16 USC Section 470	Directs Federal agencies to take into account the effects of their undertakings on properties included in or eligible for inclusion in the National Register of Historic Places. Sets inventory, nomination, protection and preservation responsibilities for Federally-owned cultural properties.
Native American Graves Protection and Repatriation Act of 1990 (NAGPRA) 25 USC Sections 3001–3013	Provides for the protection of Native American human remains, funerary objects, sacred objects and objects of cultural patrimony on Federal land. Establishes procedures for determining ownership of such remains and objects under Federal jurisdiction.
GEOLOGY AND PALEONTOLOGY	
Federal	
Antiquities Act of 1906 (16 USC Sections 431-433; 43 CFR Part 3)	The proposed BSPP site is located entirely on land currently administered by the BLM. Although there is no specific mention of natural or paleontologic resources in the Act itself, or in the Act’s uniform rules and regulations, ‘objects of antiquity’ has been interpreted to include fossils by the Federal Highways Act of 1956, the National Park Service (NPS), the BLM, the Forest Service (USFS), and other Federal agencies.
National Environmental Policy Act of 1970 (NEPA) (42 USC Section 4321 et. seq.)	Established the Council on Environmental Quality (CEQ), which is charged with preserving ‘important historic, cultural, and natural aspects of our national heritage’.

TABLE 1-1 (Continued)
GENERAL LAWS, ORDINANCES, REGULATIONS AND STANDARDS (LORS)

Applicable LORS	Description
GEOLOGY AND PALEONTOLOGY (cont.)	
Federal (cont.)	
Federal Land Policy and Management Act of 1976 (FLPMA) (43 USC Sections 1701-1784)	Authorizes the BLM to manage public lands to protect the quality scientific, scenic, historical, archeological, and other values, and to develop 'regulations and plans for the protection of public land areas of critical environmental concern', which include 'important historic, cultural or scenic values'. Also charged with the protection of 'life and safety from natural hazards'.
Paleontologic Resources Preservation Act (PRPA) (Public Law 111-011)	Authorizes Departments of Interior and Agriculture Secretaries to manage the protection of paleontologic resources on Federal lands.
National Historic Preservation Act of 1966 (NHPA) (16 USC 470)	Establishes policies for the 'preservation of the prehistoric and historic resources of the United States', under the direction of the Secretary of the Interior and the BLM.
State	
California Building Code (CBC), 2007	Includes a series of standards that are used in project investigation, design, and construction (including grading and erosion control).
Alquist-Priolo Earthquake Fault Zoning Act (California Public Resources Code [PRC], Sections 2621–2630)	Mitigates against surface fault rupture of known active faults beneath occupied structures. Requires disclosure to potential buyers of existing real estate and a 50-foot setback for new occupied buildings. Portions of the site and proposed ancillary facilities are located within designated Alquist-Priolo Fault Zones. The proposed site layout places occupied structures outside of the 50-foot setback zone.
Seismic Hazards Mapping Act (PRC Sections 2690–2699)	Identifies areas that are subject to the effects of strong ground shaking, such as liquefaction, landslides, tsunamis, and seiches.
PRC Sections 5097.5 and 30244	Regulates removal of paleontologic resources from state lands, defines unauthorized removal of fossil resources as a misdemeanor, and requires mitigation of disturbed sites.
Warren-Alquist Act (PRC Sections 25527 and 25550.5(i))	Requires the CEC to "give the greatest consideration to the need for protecting areas of critical environmental concern, including, but not limited to, unique and irreplaceable scientific, scenic, and educational wildlife habitats; unique historical, archaeological, and cultural sites…" With respect to paleontologic resources, the CEC relies on guidelines from the Society for Vertebrate Paleontology, indicated below.
Society for Vertebrate Paleontology (SVP), 1995	The "Measures for Assessment and Mitigation of Adverse Impacts to Non-Renewable Paleontologic Resources: Standard Procedures" is a set of procedures and standards for assessing and mitigating impacts to vertebrate paleontologic resources. The measures were adopted in October 1995 by the SVP, a national organization of professional scientists.
Local	
Riverside County General Plan 2000, Safety Element	Adopts the Uniform Building Code (UBC) (1997), which provides design criteria for buildings and excavations. The UBC is superseded by the CBC (2007). Requires mitigation measures for geologic hazards, including seismic shaking, surface rupture (adopts Alquist-Priolo Earthquake Fault Zoning Act), liquefaction, unstable soils and slopes, and flooding.
Riverside County General Plan 2000, Multipurpose Open Space Element	Provides for 'preservation of cultural, historical, archaeological, paleontologic, geologic and educational resources'. Also provides a map showing paleontologic sensitivity in the county.
HAZARDOUS MATERIALS MANAGEMENT	
Federal	
Superfund Amendments and Reauthorization Act of 1986 (42 USC Section 9601 et seq.)	Contains the Emergency Planning and Community Right To Know Act (also known as SARA Title III).

TABLE 1-1 (Continued)
GENERAL LAWS, ORDINANCES, REGULATIONS AND STANDARDS (LORS)

Applicable LORS	Description
HAZARDOUS MATERIALS MANAGEMENT (cont.)	
Federal (cont.)	
Clean Air Act of 1990 (CAA) (42 USC 7401 et seq., as amended)	Establishes a nationwide emergency planning and response program and imposes reporting requirements for businesses that store, handle, or produce significant quantities of extremely hazardous materials.
The CAA section on risk management plans (42 USC Section 112(r))	Requires states to implement a comprehensive system informing local agencies and the public when a significant quantity of such materials is stored or handled at a facility. The requirements of both SARA Title III and the CAA are reflected in the California Health and Safety Code, section 25531, et seq.
49 CFR 172.802	Contains the U.S. Department of Transportation (DOT) requirement that suppliers of hazardous materials prepare and implement security plans.
49 CFR Part 1572, Subparts A and B	Requires suppliers of hazardous materials to ensure that all their hazardous materials drivers are in compliance with personnel background security checks.
Oil Pollution Prevention Regulation (40 CFR 112)	Aims to prevent the discharge or threat of discharge of oil into navigable waters or adjoining shorelines. Requires a written spill prevention, control, and countermeasures (SPCC) plan to be prepared for facilities that store oil that could leak into navigable waters.
49 CFR Part 190	Outlines gas pipeline safety program procedures.
49 CFR Part 191	Addresses transportation of natural and other gas by pipeline: annual reports, incident reports, and safety-related condition reports. Requires operators of pipeline systems to notify the DOT of any reportable incident by telephone and then submit a written report within 30 days.
49 CFR Part 192	Addresses transportation of natural and other gas by pipeline and minimum Federal safety standards, specifies minimum safety requirements for pipelines including material selection, design requirements, and corrosion protection. The safety requirements for pipeline construction vary according to the population density and land use that characterize the surrounding land. This part also contains regulations governing pipeline construction (which must be followed for Class 2 and Class 3 pipelines) and the requirements for preparing a pipeline integrity management program.
Interim Final Rule (6 CFR Part 27)	A regulation of the U.S. Department of Homeland Security that requires facilities that use or store certain hazardous materials to submit information to the Department so that a vulnerability assessment can be conducted to determine what certain specified security measures shall be implemented.
State	
8 CCR Section 5189	Requires facility owners to develop and implement effective safety management plans that ensure that large quantities of hazardous materials are handled safely. While such requirements primarily provide for the protection of workers, they also indirectly improve public safety and are coordinated with the Risk Management Plan (RMP) process.
HSC Section 41700	Requires that “No person shall discharge from any source whatsoever such quantities of air contaminants or other material which causes injury, detriment, nuisance, or annoyance to any considerable number of persons or to the public, or which endanger the comfort, repose, health, or safety of any such persons or the public, or which cause, or have a natural tendency to cause injury or damage to business or property.”
California Safe Drinking Water and Toxic Enforcement Act of 1986 (Proposition 65) (HSC Section 25249.5 et seq.)	Prevents certain chemicals that cause cancer and reproductive toxicity from being discharged into sources of drinking water.
Hazardous Material Business Plan (HSC Sections 25500-25541; 19 CCR Sections 2720- 2734	Requires the submittal of a chemical inventory and planning and reporting for management of hazardous materials.

TABLE 1-1 (Continued)
GENERAL LAWS, ORDINANCES, REGULATIONS AND STANDARDS (LORS)

Applicable LORS	Description
HAZARDOUS MATERIALS MANAGEMENT (cont.)	
State (cont.)	
Hazardous Substance Information and Training Act, 8 CCR Section 339; Section 3200 et seq., 5139 et seq., and 5160 et seq.	8 CCR Section 339 lists hazardous chemicals relating to the Hazardous Substance Information and Training Act; 8 CCR Section 3200 et seq. and Section 5139 et seq. address the control of hazardous substances; 8 CCR Section 5160 et seq. addresses hot, flammable, poisonous, corrosive, and irritant substances. Together, these sections require the listing and implementation of specified control measures for the management of hazardous substances.
HSC Sections 25270-25270.13	Requires the preparation of a Spill Prevention, Control, and Countermeasures (SPCC) Plan if 10,000 gallons or more of petroleum is stored on-site. The regulations would also require the immediate reporting of a spill or release of 42 gallons or more to the California Office of Emergency Services and the Certified Unified Program Authority (CUPA).
Process Safety Management (8 CCR Section 5189)	Requires facility owners to develop and implement effective process safety management plans when toxic, reactive, flammable, or explosive chemicals are maintained on site in quantities that exceed regulatory thresholds.
Local	
Riverside County Fire Code, Riverside County Code Chapter 8.32: Ordinance No. 787	Adopts the California Fire Code, 2007 Edition, with some of its appendices, into Riverside County regulations.
Disclosure of Hazardous Materials and the Formulation of Business Emergency Plans: Riverside County Ordinance 651	Requires disclosure where businesses handle hazardous materials and requires the development of response plans; designates Riverside County Department of Environmental Health as responsible for administration and enforcement of local codes.
PUBLIC HEALTH AND SAFETY	
Federal	
Clean Air Act Section 112 (42 USC Section 7412)	Requires new sources of air pollution that emit more than 10 tons per year of any specified Hazardous Air Pollutant (HAP) or more than 25 tons per year of any combination of HAPs to apply Maximum Achievable Control Technology.
State	
California Safe Drinking Water and Toxic Enforcement Act of 1986 (Proposition 65) (HSC Section 25249.5 et seq.)	Establish thresholds of exposure to carcinogenic substances above which Prop 65 exposure warnings are required.
HSC Section 41700	States that “no person shall discharge from any source whatsoever such quantities of air contaminants or other material which cause injury, detriment, nuisance, or annoyance to any considerable number of persons or to the public, or which endanger the comfort, repose, health, or safety of any such persons or the public, or which cause, or have a natural tendency to cause injury or damage to business or property.”
Air Toxics Hot Spots Program (HSC Section 44300 et seq.)	Requires participation in the inventory and reporting program at the District level.
Air Toxics Hot Spots Information and Assessment Act (HSC Sections 44360–44366)	Requires that, based on results of a Health Risk Assessment (HRA) conducted per CARB/OEHHA guidelines, toxic contaminants do not exceed acceptable levels.
PRC Section 25523(a); 20 CCR Sections 1752.5, 2300–2309 and Div. 2 Chapter 5, Article 1, Appendix B, Part (1); California Clean Air Act, HSC Section 39650, et seq.	Requires a quantitative HRA for new or modified sources, including power plants that emit one or more toxic air contaminants (TACs).

TABLE 1-1 (Continued)
GENERAL LAWS, ORDINANCES, REGULATIONS AND STANDARDS (LORS)

Applicable LORS	Description
PUBLIC HEALTH AND SAFETY (cont.)	
Local	
Mojave Desert Air Quality Management District (MDAQMD) Rule 402	Prohibits the discharge of air contaminants or other material which cause injury, detriment, nuisance, or annoyance to the public; endanger the comfort, repose, health or safety of the public; or cause injury or damage to business or property.
MDAQMD Regulation X Emission Standards for Additional Specific Air Contaminants	Provides notice to the regulated community that California Air Toxic Control measures (ATCMs) are enforceable by the MDAQMD within its jurisdiction and Federal maximum achievable control technology (MACT) and NESHAPS are adopted by reference and enforced by the MDAQMD.
MDAQMD Rule 1320	Requires the use of best available control technology (BACT) and best available control technology for toxics (T-BACT) at certain projects and the preparation of an HRA.
MDAQMD Rule 1520	Implementation of HSC Section 44300 et seq., Air Toxics “Hot Spots” Information and Assessment Act.
SOCIOECONOMICS AND ENVIRONMENAL JUSTICE	
Federal	
Emergency Economic Stabilization Act of 2008 (PL 110-343) Business Solar Investment Tax Credit (Internal Revenue Code Section 48)	Extends the 30 percent investment tax credit (ITC) for solar energy property for eight years through December 31, 2016. The bill allows the ITC to be used to offset both regular and alternative minimum tax (AMT) and waives the public utility exception of current law (i.e., permits utilities to directly invest in solar facilities and claim the ITC). The five-year accelerated depreciation allowance for solar property is permanent and unaffected by passage of the eight-year extension of the solar ITC.
State	
California Revenue and Taxation Code Section 73	Allows property tax exclusion for certain types of solar energy systems.
California Education Code Section 17620	The governing board of any school district is authorized to levy a fee, charge, dedication, or other requirement for the purpose of funding the construction or reconstruction of school facilities.
California Government Code Sections 65996-65997	Except for a fee, charge, dedication, or other requirement authorized under Section 17620 of the Education Code, state and local public agencies may not impose fees, charges, or other financial requirements to offset the cost for school facilities.
TRANSMISSION LINE SAFETY AND NUISANCE (TLSN)	
Federal (Aviation Safety)	
Objects Affecting the Navigable Air Space (14 CFR Part 77)	Describes the criteria used to determine the need for a Federal Aviation Administration (FAA) “Notice of Proposed Construction or Alteration” in cases of potential obstruction hazards.
FAA Advisory Circular No. 70/7460-1G, “Proposed Construction and/or Alteration of Objects that May Affect the Navigation Space”	Addresses the need to file the “Notice of Proposed Construction or Alteration” form (Form 7640) with the FAA in cases of potential for an obstruction hazard.
FAA Advisory Circular 70/460-1G, “Obstruction Marking and Lighting”	Describes the FAA standards for marking and lighting objects that may pose a navigation hazard as established using the criteria in Title 14, Part 77 of the CFR.
Federal (Interference with Radio Frequency Communication)	
47 CFR Section 15.2524, Federal Communications Commission (FCC)	Prohibits operation of devices that can interfere with radio-frequency communication and requires mitigation of any interference by the owner of the source.
State (Interference with Radio Frequency Communication)	
California Public Utilities Commission (CPUC) General Order 52 (GO-52)	Governs the construction and operation of power and communications lines to prevent or mitigate interference.

TABLE 1-1 (Continued)
GENERAL LAWS, ORDINANCES, REGULATIONS AND STANDARDS (LORS)

Applicable LORS	Description
TRANSMISSION LINE SAFETY AND NUISANCE (TLSN) (cont.)	
Local (Audible Noise)	
Riverside County General Plan, Noise Element	Establishes policies and programs to ensure that noise levels are appropriate to land uses.
Riverside County Noise Ordinance	Establishes performance standards for planned residential or other noise-sensitive land uses.
State (Hazardous and Nuisance Shocks)	
Rules for Overhead Electric Line Construction (CPUC GO-95)	Governs clearance requirements to prevent hazardous shocks, grounding techniques to minimize nuisance shocks, and maintenance and inspection requirements.
High Voltage Safety Orders (8 CCR Section 2700 et seq.)	Specifies requirements and minimum standards for safely installing, operating, working around, and maintaining electrical installations and equipment.
National Electrical Safety Code (i.e. National Fire Protection Association [NFPA] 70E)	OSHA adopted the NESC/NFPA 70E which specifies grounding procedures to limit nuisance shocks. Also specifies minimum conductor ground clearances.
Industry Standards (Hazardous and Nuisance Shocks)	
Institute of Electrical and Electronics Engineers (IEEE) 1119, “IEEE Guide for Fence Safety Clearances in Electric-Supply Stations”	Specifies the guidelines for grounding-related practices within the right-of-way and substations.
State (Electric and Magnetic Fields)	
Rules for Planning and Construction of Electric Generation Line and Substation Facilities in California (CPUC GO-131-D)	Specifies application and noticing requirements for new line construction including electromagnetic fields (EMF) reduction.
CPUC Decision 93-11-013	Specifies CPUC requirements for reducing power frequency EMF.
Industry Standards (Electric and Magnetic Fields)	
American National Standards Institute (ANSI/IEEE) 644-1944 Standard Procedures for Measurement of Power Frequency Electric and Magnetic Fields from AC Power Lines	Specifies standard procedures for measuring EMF from an operating electric line.
State (Fire Hazards)	
Fire Prevention Standards for Electric Utilities (14 CCR Sections 1250-1258)	Provides specific exemptions from electric pole and tower firebreak and conductor clearance standards and specifies when and where standards apply.
VISUAL RESOURCES	
Federal	
California Desert Conservation Area (CDCA) Plan	The BSPP is located within the California Desert Conservation Area Plan, which is the BLM Resource Management Plan applicable to the BSPP site (USDOI, 1980, as amended). The CDCA Plan did not include Visual Resource Management (VRM) inventory or management classes. However, a BLM-approved Visual Resource Inventory (VRI) was conducted in 2005 for the Devers-Palo Verde 2 Transmission Line Project EIS/EIR, which covers the site of the proposed action.

TABLE 1-1 (Continued)
GENERAL LAWS, ORDINANCES, REGULATIONS AND STANDARDS (LORS)

Applicable LORS	Description
VISUAL RESOURCES (cont.)	
Federal (cont.)	
California Desert Conservation Area (CDCA) Plan (cont.)	The BSPP site is classified in the CDCA Plan as Multiple-Use Class (MUC) M (Moderate Use). Management of MUC M lands is based upon a controlled balance between higher intensity use and protection of public lands. This class provides for a wide variety of present and future uses such as mining, livestock grazing, recreation, energy, and utility development. Class M management is also designed to conserve desert resources and to mitigate damage to those resources, which permitted uses may cause. Table 1 of the CDCA Plan illustrates the types of allowable land uses by MUC Class. The table specifically includes Electrical Power Generation Facilities including Wind/Solar facilities. Guidance provided under this section allows for the authorization of such facilities within MUC M lands in compliance with NEPA requirements. New major electric transmission facilities may be allowed only within designated utility corridors. Existing facilities within designated utility corridors may be maintained and upgraded or improved in accordance with existing rights-of-way or amendments to right-of- way grants.
State	
State Scenic Highway Program (California Streets and Highways Code Sections 260-263)	The California State Department of Transportation (Caltrans) identifies a state system of eligible and designated scenic highways which, if designated, are subject to various controls intended to preserve their scenic quality. Interstate 10 within the project viewshed is not listed as an eligible State Scenic Highway.
Local	
Riverside County Integrated Plan LU-4 Relating to Project Design	*LU 4.1*: Requires that new developments be located and designed to visually enhance, not degrade the character of the surrounding area through consideration of the following concepts: c. Require that an appropriate landscape plan be submitted and implemented for development projects subject to discretionary review. d. Require that new development utilize drought- tolerant landscaping and incorporate adequate drought-conscious irrigation systems. l. Mitigate noise, odor, lighting, and other impacts on surrounding properties. m. Provide and maintain landscaping in open spaces and parking lots. n. Include extensive landscaping. o. Preserve natural features, such as unique natural terrain, drainage ways, and native vegetation, wherever possible, particularly where they provide continuity with more extensive regional systems. p. Require that new development be designed to provide adequate space for pedestrian connectivity and access, recreational trails, vehicular access and parking, supporting functions, open space, and other pertinent elements.
	LU 4.2: Require property owners to maintain structures and landscaping to a high standard of design, health, and safety through the following: c. Promote and support community and neighborhood based efforts for the maintenance, upkeep, and renovation of structures and sites.
County Scenic Corridors	*LU 13.1*: Preserve and protect outstanding scenic vistas and visual features for the enjoyment of the traveling public. *LU 13.3*: Ensure that the design and appearance of new landscaping, structures, equipment, signs, or grading within Designated and Eligible State and County scenic highway corridors are compatible with the surrounding scenic setting or environment.

TABLE 1-1 (Continued)
GENERAL LAWS, ORDINANCES, REGULATIONS AND STANDARDS (LORS)

Applicable LORS	Description
VISUAL RESOURCES (cont.)	
Local (cont.)	
County Scenic Corridors (cont.)	*LU 13.7*: Require that the size, height, and type of on-premise signs visible from Designated and Eligible State and County Scenic Highways be the minimum necessary for identification. The design, materials, color, and location of the signs shall blend with the environment, utilizing natural materials where possible. *LU 13.8*: Avoid the blocking of public views by solid walls.
The following policies apply to properties designated as Open Space-Rural on the area plan land use maps.	*LU 20.1*: Require that structures be designed to maintain the environmental character in which they are located. *LU 20.2*: Require that development be designed to blend with undeveloped natural contours of the site and avoid an unvaried, unnatural, or manufactured appearance.
	LU 20.3: Require that adequate and available circulation facilities, water resources, sewer facilities, and/or septic capacity exist to meet the demands of the proposed land use. *LU 20.4*: Ensure that development does not adversely impact the open space and rural character of the surrounding area.
WASTE MANAGEMENT	
Federal	
Solid Waste Disposal Act of 1965 (as amended and revised by the Resource Conservation and Recovery Act of 1976, et al.) (42 USC Section 6901 et seq.)	The Solid Waste Disposal Act, as amended and revised by the Resource Conservation and Recovery Act (RCRA) etc., establishes requirements for the management of solid wastes (including hazardous wastes), landfills, underground storage tanks, and certain medical wastes. The statute also addresses program administration, implementation and delegation to states, enforcement provisions, and responsibilities, as well as research, training, and grant funding provisions. RCRA Subtitle C establishes provisions for the generation, storage, treatment, and disposal of hazardous waste, including requirements addressing: Generator record keeping practices that identify quantities of hazardous wastes generated and their disposition; Waste labeling practices and use of appropriate containers; Use of a manifest when transporting wastes; Submission of periodic reports to the United States Environmental Protection Agency (U.S. EPA) or other authorized agency; and Corrective action to remediate releases of hazardous waste and contamination associated with RCRA-regulated facilities. RCRA Subtitle D establishes provisions for the design and operation of solid waste landfills. RCRA is administered at the Federal level by U.S. EPA and its 10 regional offices. The Pacific Southwest regional office (Region 9) implements U.S. EPA programs in California, Nevada, Arizona, and Hawaii.
Comprehensive Environmental Response, Compensation and Liability Act (Superfund) (42 USC Section 9601 et seq.)	Establishes authority and funding mechanisms for cleanup of uncontrolled or abandoned hazardous waste sites, as well as cleanup of accidents, spills, or emergency releases of pollutants and contaminants into the environment. Among other things, the statute addresses: Reporting requirements for releases of hazardous substances; Requirements for remedial action at closed or abandoned hazardous waste sites, and brownfields; Liability of persons responsible for releases of hazardous substances or waste; and

TABLE 1-1 (Continued)
GENERAL LAWS, ORDINANCES, REGULATIONS AND STANDARDS (LORS)

Applicable LORS	Description
WASTE MANAGEMENT (cont.)	
Federal (cont.)	
Comprehensive Environmental Response, Compensation and Liability Act (Superfund) (42 USC Section 9601 et seq.) (cont.)	Requirements for property owners/potential buyers to conduct "all appropriate inquiries" into previous ownership and uses of the property to 1) determine if hazardous substances have been or may have been released at the site, and 2) establish that the owner/buyer did not cause or contribute to the release. A Phase I Environmental Site Assessment is commonly used to satisfy CERCLA "all appropriate inquiries" requirements.
40 CFR Subchapter I – Solid Wastes	Implements the provisions of the Solid Waste Disposal Act and RCRA (described above). Among other things, the regulations establish the criteria for classification of solid waste disposal facilities (landfills), hazardous waste characteristic criteria and regulatory thresholds, hazardous waste generator requirements, and requirements for management of used oil and universal wastes. Part 257 addresses the criteria for classification of solid waste disposal facilities and practices. Part 258 addresses the criteria for municipal solid waste landfills. Parts 260 through 279 address management of hazardous wastes, used oil, and universal wastes (i.e., batteries, mercury-containing equipment, and lamps). U.S. EPA implements the regulations at the Federal level. However, California is an RCRA-authorized state, so most of the solid and hazardous waste regulations are implemented by state agencies and authorized local agencies in lieu of U.S. EPA.
Hazardous Materials Regulations (49 CFR Parts 172 and 173)	Address the U.S. Department of Transportation (DOT) established standards for transport of hazardous materials and hazardous wastes. The standards include requirements for labeling, packaging, and shipping of hazardous materials and hazardous wastes, as well as training requirements for personnel completing shipping papers and manifests. Section 172.205 specifically addresses use and preparation of hazardous waste manifests in accordance with 40 CFR Section 262.20.
Clean Water Act (33 USC Section 1251 et seq.)	The Clean Water Act governs the discharge of wastewater to surface waters of the U.S.
State	
Hazardous Waste Control Act of 1972, as amended (HSC Section 25100 et seq.)	Creates the framework under which hazardous wastes are managed in California. The law provides for the development of a state hazardous waste program that administers and implements the provisions of the Federal RCRA program. It also provides for the designation of California-only hazardous wastes and development of standards (regulations) that are equal to or, in some cases, more stringent than Federal requirements. The California Environmental Protection Agency (Cal/EPA), Department of Toxic Substances Control (DTSC) administers and implements the provisions of the law at the state level. Certified Unified Program Agencies (CUPAs) implement some elements of the law at the local level.
Environmental Health Standards for the Management of Hazardous Waste (22 CCR Div. 4.5, Section 66001 et seq.)	Establish requirements for the management and disposal of hazardous waste in accordance with the provisions of the California Hazardous Waste Control Act and Federal RCRA. As with the Federal requirements, waste generators must determine if their wastes are hazardous according to specified characteristics or lists of wastes. Hazardous waste generators must obtain identification numbers; prepare manifests before transporting the waste off site; and use only permitted treatment, storage, and disposal facilities. Generator standards also include requirements for record keeping, reporting, packaging, and labeling. Additionally, while not a Federal requirement, California requires that hazardous waste be transported by registered hazardous waste transporters. The standards addressed by 22 CCR include: Identification and Listing of Hazardous Waste (Ch. 11, Section 66261.1 et seq.). Standards Applicable to Generator of Hazardous Waste (Ch. 12, Section 66262.10 et seq.).

TABLE 1-1 (Continued)
GENERAL LAWS, ORDINANCES, REGULATIONS AND STANDARDS (LORS)

Applicable LORS	Description
WASTE MANAGEMENT (cont.)	
State (cont.)	
Environmental Health Standards for the Management of Hazardous Waste (22 CCR Div. 4.5, Section 66001 et seq.) (cont.)	Standards Applicable to Transporters of Hazardous Waste (Ch. 13, Section 66263.10 et seq.). Standards for Universal Waste Management (Ch. 23, Section 66273.1 et seq.). Standards for the Management of Used Oil (Ch. 29, Section 66279.1 et seq.). Requirements for Units and Facilities Deemed to Have a Permit by Rule (Ch. 45, Section 67450.1 et seq.). The Title 22 regulations are established and enforced at the state level by DTSC. Some generator and waste treatment standards are also enforced at the local level by CUPAs.
Unified Hazardous Waste and Hazardous Materials Management Regulatory Program (Unified Program) (HSC Ch. 6.11, Sections 25404–25404.9)	Consolidates, coordinates, and makes consistent the administrative requirements, permits, inspections, and enforcement activities of the six environmental and emergency response programs listed below. Aboveground Petroleum Storage Act requirements for Spill Prevention, Control, and Countermeasure (SPCC) Plans. Hazardous Materials Release and Response Plans and Inventories (Business Plans). California Accidental Release Prevention (CalARP) Program. Hazardous Materials Management Plan / Hazardous Materials Inventory Statements. Hazardous Waste Generator / Tiered Permitting Program. Underground Storage Tank Program. The state agencies responsible for these programs set the standards for their programs while local governments implement the standards. The local agencies implementing the Unified Program are known as CUPAs. Note: The Waste Management analysis only considers application of the Hazardous Waste Generator/Tiered Permitting element of the Unified Program.
Unified Hazardous Waste and Hazardous Materials Management Regulatory Program (27 CCR Div. 1, Subdiv, 4, Ch. 1, Section 15100 et seq.)	While these regulations primarily address certification and implementation of the program by the local CUPAs, the regulations do contain specific reporting requirements for businesses. Article 9 – Unified Program Standardized Forms and Formats (Sections 15400–15410). Article 10 – Business Reporting to CUPAs (Sections 15600–15620).
California Integrated Waste Management Act of 1989 (CIWMA) (PRC Div. 30, Section 40000 et seq.)	Establishes mandates and standards for management of solid waste in California. The law addresses solid waste landfill diversion requirements; establishes the preferred waste management hierarchy (source reduction first, then recycling and reuse, and treatment and disposal last); sets standards for design and construction of municipal landfills; and addresses programs for county waste management plans and local implementation of solid waste requirements.
California Integrated Waste Management Board (14 CCR Div, 7, Section 17200 et seq.)	Implement the provisions of the CIWMA and set forth minimum standards for solid waste handling and disposal. The regulations include standards for solid waste management, as well as enforcement and program administration provisions. Chapter 3 – Minimum Standards for Solid Waste Handling and Disposal. Chapter 3.5 – Standards for Handling and Disposal of Asbestos Containing Waste. Chapter 7 – Special Waste Standards. Chapter 8 – Used Oil Recycling Program. Chapter 8.2 – Electronic Waste Recovery and Recycling.

TABLE 1-1 (Continued)
GENERAL LAWS, ORDINANCES, REGULATIONS AND STANDARDS (LORS)

Applicable LORS	Description
WASTE MANAGEMENT (cont.)	
State (cont.)	
Hazardous Waste Source Reduction and Management Review Act of 1989 (HWSRMRA) (HSC Div. 20, Ch. 6.5, Art. 11.9, Section 25244.12 et seq.)	Expands the state's hazardous waste source reduction activities. Among other things, it establishes hazardous waste source reduction review, planning, and reporting requirements for businesses that routinely generate more than 12,000 kilograms (approximately 26,400 pounds) of hazardous waste in a designated reporting year. The review and planning elements are required to be done on a four-year cycle, with a summary progress report due to DTSC every fourth year.
Hazardous Waste Source Reduction and Management Review (22 CCR Section 67100.1 et seq.)	Implement the provisions of the HWSRMRA. The regulations establish the specific review elements and reporting requirements to be completed by generators subject to the act.
23 CCR Div. 3, Ch. 16 and 18	Relate to hazardous material storage and petroleum UST cleanup, as well as hazardous waste generator permitting, handling, and storage. The DTSC Imperial County CUPA is responsible for local enforcement.
Local	
County of Riverside General Plan, Safety Element: Policy S 6.1	Describes the County's policies and siting criteria identified in the County of Riverside Hazardous Waste Management Plan including coordination of hazardous waste facility responsibilities on a regional basis through the Southern California Hazardous Waste Management Authority
Riverside County Code Title 8 Chapters 8.60, 8.84, and 8.132, Health and Safety	Establishes requirements for the use, generation, storage, and disposal of hazardous and non-hazardous materials and wastes within the County.
Riverside County Code, Chapter 8.32, Ordinance No. 787, Fire	Adopts the 2007 California Fire Code.
WORKER SAFETY AND FIRE PROTECTION	
Federal	
Occupational Safety and Health Act of 1970 (29 USC Section 651 et seq.)	Mandates safety requirements in the workplace with the purpose of "[assuring] so far as possible every working man and woman in the nation safe and healthful working conditions and to preserve our human resources" (29 USC Section 651).
Occupational Safety and Health Administration Safety and Health Regulations (29 CFR Sections 1910.1-1910.1500)	Define the procedures for promulgating regulations and conducting inspections to implement and enforce safety and health procedures to protect workers, particularly in the industrial sector.
29 CFR Sections 1952.170-1952.175	Provide Federal approval of California's plan for enforcement of its own Safety and Health requirements, in lieu of most of the Federal requirements found in 29 CFR sections 1910.1 to 1910.1500.
State	
Cal/OSHA regulations (8 CCR all applicable sections)	Require that all employers follow these regulations as they pertain to the work involved, including regulations pertaining to safety matters during construction, commissioning, and operations of power plants, as well as safety around electrical components, fire safety, and hazardous materials use, storage, and handling.
24 CCR Section 3 et seq.	Incorporate the current edition of the Uniform Building Code.
HSC Section 25500 et seq.	Present Risk Management Plan requirements for threshold quantities of listed acutely hazardous materials at a facility.
HSC Sections 25500-25541	Require a Hazardous Material Business Plan detailing emergency response plans for hazardous materials emergency at a facility.

TABLE 1-1 (Continued)
GENERAL LAWS, ORDINANCES, REGULATIONS AND STANDARDS (LORS)

Applicable LORS	Description
WORKER SAFETY AND FIRE PROTECTION (cont.)	
Local	
Riverside County Ordinance 457	Adopts specific building, mechanical, plumbing, and electrical codes from sources such as the California Building Standards Commission with county-specific modifications.
Riverside County Ordinance 787	Adopts the 2007 edition of the California Fire Code and portions of the 2007 edition of the California Building Code with county-specific modifications.
Riverside County Ordinance 615	Establishes requirements for the use, generation, storage and disposal of hazardous materials within the County.
Riverside County Dept. of Environmental Health, Hazardous Materials Releases	Adopts State requirements and guidelines to govern hazardous materials release response plans and inventories.
Chapter 22 of the 2007 California Fire Code	Addresses requirements for Motor Fuel-Dispensing Facilities and Repair Garages. It has been adopted by Riverside County and will apply to the fuel depot at the site.
NFPA 30a	This is the NFPA code for Motor Fuel Dispensing Facilities and Repair Garages (2008 Edition) and is the industry standard for fuel depots.
NOISE	
Federal	
Occupational Safety & Health Act (OSHA): 29 U.S.C. Section 651 et seq.	Protects workers from the effects of occupational noise exposure.
State	
California Occupational Safety & Health Act (Cal-OSHA): 29 U.S.C. Section 651 et seq., Cal. Code Regs., tit. 8, Sections 5095-5099	Protects workers from the effects of occupational noise exposure. Note, These standards are equivalent to federal OSHA standards
Local	
Riverside County General Plan, Noise Element	Establishes goals, objectives, and procedures to protect the public from noise intrusion. Land use compatibility defines the acceptability of a land use in a specified noise environment. For residential land uses, these guidelines categorize noise levels of up to 60 dBA day/night average sound level (Ldn) or CNEL as “normally acceptable” and up to 70 dBA Ldn or CNEL as “conditionally acceptable.”
Riverside County Noise Ordinance, Ordinance 847	Section 4 of Ordinance No. 847 (Regulating Noise) limits noise on any property that causes the exterior noise level on any other occupied property to 55 dBA during the daytime hours and 45 dBA during the nighttime hours, for noise-sensitive receptors[2] within a very low density rural area, such the area surrounding the site. Also limits the hours of construction activities to the hours of 6:00 a.m. to 7:00 p.m., June through September, 6:00 a.m. to 6:00 p.m., October through May, Mondays through Fridays, and to 9:00 a.m. to 5:00 p.m. on Saturdays.

Also see Appendix B, which describes the Federal Laws, Regulations and Executive Orders that apply to BLM-administered lands in the action area.

[2] A sensitive noise receptor, also referred to as a noise-sensitive receptor, is a receptor at which there is a reasonable degree of sensitivity to noise (such as residences, schools, hospitals, elder care facilities, libraries, cemeteries, and places of worship).

1.6 Interagency Coordination

The BLM and CEC seek comments from and work closely with other regulatory agencies that administer LORS that may be applicable to the proposed action. These agencies may include the U.S. Environmental Protection Agency, U.S. Fish and Wildlife Service, U.S. Army Corps of Engineers, State Water Resources Control Board/Regional Water Quality Control Board, State Historic Preservation Office, California Department of Fish and Game, and the Mojave Desert Air Quality Management District. On December 21, 2009, the CEC staff sent the BSPP AFC to all local, state, and Federal agencies that might be affected by or have an interest in the proposed action.

The BLM has notified affected Indian Tribes regarding the proposed action, has sought their comments, and has invited them to consult on the BSPP on a government-to government basis. The affected Indian Tribes are currently working with the BLM.

1.7 Issues Addressed in the NEPA Analysis

The BLM solicited internal and external input on the issues, impacts, and potential alternatives to be addressed in the EIS for the BSPP, as well as the extent to which those issues and impacts would be analyzed in the document. This process is called “scoping” (40 CFR 1501.7). Internal input was provided by BLM and cooperating agency staff, as an interdisciplinary process, to help define issues, alternatives, and data needs. External scoping involved notification and opportunities for feedback from other agencies, organizations, tribes, local governments, and the public. Formal public scoping begins following publication of a Notice of Intent (NOI) to prepare an environmental impact statement for a proposed action.

The NOI for the BSPP was published in the Federal Register on November 23, 2009. On December 11, 2009, BLM held a Scoping Meeting at the University of California-Riverside, Palm Desert Campus. A draft scoping report was released for public review and comment in January 2010. BLM gave a presentation at and participated in the CEC’s January 25, 2010, Informational Hearing in Blythe, California, and Site Visit for BSPP. In addition to property owners in the vicinity of the proposed BSPP and other interested parties, notification was provided to Federal, state and local public interest and regulatory organizations with an expressed or anticipated interest in the proposed action. Also, elected and certain appointed officials were similarly notified of the hearing and site visit. The issues, impacts, and potential alternatives to be addressed in the EIS for the BSPP were identified during this scoping process. See Appendix C, Results of Scoping.

CHAPTER 2
Proposed Action and Alternatives

On March 16, 2007, the BLM Palm Springs-South Coast Field Office received an Application for Transportation and Utility Systems and Facilities on Federal Lands to construct, operate, maintain and decommission the Blythe Solar Power Plant Project (BSPP) on BLM-administered lands in Eastern Riverside County, California. The proposed action would be located in the California inland desert, approximately eight miles west of the city of Blythe and three miles north of the Interstate-10 freeway (see, Figure 1). Palo Verde Solar I[1] (Applicant) is seeking a right-of-way (ROW) grant for approximately 9,400 acres. Construction and operation of the BSPP would disturb a total of about 7,025 acres. Remaining acreage that would not be disturbed may not be part of the ROW grant.

2.1 Proposed Land Use Plan Amendment Decisions and Alternatives

The Applicant has applied for a ROW and did not request a CDCA Plan amendment directly. Nonetheless, the BLM has determined that a CDCA Plan amendment would be required if a ROW were granted for a solar power generating facility on the proposed site. Regardless of whether the proposed project is approved, the BLM could elect to amend the CDCA Plan. Consequently, the following range of outcomes of the BLM's potential CDCA Plan amendment process is as follows:

PA1 – The CDCA Plan (1980, as amended) would be amended to identify the footprint of the BSPP site as suitable for the proposed type of solar energy development. (This is the proposed land use plan amendment.)

PA2 – The CDCA Plan (1980, as amended) would not be amended. (This is No Action Alternative A, discussed below.)

PA3 – The CDCA Plan (1980, as amended) would be amended to identify the BSPP application area as unsuitable for any type of solar energy development. (This is CDCA Plan Amendment/No Action Alternative B, discussed below.)

PA4 – The CDCA Plan (1980, as amended) would be amended to identify the BSPP application area as suitable for any type of solar energy development. (This is CDCA Plan Amendment/No Action Alternative C, discussed below.)

[1] Chevron Energy Solutions and Solar Millennium have a joint development agreement. Chevron Energy Solutions applied for the Right of Way for Blythe Solar Power Project. To facilitate the permitting of the Blythe Solar Power Project (BSPP), the Applicant is requesting that the BLM issue one right of way grant to a Project- specific company. The company for BSPP is Palo Verde Solar I, LLC a wholly owned subsidiary of Solar Millennium and the single Applicant for the BSPP.

2.2 Proposed Action

2.2.1 Introduction

The Applicant has filed an application for a ROW to construct, operate, maintain and decommission the BSPP and bundled double circuit 230 kV power transmission line (gen-tie) on BLM-administered land. The BSPP would consist of four adjacent, independent, identical power block units (Units) of 250 MW nominal capacity each for a total nominal capacity of 1,000 MW commercial solar parabolic trough generating station and ancillary facilities (see Figures 2a and 2b).

The Applicant proposes to develop the BSPP in four phases, which are designed to generate a combined total of approximately 1000 MW of electricity. The first two phases of the proposed action, BSPP Units 1 and 2, are designed to provide a combined total of approximately 500 MW of electricity and would occupy an estimated 1600 acres each; the third and fourth phases, BSPP Units 3 and 4, would provide a combined total of approximately 500 MW of electricity and occupy an estimated 1200 acres each (see Figure 3 for a solar unit detail).

All four phases would share the following onsite facilities: administration building, parking area, maintenance building, switchyard, bioremediation areas, wastewater treatment facilities, access and maintenance roads (either dirt, gravel or paved), perimeter fencing, central gas pipeline, a distribution line, fiber optics line, and water wells. Shared offsite facilities include access to the site, a distribution line gas pipeline, fiber optics lines, and a double circuit 230 kV gen-tie line that would connect into the power grid at the planned Southern California Edison Colorado River Substation approximately 5 miles southwest of the BSPP.

The total permanent footprint of the on-site BSPP facilities would be fenced and including rerouting drainage channels would be approximately 6,840 acres. The proposed off-site linear facilities would be approximately 185 acres. The total estimated permanent footprint is approximately 7,025 acres.

The proposed site is located in the California inland desert within the Palo Verde Groundwater Basin, approximately eight miles west of Blythe, three miles north of Highway I-10 and approximately one mile northwest of the Blythe airport (see Figure 1) Riverside County, California.

Current access to the site is from Exit #232, Airport/Mesa Drive on I-10 via Mesa Drive Road (see Figure 6).

The Proposed Action request a ROW grant for the following-described BLM-administered land (see Figure 7):

San Bernardino Base and Meridian

Township 6 South, Range 22 East,
Sections 6 and 7;
Section 18, N½NW¼, N½NW¼, SW¼NW¼.

Township 6 South, Range 21 East,
Section 1- 4 inclusive;
Section 5, E½;
Section 8, E½;
Section 9 and 10;
Section 11, N½, SW¼;
Section 12 and 13;
Section 14, N½, SE¼; SW¼SE¼
Section 15 and 23;
Section 24, NW¼;
Section 26, W½W½;
Section 35, NW¼, W½SE¼.

Township 7 South, Range 21 East,
Section 2, E½NW¼, SW¼;
Section 3, S½S½;
Section 4, S½S½;
Section 5, S½S½;
Section 6, E½SE¼.

2.2.2 Structures and Facilities

The BSPP would consist of four adjacent, independent, and identical units of 250 megawatt (MW) nominal capacity each, for a total nominal capacity of 1,000 MW (see Figures 2a and 2b).

The BSPP would utilize solar parabolic trough technology to generate electricity. With this technology, arrays of parabolic mirrors collect heat energy from the sun and refocus the radiation on a receiver tube located at the focal point of the parabola. A heat transfer fluid (HTF) is heated to high temperature (750 degrees Fahrenheit (°F)) as it circulates through the receiver tubes. The heated HTF is then piped through a series of heat exchangers, where it releases its stored heat to generate high-pressure steam. The steam is then fed to a traditional steam turbine generator, where electricity is produced.

Each of the four solar field systems operates under the control of its Field Supervisor Controller (FSC), which is a computer located at each plant's central control room.

The FSC collects information from each Solar Collector Assembly (SCA) and issues instructions to the SCAs. Some of the FSC functions include deploying the solar field during the day as weather and facility availability permit, and stowing it at night and during high winds (in high wind conditions, the solar field must be stowed).

A weather station located in each power block provides real-time measurements of weather conditions that affect the solar field operation. Radiation data is used to determine the performance of the solar field.

The FSC communicates all relevant conditions to the solar power plant's distributed control system (DCS). The DCS coordinates and integrates power block areas, the HTF system, and solar field operation.

Major Project Components

The major components and features of the proposed BSSP include (see Figures 2a and 2b):

1. Power Block Unit #1 (northeast);
2. Power Block Unit #2 (northwest);
3. Power Block Unit #3 (southwest);
4. Power Block Unit #4 (southeast);
5. Access road from Black Rock Road to onsite office;
6. Office and parking;
7. Land Treatment Unit (LTU) for bioremediation/land farming of HTF-contaminated soil;
8. Warehouse/maintenance building and laydown area;
9. Onsite transmission facilities, including central internal switchyard;
10. Dry wash rerouting; and
11. Groundwater wells used for water supply.

The four proposed power blocks are identical in design (see Figure 3). The descriptions below apply to all four power blocks in all four units. Major components of each power block include:

1. Steam generation heat exchangers;
2. HTF overflow and expansion vessels;
3. One HTF freeze protection heat exchanger;
4. One auxiliary boiler;
5. One steam turbine-generator (STG);
6. One generator step up transformer (GSU);
7. Air cooled condenser (ACC);
8. One wet cooling tower for ancillary equipment;
9. Water filter system and clarifier system;
10. Combination firewater/clarified water tank;
11. Reverse osmosis (RO) reject water surge tank;
12. Potable water system;
13. Demineralized water system;
14. Demineralized water tank;
15. High pH reverse osmosis (HERO) waste water recovery system;
16. Recovered water surge tank;
17. Sanitary water septic systems and leach fields;
18. Evaporation waste stream pond(s);
19. Water, natural gas, and HTF pipelines exiting the power block;
20. Operations and maintenance buildings; and
21. Transmission and telecommunications lines exiting the power block.

General Project Dimensions

The general project dimensions are as follows (see Figures 2a and 2b):

1. Total proposed ROW area: 9,400 acres
2. Disturbance area (total area within ROW disturbed by construction and operation including approximately 1,100 acres outside the facility footprint, mostly rerouted drainage channels): 7,025 acres
3. Facility footprint (total area within disturbance area that is inside security fencing encompassing all four units): 5,950 acres[2]
4. Power Plant Units 1 and 2 (solar field and power block): 1,600 acres each
5. Power Plant Units 3 and 4 (solar field and power block): 1,200 acres each
6. Each solar field includes a power block - approximately 1547 feet x 535 feet, general height 60 feet, ACC height 120 feet (9 acres)
7. Parking area: approximately 40,600 square feet (.93 acres)
8. Administration building: 10,000 square feet (.23 acres)
9. Laydown area: approximately 47.5 acres
10. Includes warehouse/assembly hall: 197 feet x 558 feet x 36 feet (approximately 2.52 acres)
11. Substation/switchyard: 250,000 square feet (5.74 acres)
12. Unpaved access roads: (onsite) 52.6 miles x 24 feet (153.11 acres)
13. Paved access road (onsite and offsite): approximately 11,000 feet x 24 feet wide (6.06 acres)
14. Natural gas pipeline : 4 inches diameter x 9.8 miles long(approximately 8 miles on-site)
15. Gen tie line (onsite): 120 feet x 15,500 feet (approximately 3 miles) = 43 acres
16. Gen tie line (offsite): interconnecting at the proposed Colorado River substation- 35,500 feet (approximately 6.5 miles) x 225 feet = 183 acres (includes 100 feet x 100 feet site for each transmission tower)
17. Bioremediation/land treatment areas: 360,000 square feet (8.26 acres)
18. Domestic septic system/leach field: approximately 22,000 square feet (0.51 acres)
19. Gen-tie transmission towers: Heights range from 90 (along the north-south span) to 145 feet. Final structure heights and corresponding span lengths would meet Federal Aviation Administration (FAA) requirements for the nearby Blythe Airport

[2] Excludes off-site linear facilities (gen-tie transmission line, gas pipeline, distribution line, fiber optics line, and off-site access)

2.2.3 Construction

Project construction is expected to occur over a total of 69 months. Project construction would require an average of 604 employees over the entire 69-month construction period, with manpower requirements peaking at approximately 1,004 workers in Month 16 of construction. The construction workforce would consist of a range of laborers, craftsmen, supervisory personnel, support personnel, and management personnel.

Temporary construction parking areas would be provided within the BSPP site adjacent to the laydown area. The solar power plant laydown area would be utilized throughout the build out of the four solar units. The construction sequence for power plant construction includes the following general steps:

Site Preparation

This would include detailed construction surveys, mobilization of construction staff, grading, and preparation of drainage features. Grading for the solar fields, power blocks, and drainage channels would be completed during the first 55 months of the construction schedule.

Linears

This would include the site access road, telecommunication line, natural gas pipeline, and transmission line. The site access road and telecommunication line for Unit #1 would be constructed during the first nine months of the construction schedule in conjunction with plant site preparation activities. The natural gas pipeline, electric transmission lines, and telecommunications lines would be constructed during the first 18 months of the construction schedule.

Foundations

This would include excavations for large equipment (STG, SSG, GSU, etc.), footings for the solar field, and ancillary foundations in the power block.

Major Equipment Installation

Once the foundations are complete, the larger equipment would be installed. The solar field components would be assembled in an onsite erection facility and installed on their foundations.

Drainage and Earthwork

Drainage would be constructed in two phases: Phase One would accommodate the necessary drainage for the construction of Units 1 & 2; Phase Two would accommodate the drainage plan for the entire four unit facility. In Phase One, two of the five major channels would be built for Units 1 and 2: the entire length of the North Channel plus diffuser, and the entire length of the Central channel plus diffuser. Only the portion of the West channel that bounds the southwest corner of Unit 2 would be constructed; the remainder of the West channel would not be needed until Units 3 and 4 are built. The southern boundary of Unit 2 would be protected with a berm from the West channel eastward to the point where the Central channel begins. Arizona crossings (roadway dips) would be employed to provide adequate drainage across the access road into the site. Phase Two would implement the fully constructed drainage plan for the entire facility.

Construction Water

Construction water requirements cover all construction-related activities including:

1. Dust control for areas experiencing construction work as well as mobilization and demobilization,
2. Dust control for roadways,
3. Water for grading activities associated with both cut and fill work,
4. Water for soil compaction in the utility and infrastructure trenches,
5. Water for soil compaction of the site grading activities,
6. Water for stockpile sites,
7. Water for the various building pads,
8. Water for concrete pours on site, and
9. Concrete batch plant operations.

The predominant use of water would be for grading activities, which would have a steady rate of work each month. The grading schedule for the site has been spread to cover the total construction period and there should be no definable peak but rather a steady state condition of water use. The average water use for the proposed action is estimated to be about 645,000 gallons per calendar day. Total water use for the duration of construction is estimated to be about 4,100 acre feet. Construction water would be sourced from onsite wells. Potable water during construction would be brought on site in trucks and held in day tanks.

Concrete Batch Plant

With the estimated concrete volume of approximately 125,000 cubic yards per solar plant, an onsite batch plant would be utilized to provide concrete for the solar fields and power block foundations and pads. The batch plant would have a production capacity of 150 cubic yards per hour and operate 10 hours per day, five days a week. Night operation of the batch plant likely would be required to overcome the difficulty of performing concrete placement in extremely high ambient temperatures. It would consist of a series of storage bins and piles, conveyors, mixers, ice storage and chipper, and would include a 75 kW power supply (with diesel generator if needed) and provision for dust control. Concrete would be transported from the batch plant to the placement area via a fleet of eight concrete trucks. The batch plant would be movable and would be deployed to the current area of work at the power blocks or main warehouse area.

Fuel Depot

A fuel depot would be constructed to refuel, maintain, and wash construction vehicles, and would occupy an area of approximately 75 feet x 150 feet. It would consist of a fuel farm with two 2000-gallon on-road vehicle diesel tanks, two 8,000-gallon off-road vehicle diesel tanks, one 500-gallon gasoline tank, and one wash water holding tank. The fuel farm would include secondary spill containment, a covered maintenance area also with secondary containment, and a concrete pad for washing vehicles.

Construction Power

Construction power would be provided to the site from the Southern California Edison (SCE) 12.47 kV distribution line routed to the site from SCE's distribution poles one mile east of BSPP at the corner of Sixth Avenue and Davis Street.[3] The BSPP would include construction of a 12.47 kV internal distribution system and step down transformers to provide power as needed for construction operations.

Construction Wastewater

Sanitary wastes produced during construction would be held in chemical toilets and transported offsite for disposal by a commercial chemical toilet service. Any other hazardous wastewater produced during construction, such as equipment rinse water, would be collected by the construction contractor in Baker tanks and transported off site for disposal in a manner consistent with applicable regulatory requirements.

Waste Management

Non-Hazardous Solid Waste

Non-hazardous solid wastes may be generated by construction, operation, and maintenance of the proposed action; if so, such wastes would be typical of power generation facilities and may include scrap metal, plastic, insulation material, glass, paper, empty containers, and other solid wastes. Disposal of these wastes would be accomplished by contracted solid refuse collection and recycling services.

Hazardous Solid and Liquid Waste

Limited hazardous wastes would be generated during construction and operation. During construction, these wastes may include paint and paint-related wastes (e.g., primer, paint thinner and other solvents), equipment cleaning wastes and spent batteries. During BSPP operation, these wastes may include used oils, hydraulic fluids, greases, filters, spent cleaning solutions, spent batteries, and spent activated carbon. Both construction and operation-phase hazardous waste would be recycled and reused to the maximum extent possible. All wastes that could not be

[3] The distribution line would be wholly owned and operated by SCE. It would be used to provide power during the construction phase of the proposed action. SCE would retain the facility after construction is completed.

recycled and any waste remaining after recycling would be disposed of in accordance with all applicable laws, ordinances, regulations and standards (LORS).

Hazardous Materials

There would be a variety of hazardous materials used and stored during construction and operation of the proposed action. Hazardous materials that would be used during construction include gasoline, diesel fuel, oil, lubricants, and small quantities of solvents and paints. All hazardous materials used during construction and operation would be stored onsite in storage tanks/vessels/containers that are specifically designed for the characteristics of the materials to be stored. Bulk storage tanks or totes will have secondary containment structures capable of holding the tank or tote volume plus an allowance for precipitation. Concrete containment structures will be coated with a chemical resistant coating to ensure long-term integrity of the containment structure. Aboveground carbon steel tanks (300 gallons each) also would be used to store diesel fuel at each power block. Secondary containment would be provided for these tanks.

2.2.4 Operation and Maintenance

The Operations & Maintenance (O&M) workforce would be comprised of approximately 221 people. The Applicants will establish an Operations and Maintenance Service Company to operate and maintain the plant. Personnel for the O&M Services Company would be made up of staff who would be intimately involved in plant commissioning and acceptance testing.

Management and supervision of the proposed action would be centered within the solar field maintenance organization. Skilled personnel would be assigned to conduct expedient maintenance and mirror washing. The primary responsibility of “field operators” would be to monitor, in considerable detail, the condition and repair needs of the solar field.

Data Control System (DCS)

At each solar field, a DCS containing several automation units would control the HTF and steam loops and all auxiliary plant systems, and determine the appropriate operating sequences for them. It also would monitor and record the primary operating parameters and functions as the primary interface for system control.

The DCS would communicate with all subsystem controls, including electrical system equipment, steam cycle controllers, variable frequency drives and balance-of-plant system controllers via serial data communication. It would receive analog and digital inputs/outputs from all instruments and equipment not served directly by dedicated local controllers. The DCS would control both the steam and HTF cycles directly, operating rotating equipment via relevant electrical panels. It would include a graphical user interface at an operator console in the main control room.

Day-to-day, the following operation modes would occur in the HTF system: Warm up, Solar Field Mode (heat transfer from solar field to power block), Shutdown, and Freeze Protection.

Warm up

Usually in the morning, the warm up mode would bring the HTF flow rate and temperatures up to their steady-state operating conditions. It would do this by positioning all required valves, starting the required number of HTF main pumps for establishing a minimum flow within the solar field and tracking the solar field collectors into the sun.

At the beginning of warm up at each of the four units, HTF would be circulated through a bypass around the power block heat exchangers until the outlet temperature reaches the residual steam temperature in the heat exchangers. HTF then would be circulated through the heat exchangers and the bypass closed. As the HTF temperature at the solar field outlet would continue to rise, steam pressure would build up in the heat exchangers until the minimum turbine inlet conditions are reached, upon which the turbine could be started and run up to speed. The turbine would be synchronized and loaded according to the design specification until its power output matches the full steady state solar field thermal output.

Solar Field Control Mode

The DCS would enter solar field control mode automatically after completing warm-up mode. It would regulate the flow by controlling the HTF main pump speeds to maintain the design solar field outlet temperature.

HTF pumps would generally be operated in parallel, at the speed required to provide the required flow in the field. If the thermal output of the solar field is higher than the design capacity of the steam generation system, collectors within the solar field would be de-focused to maintain design operating temperatures.

Shutdown

If the minimal thermal input to the turbine required by the BSPP’s operating strategy cannot be met under the prevalent weather conditions, then shutdown would be indicated. Operators would track all solar collectors into the stow position, reduce the number of HTF main pumps to a minimum, and stop the HTF flow to the power block heat exchangers.

Freeze Protection

To eliminate the problem of HTF freezing, an HTF heater would be used to prevent freezing of the HTF piping system during cooler winter nights or whenever the unit is offline.

Solar Mirror Washing Water

At each solar field, to facilitate dust and contaminant removal, water from the demineralization process would be sprayed on the solar collectors for cleaning. The collectors would be cleaned once or twice per week, determined by the reflectivity monitoring program. This mirror washing operation would be done at night and involve a water truck spraying treated water on the mirrors in a drive-by fashion. The applicant expects that the mirrors would be washed weekly in winter and twice weekly from mid-spring through mid-fall. Because the mirrors would be angled down for washing, water would not accumulate on the mirrors; instead, it would fall from the mirrors to the ground and, due to the small volume, is expected to soak in with no appreciable runoff. Any remaining rinse water from the washing operation would be expected to evaporate on the mirror surface. The treated water production facilities would be sized to accommodate the solar mirror washing demand of about 30 acre feet per year (ac-ft/yr).

HTF Leak Detection

Leak detection of HTF would be accomplished in various ways. Visual inspection throughout the solar field on a daily basis would detect leaks occurring at ball joints or other connections. Additionally, the configuration of the looped system would allow different sections of the loops to be isolated. Isolation valves will be installed such that each HTF loop sections can be contained in the unlikely event of a major rupture in the HTF piping.

Large leaks would be detected using remote pressure sensing equipment and remotely actuated valves to allow for isolation of large sections of the large-bore header piping in the solar field.

2.2.5 Decommissioning

The planned operational life of the BSPP is 30 years, but the facility conceivably could operate for a longer or shorter period depending on economic or other circumstances. If the BSPP remains economically viable, it could operate for more than 30 years. However, if the facility were to become economically non-viable before 30 years of operation, permanent closure could occur sooner. In any case, a Decommissioning Plan would be prepared and put into effect when permanent closure occurs.

Temporary Closure

If a temporary closure occurs, security would be maintained 24 hours per day at the BSPP and the BLM and other responsible agencies would be notified. Temporary closure activities would differ depending on whether or not a release of hazardous materials is involved.

If there is no actual or threatened release of hazardous materials, a contingency plan would be implemented for the temporary halting of facility operations. The contingency plan would be developed before operations and its purpose is to ensure compliance with all applicable laws, ordinances, regulations, and standards (LORS) and appropriate protection of public health, safety, and the environment. Depending on the expected duration of the temporary shutdown, the contingency procedures implemented may include draining and properly disposing of chemicals from storage tanks and other facility equipment, safe shutdown of all facility equipment, and other measures as needed to ensure protection of onsite workers, the public, and the environment.

If the temporary closure does involve an actual or threatened release of hazardous materials, the procedures followed would be those provided in the Hazardous Materials Business Plan that would be developed for the proposed action. Procedures would include, at a minimum:

1. Measures to control the release of hazardous materials;

2. Notifications required to the appropriate agencies and the public;
3. Emergency response procedures; and
4. Training requirements for BSPP personnel in hazardous materials release response and control.

When all issues related to the hazardous materials release have been resolved, temporary closure would proceed as described above for temporary closure without a hazardous materials release.

Permanent Closure

The procedures provided in the Decommissioning Plan would be developed to ensure compliance with applicable LORS, and to ensure public health and safety and protection of the environment. The Decommissioning Plan would be submitted to the CEC and BLM for review and approval prior to a planned closure.

Security for the BSPP would be maintained on a 24-hour basis during permanent closure. In general, the Decommissioning Plan would address: decommissioning measures for the BSPP and all associated facilities; activities necessary for site restoration/revegetation if removal of all equipment and facilities is needed; recycling of facility components, collection and disposal of hazardous and non-hazardous wastes, and resale of unused chemicals to other parties; decommissioning alternatives other than full site restoration; costs associated with the planned decommissioning activities and where funding would come from for these activities; and conformance with applicable LORS (Solar Millennium 2009a, p. 3-2).

It is assumed that the number and type of workers required for closure and decommissioning activities would be similar to those described above for construction of the BSPP. Also, it is assumed the closure and decommissioning workforce would be drawn from the regional and local area of potential effect. Furthermore, it is assumed that the regional area of potential effect would continue to offer a high number of transient lodging opportunities to serve decommissioning construction employees. Closure and decommissioning of the BSPP would likely require further environmental impact evaluation to determine fiscal and non-fiscal impacts to the action area.

Upon closure the owner of the BSPP shall implement a final Decommissioning and Reclamation Plan. The Decommissioning and Reclamation Plan shall include a cost estimate for implementing the proposed decommissioning and reclamation activities subject to review and revisions from the CPM in consultation with BLM, USFWS and CDFG.

Reclamation Plan

The BLM will be developing a plan related to reclamation requirements associated with solar development. Moreover, if approved, the solar energy ROW authorization would include a required “Performance and Reclamation” bond to ensure compliance with the terms and conditions of the ROW authorization, consistent with the requirements of 43 CFR 2805.12(g). The “Performance and Reclamation” bond will consist of three components. The first component will be hazardous materials, the second component will be the decommissioning and removal of improvements and facilities, and the third component will address reclamation, revegetation, restoration and soil stabilization.

2.3 Connected Actions

2.3.1 Gen-tie Line

The BSPP would be connected to the grid via SCE's planned Colorado River Substation, which would be located approximately five miles southwest of the BSPP area. The BSPP would be connected to the substation via the proposed gen-tie line, a bundled double circuit 230 kV transmission line.

2.3.2 Telecommunications and Telemetry

The BSPP would have telecommunications service from Frontier Communications, the telecommunications service providers for the Blythe area. Voice and data communications would be provided by a new twisted pair telecommunications cable. The routing for this cable will follow the routing of the redundant telecommunications line from the project to at the Colorado River Substation. The routing for each of these lines would be adjacent to the Black Rock Road, and the site access road. Wireless telecom equipment would be used to support communication with staff dispersed throughout the site. The BSPP would utilize electronic telemetry systems to control equipment and facilities operations over the site.

2.3.3 Natural Gas Pipeline

A new four-inch diameter, 9.8-mile long natural gas pipeline would be constructed to connect the project to an existing Southern California Gas (SCG) pipeline situated south of I-10. Approximately eight miles would be within the plant site boundary and two miles outside the plant site boundary. The line would be buried with a minimum three feet of cover depending on location. The gas line route would begin at an existing SCG line 1,800 feet south of I-10 and traverse directly north to the site where it would provide fuel for operating the HTF system.

Construction of the gas pipeline would be built to SCG standards and would take approximately three to six months. Most major pieces of pipeline construction equipment would remain along the pipeline ROW during construction with storage and staging of equipment and supplies located at the site or other acceptable site selected by SCG at the time construction is underway. Excavated earth material would be stored within the construction ROW.

There is an existing gas line running through a portion of the site that has been abandoned in place. The existing line would be removed as necessary during construction.

2.3.4 Distribution Line

Construction power would be provided to the site from the SCE 12.47 kV distribution line routed to the site from SCE's distribution poles one mile east of BSPP at the corner of Sixth Avenue and

Davis Street.[4] The BSPP would include construction of a 12.47 kV internal distribution system and step down transformers to provide power as needed for construction operations.[5]

2.4 Actions or Elements Common to All Alternatives

The proposed action would consist of four adjacent, independent units each producing 250 MW nominal capacity of electric power. All four units would be identical with the exception of the water treatment systems and water tanks for dust control, which would be located only with Units 1 and 3. Complete descriptions of the features of the proposed action as a whole and of each individual unit can be found in Section 2.2 (Project Description). In the Reduced Acreage Alternative, there would only be three units, but the individual units would remain identical. In the Reconfigured Alternative, there would still be four identical units; however, the location of Unit 3 would be moved approximately 0.8 mile to the southwest of the proposed location.

2.4.1 Integral Components of Each Solar Plant

Solar Collector Assemblies (SCAs)

The proposed action's SCAs would be oriented north-south to rotate east-west to track the sun as it moves across the sky throughout the day. The SCAs would collect heat by means of linear troughs of parabolic reflectors, which focus sunlight onto a straight line of heat collection elements welded along the focus of the parabolic "trough."

Parabolic Trough Collector Loops

Each of the collector loops would consist of two adjacent rows of SCAs with each row being about 1,300 feet long. The two rows would be connected by a crossover pipe. The heat transfer fluid (HTF) would be heated in the loop and would enter the header, which returns hot HTF from all loops to the power block where the power generating equipment is located.

Mirrors

The parabolic mirrors to be used in the proposed action would be low-iron glass mirrors. Typical life spans of such mirrors are expected to be 30 years or more.

Air Cooled Condensers (ACCs)

The ACC would use a large array of fans to force air over finned tube heat exchangers arranged in an A-frame bundle configuration. The exhaust from the steam turbine would flow through a large diameter duct to the ACC, where it would be condensed inside the tubes running diagonally top to bottom through indirect contact with the ambient air. The heat then would be ejected directly to the atmosphere through convection.

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[4] The distribution line would be wholly owned and operated by SCE. It would be used to provide power during the construction phase of the proposed action. SCE would retain the facility after construction is complete.

[5] During the operational phase of the proposed action, power would be provided by the BSPP.

Heat Collection Elements (HCEs)

The HCEs of the four solar plants would be comprised of a steel tube surrounded by an evacuated glass tube insulator. The steel tube would have a coated surface, which would enhance its heat transfer properties with a high absorptivity for direct solar radiation, accompanied by low emissivity. Glass-to-metal seals and metal bellows would be incorporated into the HCE to ensure a vacuum-tight enclosure. The enclosure would protect the coated steel tube and reduce heat losses by acting as an insulator.

HTF System

In addition to the HTF piping in the solar field, each of the four HTF systems would include three elements: 1) the HTF heat exchanger, 2) the HTF expansion vessel and overflow vessel, and 3) the HTF ullage system. Rather than a fired HTF heater, a heat exchanger would be installed to assist in ensuring that temperatures stay above 54°F or 12°C since freezing of the HTF piping system can occur during cooler winter nights or whenever the unit is offline. HTF would be routinely circulated at low flow rates throughout the solar field using hot HTF from the storage vessel as a source. During winter, a natural gas-fired HTF heater would be used when weather conditions dictate (i.e. on cold nights). A HTF expansion vessel and overflow vessel would be required to accommodate the volumetric change that would occur when heating the HTF to the operating temperature.

The proposed HTF heat exchanger is an unfired unit that utilizes steam from the auxiliary boiler as the heating medium. During plant operation, the HTF would degrade into components of high and low boilers (substances with high and low boiling points). The low boilers would be removed from the process through the ullage system. HTF would be removed from the HTF surge tank and flashed, leaving behind high boilers and residual HTF. The flashed vapors would be condensed and collected in the ullage system.

Solar Steam Generator System (SSG)

At each of the four Units, the SSG system would transfer the sensible heat from the HTF to the feedwater. The steam generated in the SSG would be piped to a Rankine-cycle reheat steam turbine. Heat exchangers would be included as part of the SSG system to preheat and boil the condensate, superheat the steam, and reheat the steam.

Steam Turbine Generator (STG)

The STG would receive steam from the SSG. The steam would expand through the STG turbine blades to drive the steam turbine, which then would drive the generator, converting mechanical energy to electrical energy. Each of the proposed action's STGs would be a three-stage casing type with high pressure (HP) intermediate pressure (IP), and low pressure (LP) steam sections. The STG would be equipped with the following accessories: steam stop and control valves, gland seal system, lubricating and jacking oil systems, thermal insulation, and control instrumentation.

Cooling Systems

Each of the four power plant Units would include two cooling systems: 1) the air-cooled steam cycle heat rejection system and, 2) the closed cooling water system for ancillary equipment cooling:

Steam Cycle Heat Rejection System

The cooling system for heat rejection from the steam cycle would consist of a forced draft air-cooled condenser, or dry cooling system. At each power block, the dry cooling system would receive exhaust steam from the LP section of the STG and condense it to liquid for return to the SSG.

Auxiliary Cooling Water System

The auxiliary cooling water systems would use wet cooling towers for cooling plant equipment, including the STG lubrication oil cooler, the STG generator cooler, steam cycle sample coolers, large pumps, etc. The water would be warmed by the various equipment items being cooled and reject the heat to the cooling tower. This auxiliary cooling system would allow critical equipment such as the generator and HTF pumps to operate at their design ratings during hot summer months when the BSPP’s power output would be most valuable. An average of 146,000 gallons of water per day (160 ac-ft/yr) would be consumed by the auxiliary cooling water system; the maximum rate of consumption would be 223,000 gallons per day in summer.

Water Storage Tanks

In each power block there would be two major covered water tanks: one 1,000,000 gallon Service/Fire Water storage tank and one 120,000 gallon Demineralized Water storage tank. A much smaller RO Reject water tank would also be provided. Several other small water system surge tanks also would be installed in between various steps in the water treatment process. Water storage tanks would be vertical, cylindrical, field-erected steel tanks supported on foundations consisting of either a reinforced concrete mat or a reinforced concrete ring wall with an interior bearing layer of compacted sand supporting the tank bottom.

Roads/Site Surface

Access to the BSPP site would be via a new public road heading north from the frontage road. This road would be accessed from an improved section of Black Rock Road along I-10, from the plant access road to the Airport/Mesa Drive exit. Only a small portion of the site would be paved, primarily the site access road, the service roads to the power blocks, and portions of the power blocks (paved parking lot and roads encircling the STG and SSG areas). The remaining portions of each power block would be gravel surfaced. In total, each power block area would be approximately 18.4 acres each, with approximately six acres of paved area. The solar fields would remain unpaved and without a gravel surface in order to prevent rock damage from mirror wash vehicle traffic; an approved dust suppression coating would be used on the dirt roadways within and around the solar fields. Roads and parking areas located within the power block areas and adjacent to the administration building and warehouses would be paved with asphalt.

Fencing and Security

The perimeter of the proposed solar fields and support facilities would be secured with a combination of chain link and wind fencing. Fencing would be desert tortoise proof to prevent tortoises from entering onto the action area. Chain link metal fabric security fencing would consist of eight-foot tall fencing with one-foot barbed wire or razor wire on top along the north and south sides of the facilities. Thirty-foot tall wind fencing, comprised of A-frames and wire mesh, would be installed along the east and west sides of each solar field. Controlled access gates would be located at the site entrance. As discussed below, the drainage channels would be outside the plant and the security fencing but still within the proposed ROW.

Drainage and Earthwork

The existing topographic conditions of the site show an average slope of approximately one foot in 67 feet (1.50%) toward the east on the west side of the site and approximately one foot in 200 feet (0.50%) toward the southeast on the east side of the site. The site lies on the Palo Verde Mesa east of the McCoy Mountains. The general stormwater flow pattern is from the higher elevations in the mountains located three miles west of the site to the lower elevations in the McCoy Wash to the east of the site.

Lighting System

The proposed lighting system would provide operations and maintenance personnel with illumination in normal and emergency conditions. AC lighting would be the primary form of illumination, but DC lighting would be included for activities or emergency egress required during an outage of the plant's AC system.

Fuel Supply and Use

The auxiliary boiler for each unit would be fueled by natural gas. The gas for the entire BSPP would be supplied from a new, approximately 10-mile long (two miles offsite) four-inch diameter pipeline connected to an existing SCG main pipeline south of I-10.

Natural gas would be delivered via an SCG custody transfer station consisting of filtering equipment, pressure regulating valves, and a fiscal flow meter. Pressure limiting equipment would be provided to ensure that the downstream piping would be protected from overpressure. The estimated maximum natural gas usage rate per unit is 35 MMBtu/hr.

Water Supply and Use

The BSPP would be dry-cooled, except for the auxiliary cooling water system. The proposed action's primary water uses include solar mirror washing, feedwater makeup, fire water supply, onsite domestic use, and cooling water for auxiliary equipment heat rejection.

Water Requirements

The average total annual water usage for all four units combined is estimated to be about 600 ac-ft/yr, which corresponds to an average flow rate of about 388 gallons per minute (gpm), based on pumping 24 hours per day, 350 days per year. Usage rates during operations would vary during the year and would be higher in the summer months when the peak maximum flow rate could be as much as about 50 percent higher (about 568 gpm).

Water Source and Quality

BSPP water needs would be met by use of groundwater pumped from wells on the plant site. Water for domestic uses by BSPP employees would also be provided by onsite groundwater treated to potable water standards.

It is expected that two new water supply wells in each of the power blocks and two additional wells adjacent to the central warehouse would adequately serve the entire BSPP. A second well would provide redundancy and backup water supply in the event of outages or maintenance of the first well. Water for mirror washing would be demineralized onsite at one of the water treatment facilities.

Fire Protection

Fire protection systems would be provided to limit personnel injury, property loss, and project downtime resulting from a fire. The systems would include a fire protection water system, foam generators, carbon dioxide fire protection systems, and portable fire extinguishers. The BSPP would be within the jurisdiction of the Riverside County Fire Department.

Firewater would be supplied from the one million-gallon clarified water storage tanks located at each of the four power blocks on the site. One electric and one diesel fueled backup firewater pump, each with a capacity of 5,000 gpm, would deliver water to the fire protection piping network.

The piping network would be configured in a loop so that a piping failure could be quickly isolated with shutoff valves without interrupting water supply to other areas in the loop. Fire hydrants would be placed at intervals throughout the project site that would be supplied with water from the supply loop. The water supply loop would also supply firewater to a sprinkler deluge system at each unit transformer, HTF expansion tank and circulating pump area, and sprinkler systems at the steam turbine generator and in the administration building. Fire protection for each solar field would be provided by zoned isolation of the HTF lines in the event of a rupture that results in a fire.

Waste Generation and Management

BSPP wastes would be comprised of non-hazardous wastes including solids and liquids and lesser amounts of hazardous wastes and universal wastes. The non-hazardous solid waste primarily would consist of construction and office wastes, as well as liquid and solid wastes from the water treatment system. The non-hazardous solid wastes would be trucked to the nearest Class II or III landfill. Non-hazardous liquid wastes would consist primarily of domestic sewage and waste water streams such as: RO system reject water boiler blowdown, and auxiliary cooling tower blowdown. A septic tank and leach field system would be installed to manage domestic sewage. All other waste streams will be either recycled or sent to the evaporation pond.

Wastewater

The BSPP would produce four primary wastewater streams:

1. Non-reusable sanitary wastewater produced from administrative centers and operator stations;
2. Non-reusable cooling tower blowdown;
3. Partially recyclable boiler blowdown (to be used as cooling tower makeup); and
4. Reusable RO and demineralized reject water that would be sent to a High pH Reverse Osmosis (HERO) type system, or concentrated to minimize waste streams to the evaporation ponds.

Sanitary wastewater production is based on domestic water use. Maximum domestic water use is expected to be less than 332,000 gallons per month (11,000 gallons per day, or 12.3 ac-ft/yr). It is anticipated that the wastewater would be consistent with domestic sanitary wastewater and would have biochemical oxygen demand and total suspended solids in the range of 150 to 250 mg/L.

Wastewater Treatment

Sanitary wastes would be collected for treatment in septic tanks and disposed via leach fields located at the four power blocks as well as at the administration area and warehouse area. Smaller septic systems would be provided for the control room buildings to receive sanitary wastes at those locations. Based on the current estimate of 11,000 gallons of sanitary wastewater production per day for the entire site, a total each field area of approximately 22,000 square feet would be required spread out among several locations.

In a typical wet cooled power plant, water is cycled in the cooling tower until the concentration of chemical constituents rises to levels where it becomes unusable (e.g., typically five to 10 cycles of concentration) and is then blown down as a waste stream. Dilute waste streams such as boiler blow downs and some RO concentrate may be fed to the cooling tower and further concentrated; this design practice helps reduce the total waste water flow that then must be sent to an evaporation pond or other treatment system. While dry cooling the power cycle significantly reduces the overall water usage of a plant, it eliminates the cooling tower recycle option that helps minimize waste flows from the remaining water processes. The auxiliary wet cooling tower is too small to concentrate the remaining water flows.

The three plant waste water streams - cooling tower blowdown, boiler blow down, and RO/ demineralizer water rejects - would be recycled as much as possible to the high pH reverse osmosis (HERO) system for recovery. The HERO system will recover 70 percent or more (depending on water quality) of this waste stream and would significantly limit the size of the required evaporation pond(s). Some waste water sources such as cooling tower blowdown or boiler blowdown in certain cases may not be recoverable in the HERO system and would be sent directly to the evaporation pond(s).

The waste water treatment system would require two 4-acre evaporation ponds per power block. Two ponds were selected for reliability. The plant would operate on one pond for approximately 24 months, and then switch to the second pond. Approximately 18 months would be required for one pond to evaporate and be ready for use again. If a pond requires maintenance or solids removal, the plant still could operate with the other pond. The evaporation ponds would be double-lined and covered with narrow-mesh netting to prevent access by ravens and migratory birds in accordance with applicable regulations.

On-Site Land Treatment Unit

The four solar fields to be installed at the site would require two LTUs to bioremediate or land farm soil contaminated from releases of HTF. Each LTU would be designed in accordance with Colorado River Basin Regional Water Quality Control Board (RWQCB) requirements and would be expected to comprise an area of about 4 acres per solar plan or 16 total acres. The bioremediation facility would utilize indigenous bacteria to metabolize hydrocarbons contained in non-hazardous HTF contaminated soil. A combination of nutrients, water, and aeration facilitates the bacterial activity where microbes restore contaminated soil within two to four months. The California Department of Toxic Substances Control (DTSC) has determined for a similar thermal solar power plant that soil contaminated with up to 10,000 mg/kg of HTF is classified as a non-hazardous waste. However, the DTSC has further indicated that site-specific data would be required to provide a classification of the waste. Soil contaminated with HTF levels of between 100 and 1,000 mg/kg would be land farmed at the LTU, meaning that the soil would be aerated but no nutrients would be added.

2.5 Alternatives Development and Screening Process

The Applicant proposes to develop the BSPP on federal land administered by the BLM. Since the BLM is a federal agency and the CEC has State authority to approve thermal power plants, the BSPP is subject to review under both NEPA and CEQA. Accordingly, alternatives to the BSPP were developed consistent with both NEPA and CEQA.

2.5.1 Alternatives Development under NEPA

NEPA requires decision-makers and the public to be fully informed of the impacts associated with the proposed project. NEPA declares that the Federal government’s continuing policy is to create and maintain conditions under which people and nature can exist in productive harmony and fulfill the social, economic, and other requirements of present and future generations of Americans. NEPA directs the BLM to “study, develop, and describe appropriate alternatives to recommended courses of action in any proposal that involves unresolved conflicts concerning alternative uses of available resources” (NEPA Section 102(2)(E)).

CEQ regulations require that an EIS rigorously explore and objectively evaluate a reasonable range of alternatives to a proposed action. Reasonable alternatives are those for which effects can be reasonably ascertained, whose implementation is not remote or speculative, that are feasible, effective, are not remote from reality, and those that are consistent with the basic policy objectives for management of the area. (40 CFR 1502.14; CEQ Forty Questions, No. 1A; Headwaters, Inc. v. BLM, 914 F.2d. 1174 (9th Cir. 1990)). In order to establish the reasonable range of alternatives to be considered, the defined project purpose and need functions as the first and most important screening tool. NEPA requires the consideration of a No Action Alternative, which is the scenario that would exist if the proposed project were not constructed and no CDCA Plan amendment was approved.

2.5.2 Alternatives Development under CEQA

The CEQA Guidelines (14 CCR 15126.6(a)) require an evaluation of the comparative merits of "a range of reasonable alternatives to the project, or to the location of the project, which would feasibly attain most of the basic objectives of the project but would avoid or substantially lessen any of the significant effects of the project." In addition, the analysis must address the "no project" alternative (14 CCR 15126.6(e)). The range of alternatives considered under CEQA is governed by a "rule of reason," which requires consideration only of those alternatives necessary to permit informed decision making and public participation. CEQA states that an environmental document does not have to consider an alternative of which the effect cannot be reasonably ascertained and of which the implementation is remote or speculative (14 CCR 15125(d)(5)).

2.5.3 Alternatives Screening Process

To prepare the alternatives analysis, the following methodology was used:

1. Develop an understanding of the project, identify the basic objectives of the project, and describe its potentially significant adverse impacts.

2. Under NEPA, explore and evaluate all reasonable alternatives, and of those reasonable alternatives, identify those that would avoid or minimize adverse impacts or enhance the quality of the human environment.

3. Under CEQA, identify and evaluate technology alternatives to the project such as increased energy efficiency (or demand-side management) and the use of alternative generation technologies (e.g., solar or other renewable or nonrenewable technologies); and identify and evaluate alternative locations; evaluate potential alternatives to select those qualified for detailed evaluation.

4. Evaluate the impacts of not constructing the project, known as the No Action Alternative under NEPA and the No Project Alternative under CEQA.

The BSPP is described above, in Section 2.1, and the BLM's statement of purpose and need is described in PA/FEIS Section 1.1.1. The scoping process described in PA/FEIS Section 1.7 informed the range of alternatives to be considered. Based on the analysis presented in PA/FEIS Chapter 4, the following impacts have been identified as issues of greatest concern for the BSPP:

biological resources, cultural resources, and visual resources. Based on this methodology, each potential alternative was evaluated according the following criteria for its ability to:

1. for NEPA purposes, be consistent with BLM's purpose and need, which may or may not result in project approval, and to eliminate or reduce impacts of the BSPP.

2. for CEQA purposes, avoid or substantially lessen one or more of the potential significant effects of the project as described above, meet most project objectives, and not create unmitigable significant impacts of its own.

2.5.4 Alternatives Considered

In total, 24 alternatives were considered by the BLM. Five were carried forward, in addition to the proposed action, for more detailed review. Two of the five are action alternatives: The Reconfigured Alternative and the Reduced Acreage Alternative. (See PA/FEIS Section 2.6). The remaining three are variations of a no action alternative, including No Action Alternative A, and two "no project" alternatives: CDCA Plan Amendment/No Action Alternative B and CDCA Plan Amendment/No Action Alternative C. (See PA/FEIS Section 2.7). Of the various alternatives considered, one was selected as the Preferred Alternative. (See PA/FEIS Section 2.8). Nineteen alternatives were considered but eliminated from detailed analysis. (See PA/FEIS Section 2.9).

Action Alternatives

A number of scoping comments requested that the BSPP be reconfigured or reduced in size to avoid the western washes where impacts to desert washes, ephemeral streams, soils, and associated wash-dependant vegetation communities would be greatest. Scoping comments suggested including the agriculture lands immediately east of the BSPP in the footprint to make up for any loss in acreage by avoiding the western units. The scoping comments were incorporated into the alternatives described herein. This section describes two alternatives to the proposed project: the Reconfigured Alternative and the Reduced Acreage Alternative.

Reconfigured Alternative

The Reconfigured Alternative would be a 1,000 MW solar facility like the proposed action and would require a CDCA PA by the BLM. Three of the proposed solar fields (Units 1, 2, and 4) would remain at their proposed locations. These include the two northern solar fields and the southeastern solar field. Unit 3 (the southwestern solar field) would be relocated approximately 0.8 miles south of its proposed location. The location of the four solar fields is shown in Figure 4. Approximately 480 acres of the Reconfigured Alternative (a portion of Unit 3) would be outside of the ROW application area, but the alternative would remain entirely within BLM-administered lands. A modified ROW application would be required to incorporate these lands into the action area.

The Reconfigured Alternative was developed by the applicant in response to a data request. The data request was developed to reduce impacts related to a major unnamed dry wash that flows through the proposed site along the southwestern side. This alternative is analyzed because (1) it would retain the 1,000 MW generation capacity defined for the proposed action and the engineering is defined by the applicant as feasible, and (2) it would minimize impacts to state waters and to desert dry wash woodlands, a vegetation community classified as sensitive by the BLM and CDFG. The boundaries of the Reconfigured Alternative remain entirely on BLM-administered land.

The Reconfigured Alternative would relocate Unit 3, a 250 MW solar generating facility, to a location approximately 0.8 mile south of Solar Unit 2, on approximately 1,350 acres of land (approximately 150 acres larger than Unit 3 as proposed, which was proposed at 1,200 acres). Specifically, the alternative would relocate the Unit 3 solar field, including the power block, water treatment system, water storage tanks, and the administration, control, warehouse, maintenance, and lab buildings.

Similar to the proposed action, the Reconfigured Alternative would transmit power to the grid through the Colorado River Substation. It would require the same infrastructure as the proposed action, including on-site wells, transmission line, road access, gas pipeline, main office and warehouse buildings, and central internal switchyard. The transmission line, road access, and gas pipeline would remain approximately the same length as for the proposed action. The required linear facility routes may require minor adjustments.

Under this alternative, a ROW grant for the appropriate acreage would be issued, and the CDCA Plan would be amended to include the applicant's BSPP generation facilities and transmission line as an approved site under the Plan.

Reduced Acreage Alternative

The Reduced Acreage Alternative would retain only Units 1, 2 and 4 of the proposed action, with the ability to generate 750 MW. Unit 3 (250 MW) would not be constructed. This alternative would require a CDCA PA by the BLM. This alternative would be located entirely within the applicant's ROW application area as defined by the applicant. This alternative is analyzed for two major reasons:

1. It would eliminate about 25 percent of the proposed action, and

2. It would eliminate the 1,200 acre southwestern solar field which is located on flowing desert washes and, thereby, would reduce impacts to state waters and to desert dry wash woodlands, a vegetation community classified as sensitive by the BLM and CDFG, and to wildlife movement corridors.

The boundaries of the Reduced Acreage Alternative are shown in Figure 5.

The Reduced Acreage Alternative would have a net generating capacity of approximately 750 MW and its footprint would occupy approximately 4,750 acres of land. This alternative would retain 75 percent of the proposed action's generating capacity, and would affect 75 percent of the land affected by the proposed action. Specifically, the alternative would retain the Unit 1, 2, and 4 solar fields, including the power block, water treatment system, water storage tanks, and administration, control, warehouse, maintenance, and lab buildings. Units 3 and 4, as proposed for the proposed action, were designed to share water treatment systems and water storage tanks for dust control; the shared facilities are proposed to be located in Unit 3. As such, the shared facilities would need to be relocated to Unit 4.

Similar to the proposed action, the Reduced Acreage Alternative would transmit power to the grid through the Colorado River Substation. It would require infrastructure including on-site wells, transmission line, road access, administration building, gas pipeline, main office and warehouse buildings, and central internal switchyard. The transmission line and road access would remain approximately the same length as for the proposed action. The gas pipeline would also remain approximately the same length as for the proposed action. The required linears could require minor adjustment to accommodate the smaller configuration.

Under this alternative, a ROW grant for the appropriate acreage would be issued, and the CDCA Plan would be amended to include the applicant's BSPP generation facilities and transmission line as an approved site under the Plan.

No Action/No Project Alternatives

In accordance with 40 CFR Section 1502.14(d), the BLM is required to evaluate a no action alternative. The no action alternative evaluates the environmental conditions of the area in question based on the project not being constructed. BLM considers the no action alternative also to include no action on, or amendment of, the CDCA Plan – See No Action Alternative A below.

Associated with the No Action Alternative are several CDCA Plan amendment options. One option is to deny the proposed project ROW application, but amend the land use plan to identify the area in question as unsuitable for solar energy development – See CDCA Plan Amendment/No Action Alternative B. A second option is to deny the proposed project ROW application, but amend the land use plan to identify the area in question as suitable for any type of solar energy development – See CDCA Plan Amendment/No Action Alternative C. BLM's alternatives related to the No Action Alternative and the CDCA Plan amendment are the following:

No Action Alternative A

Under this No Action alternative, the ROW application would be denied, and the ROW grant would not be authorized. The CDCA Plan (1980, as amended) would not be amended.

CDCA Plan Amendment/No Action Alternative B

Under this No Action alternative, the ROW application would be denied, and the ROW grant would not be authorized. The CDCA Plan (1980, as amended) would be amended to identify the application area as unsuitable for any type of solar energy development.

CDCA Plan Amendment/No Action Alternative C

Under this No Action alternative, the ROW application would be denied, and the ROW grant would not be authorized. The CDCA Plan (1980, as amended) would be amended to identify the application area as suitable for any type of solar energy development.

2.5.5 Preferred Alternative

The BLM's preferred alternative is the proposed action without modification.

2.5.6 Alternatives Considered but Eliminated From Detailed Analysis

Rationale for Eliminating Alternatives

In accordance with 43 C.F.R. 2804.10, the BLM worked closely with the Applicant during the pre-application phase to identify appropriate areas for the proposed project. BLM discouraged the Applicant from including in its application alternate BLM locations with significant environmental concerns, such as critical habitat, Areas of Critical Environmental Concern (ACECs), Desert Wildlife Management Areas (DWMAs), designated off-highway vehicle (OHV) areas, wilderness study areas, and designated wilderness areas or other sensitive resources. BLM encouraged the Applicant to locate its project on public land with the fewest potential conflicts.

Other alternative sites, technologies and methods identified in Table 2-1 and discussed below were considered but eliminated from detailed analysis under NEPA. These alternatives were eliminated from detailed analysis because one or more of the following criteria from the BLM NEPA Handbook H-1790-1 apply:

(1) It is ineffective (it would not respond to the BLM project purpose and need);

(2) It is technologically or economically infeasible;

(3) It is inconsistent with the basic policy objectives for the management of the area (e.g., does not conform to the CDCA Plan);

(4) Its implementation is remote or speculative;

(5) It is substantially similar in design to an alternative that is analyzed; and/or

(6) It would have substantially similar effects to an alternative that is analyzed.

Not all of these criteria from the BLM Handbook were used in eliminating alternatives from consideration as described below. This process for eliminating these alternatives from detailed analysis complies with 40 CFR 1502.14(a) and is described briefly in the following sections.

2.5.7 Alternatives Considered but Eliminated from Detailed Analysis

Alternative sites, technologies and methods were considered as alternatives to the BSPP but not carried forward for detailed analysis. Such alternatives are identified and the rational for elimination summarized in Table 2-1. Each is discussed below.

TABLE 2-1
ALTERNATIVES CONSIDERED BUT ELIMINATED FROM DETAILED ANALYSIS

Alternative	Rationale for Elimination
Blythe Mesa Alternative	Ineffective, infeasible, remote or speculative.
East of Lancaster Alternative	Ineffective, infeasible.
El Centro Alternative	Inconsistent with the basic policy objectives for management of the area.
Johnson Valley Alternative	Ineffective, infeasible, remote or speculative.
Chuckwalla Valley Alternative	Inconsistent with the basic policy objectives for management of the area.
Stirling Dish Technology	Ineffective.
Solar Power Tower Technology	Ineffective.
Linear Fresnel Technology	Ineffective, infeasible.
Solar Photovoltaic Technology – Utility Scale	Ineffective.
Distributed Solar Technology	Ineffective, infeasible.
Wind Energy	Ineffective, infeasible.
Geothermal Energy	Ineffective, remote or speculative
Biomass Energy	Ineffective, infeasible, remote or speculative.
Tidal Energy	Ineffective, infeasible, remote or speculative.
Wave Energy	Ineffective, infeasible.
Natural Gas	Ineffective.
Coal	Ineffective.
Nuclear Energy	Ineffective.
Conservation and Demand-side Management	Ineffective, remote or speculative.

Alternative Considered Under CEQA Only

One alternative was evaluated in detail the SA/DEIS only under CEQA: the Blythe Mesa Alternative. The Blythe Mesa Alternative is discussed in detail in Section B.2.7.2 of the RSA. Briefly, however, this alternative would be located entirely on private land. The Energy Commission determined that impacts of the Blythe Mesa Alternative would be similar to those of the proposed action for many resource areas; however, it would likely have less severe biological and cultural resources impacts because it would be located on disturbed lands previously used for agriculture.

The Blythe Mesa Alternative was eliminated primarily because it is ineffective (i.e., it would not respond to the BLM project purpose and need). Under NEPA, reasonable alternatives are dictated by the nature and scope of the proposed action and are defined by the purpose and need. Here, BLM's purpose and need are for the BLM to respond to Palo Verde Solar I's application for a ROW grant to construct, operate, and decommission a solar thermal facility on public lands in compliance with FLPMA, BLM ROW regulations, and other Federal applicable laws. The Blythe Mesa Alternative would be ineffective because the proposed site would not be under the BLM's jurisdiction, the BLM would have no discretionary approval authority over the project, and the alternative would not accomplish the BLM's purpose and need for the proposed action.

The Blythe Mesa Alternative also was eliminated because it is economically infeasible. For one thing, the alternative site would consist of three unconnected areas. Although it theoretically would be possible to develop the solar units in non-contiguous areas, the cost of the project would increase due to the need for additional infrastructure (transmission, water, etc.) and expanded need for site security. Additionally, the alternative site would be made up of about 79 parcels. The BLM does not own or manage any of those parcels.

The Blythe Mesa Alternative was eliminated for an additional reason: its implementation is remote or speculative. Site control for the proposed site would require the willing participation of 23 separate landowners. As a result, obtaining control over sufficient land to develop the project seems remote or speculative. At the proposed site, BLM is the only land management entity.

Site Alternatives

This section considers potential alternatives to the proposed BSPP that were evaluated, and determined to not be feasible or result in lesser impacts than the proposed action. The Site Alternatives identified below are discussed in detail in Section B.2.8.1 of the RSA. Briefly, however, because these alternatives would not avoid or substantially reduce the adverse impacts of the proposed BSPP or because they do not meet project objectives, the purpose and need for the project, or are otherwise not reasonable alternatives, they are not analyzed in further detail in this PA/FEIS. The following alternative sites were evaluated in this analysis:

1. East of Lancaster Alternative
2. El Centro Alternative
3. Johnson Valley Alternative
4. Chuckwalla Valley Alternative

East of Lancaster Alternative

The East of Lancaster Alternative was identified by the Applicant as a potential alternative site for the proposed project. The East of Lancaster site is made up of about 1,370 separate parcels of private land located east of the City of Lancaster, in Los Angeles County. The elevation of East of Lancaster Alternative is between approximately 2,500 and 2,600 feet above sea level. The site is located in between Palmdale and Lancaster and is made up of 1,370 parcels located approximately one mile northeast of the Antelope Valley Enterprise Zone. The site would be located on 7,900 acres.

East of Lancaster was not pursued by the Applicant as a possible site for the BSPP because it was privately-owned and heavily subdivided. Further, the site was 14 miles from the nearest 500 kV substation. The East of Lancaster site also had a lower solar resource than the proposed site.

Rationale for Elimination

The East of Lancaster site is located on private land. Like other alternatives proposed to be located on lands not under the jurisdiction of the BLM, the East of Lancaster alternative is considered to be ineffective, because it would not accomplish the purpose and need for the proposed action, i.e., to respond to Palo Verde Solar I's application under Title V of FLPMA (43 U.S.C. 1761) for a ROW grant to construct, operate, and decommission a solar thermal facility on public lands in compliance with FLPMA, BLM ROW regulations, and other Federal applicable laws.

The East of Lancaster alternative also was eliminated because it is infeasible: The site is made up of about 1,370 separate privately-owned parcels. Due to the number of parcels that would have to be acquired to accommodate a 1,000 MW alternative on this site, obtaining site control would be extremely challenging in comparison to obtaining a right-of-way grant to use BLM land. The East of Lancaster alternative also was eliminated because its implementation is remote or speculative, given the number of privately-owned parcels necessary to implement the alternative and likelihood that a sufficient number of property owners willingly would participate.

El Centro Alternative

The El Centro Alternative was identified by the Applicant as a potential alternative site for the BSPP. The El Centro Alternative is located primarily on BLM land within the CDCA west of Imperial Valley, in Imperial County. The elevation of El Centro Alternative is between approximately sea level and 100 feet above sea level. The site is located south of the U.S. Naval Reservation parachute Drop Zone within the Plaster City East Pit Area of the Plaster City Open Area on 5,600 acres. The Plaster City Open Area is a designated Off-Highway Vehicle (OHV) open area that is used for individual driving, primitive camping, and day use.

Rationale for Elimination

The El Centro Alternative was eliminated because it is inconsistent with the basic policy objectives for the management of the area. The CDCA Plan states that the BLM is committed in providing opportunities for visitors to obtain various types of outdoor recreational experience and benefits including motorized-vehicle play open areas. The CDCA Plan's Recreation Element has goals of providing a wide range of quality recreation opportunities, managing recreation use to minimize user conflicts, provide safe recreation environment, protect desert resources, and encourage the use and enjoyment of desert recreation opportunities by special populations and provide facilities to meet the needs of those groups. Use of the El Centro Alternative would conflict with the CDCA Recreation Element goals.

Johnson Valley Alternative

The Johnson Valley Alternative was identified by the Applicant as a potential alternative site for the BSPP. The Johnson Valley Alternative is located on public and private land approximately 31 miles southeast of the Victorville/Apple Valley, in San Bernardino County. The site is made up of 55 parcels and is owned by 29 separate landowners, including the BLM and State of California. The site would be located on 9,000 acres. Johnson Valley was not pursued by the Applicant as a possible site because it is approximately 31 miles away from the nearest 500 kV substation.

Rationale for Elimination

The Johnson Valley site is located, in part, on private land, and willing participation would be required from approximately 29 owners. Like other alternatives proposed to be located on lands not under the jurisdiction of the BLM, the Johnson Valley alternative is considered to be ineffective to the extent it would not accomplish the purpose and need for the proposed action, i.e., to respond to Palo Verde Solar I's application under Title V of FLPMA (43 U.S.C. 1761) for a ROW grant to construct, operate, and decommission a solar thermal facility on public lands in compliance with FLPMA, BLM ROW regulations, and other Federal applicable laws.

Implementing the Johnson Valley Alternative would require significant additional transmission construction. Additionally, obtaining sufficient control of the number of parcels that would be needed to accommodate a 1,000 MW alternative make this alternative infeasible and its implementation speculative and remote. The Draft Phase 2a Report published by the Renewable Energy Transmission Initiative (RETI) in early June 2009 identified private land areas suitable for solar development only if there were no more than 20 owners in a two square mile (1,280 acre) area. Moreover, this alternative would not reduce impacts of the proposed BSPP without creating more severe impacts of its own.

Chuckwalla Valley Alternative

The Chuckwalla Valley Alternative was identified by the Applicant as a potential alternative site for the BSPP. The Chuckwalla Valley Alternative is located on public and private land west of Blythe, in Riverside County. Chuckwalla Valley was not pursued by the Applicant as a possible site because it is located in desert tortoise critical habitat and is located within the Chuckwalla Desert Wildlife Management Area (DWMA), which are managed as Areas of Critical Environmental Concern for recovery of the desert tortoise, as designated by the NECO Plan. The BLM established the Chuckwalla DWMA to protect federally listed desert tortoise and 38 special status plant and animal species and included the specific feature of a 1 percent surface disturbance limitation on federal lands within DWMAs. The U.S. Fish and Wildlife Service designated the area as Critical Habitat for the desert tortoise and BLM designated it as an Areas of Critical Environmental Concern (BLM 2002).

Rationale for Elimination

The Chuckwalla Valley Alternative was eliminated because it is inconsistent with the basic policy objectives for the management of the area (e.g., it does not conform to the NECO Plan) based on the location of portions of the alternative within a DWMA. In addition, the site is located on private and public land with approximately nine owners. Due to the number of parcels that would have to be acquired to accommodate a 1,000 MW alternative on this site, this alternative would make obtaining site control more challenging (in comparison to obtaining a right-of-way grant to use BLM land).

Alternative Solar Generation Technologies

Several alternative solar generation technologies were evaluated as potential alternatives to the BSPP, which would use the solar trough technology. The BLM has the authority to change the technology on a proposal if it is shown that the change would reduce impacts. The following solar generation technologies were considered in this analysis:

1. Stirling energy systems technology
2. solar power tower technology
3. linear Fresnel technology
4. photovoltaic technology

Each of the alternative solar generation technologies is discussed in detail in Section B.2.8.2 of the RSA. The rationale for their elimination from more detailed consideration is provided below.

Rationale for Elimination

Alternative solar technologies are eliminated from detailed discussion because they are ineffective. In other words, they would not respond to the BLM's purpose and need for the proposed action, which is to is to respond to Palo Verde Solar I's application under Title V of FLPMA (43 U.S.C. 1761) for a ROW grant to construct, operate, and decommission a solar thermal facility on public lands in compliance with FLPMA, BLM ROW regulations, and other Federal applicable laws.

The Stirling energy systems technology also is eliminated because it could increase the footprint of the BSPP between 10 and 45 percent. Further, due to its greater height, it could increase visual impacts. With a minimum size of nearly 8,500 acres, Stirling engine technology would not eliminate any of the significant impacts of the BSPP plant.

The solar power tower technology also is eliminated because no substantial reduction in impacts would occur under this alternative technology. The large area needed for a solar power tower plant would be greater than the land requirement for the BSPP. Grading requirements for the solar power tower would be less than for the BSPP because the solar power tower technology does not require grading of the entire solar field; however, grading would still be required for the access roads in between the rows of heliostats. For these reasons, recreation and land use, biological resources, and cultural resource impacts would be greater than those of the BSPP. In addition, due to the extent of the facility and the height of the power towers, impacts to the Blythe Airport would potentially be greater for this alternative.

The solar linear Fresnel technology also is eliminated because it is infeasible. The Fresnel solar technology is a proprietary technology owned by Ausra, Inc. However, Ausra, Inc. has changed its focus to being a technology and equipment provider rather than an independent power developer and owner and will focus on medium-sized (50 MW) solar steam generating systems for customers including steam users, such as food processors, enhanced oil recovery firms, and utilities for power augmentation systems that deliver steam into existing fossil-fuel power plants. A project of 1,000 MW is theoretically possible, and would require smaller acreage per megawatt. However, at nearly 5,000 acres for 1,000 MW, this technology would not eliminate the significant impacts of the proposed solar trough technology at this site. Moreover, this technology is not within the area of expertise of the Applicant, and therefore would not likely be technically or economically feasible for it to implement. Accordingly, this alternative technology also was eliminated on this basis.

Utility-scale solar photovoltaic technology also is eliminated because it would not reduce major impacts of the BSPP facility. Due to its requirement for a nearly flat site, it would require similar grading as the Blythe facility with similar air emissions and erosion potential. With a minimum size of at least 3,000 acres, solar PV technology would not eliminate the impacts of the BSPP associated with ground disturbance.

Distributed solar technology also is eliminated because its implementation is infeasible. The rate of PV manufacturing and installation is expected to continue to grow very quickly. However, given that there are currently only about 500 MW of distributed solar PV in California, the addition of an additional 1,000 MW to eliminate the need for the BSPP cannot be guaranteed. This would require an even more aggressive deployment of PV at more than double the historic rate of solar PV than the California Solar Initiative program currently employs. Challenges to an accelerated implementation of distributed solar PV are discussed in the RSA. In sum, while it very likely will be possible to achieve 1,000 MW of distributed solar energy over the coming years, the very limited numbers of existing facilities make it difficult to conclude with confidence that it will happen within the timeframe required for the BSPP.

Alternative Renewable Technologies

Non-solar renewable generation technologies were considered as potential alternatives to the BSPP. The following renewable generation technologies were considered in this analysis:

1. wind energy
2. geothermal energy
3. biomass energy
4. tidal energy
5. wave energy

The non-solar renewable technologies alternatives (wind, geothermal, biomass, tidal, wave) are discussed in detail in Section B.2.8.3 of the RSA. The rationale for their elimination from more detailed consideration is provided below.

Rationale for Elimination

Alternative renewable technologies are eliminated from detailed discussion because they are ineffective. In other words, they would not respond to the BLM's purpose and need for the proposed action, which is to is to respond to Palo Verde Solar I's application under Title V of FLPMA (43 U.S.C. 1761) for a ROW grant to construct, operate, and decommission a solar thermal facility on public lands in compliance with FLPMA, BLM ROW regulations, and other Federal applicable laws.

The non-solar renewable technologies alternatives (wind, geothermal, biomass, tidal, wave) also are eliminated because they would be infeasible at the scale of the BSPP if they are feasible at all: none of these alternative technologies is within the Applicant's area of expertise, and so may not be technically or economically feasible for them to implement.

Wind energy alternatives also are eliminated because they could create significant impacts to biological, visual, cultural, and water and soils resources.

Geothermal energy alternatives also are eliminated because their implementation is remote or speculative: No new geothermal energy projects, despite the encouragement provided by Renewable Portfolio Standard targets and ARRA funding, have been proposed and no geothermal projects are included on the Renewable Energy Action Team list of projects requesting ARRA funds.

Biomass alternatives also are eliminated because most biomass facilities produce only small amounts of electricity (in the range of 3 to 10 MW) and so could not produce an amount of energy necessary to replace the BSPP. Consequently, these alternatives are eliminated because they are infeasible and/or remote or speculative. Further, biomass facilities generate significant air emissions and require numerous truck deliveries to supply the plant with the waste. Other environmental concerns associated with biomass relate to the emission of toxic chemicals, such as dioxin, and the disposal of the toxic ash that results from biomass burning. Accordingly, these alternatives would not reduce impacts relative to the proposed environment.

Tidal fence technology also is eliminated because its use is limited to areas that are adjacent to a body of water with a large difference between high and low tides (unlike the site). The technology also creates significant environmental impacts to ocean ecosystems. The technology also is infeasible because in-flow tidal turbines are a relatively new technology, unproven at the scale that would be required to replace the BSPP.

Wave power technologies also are eliminated because they are new and may not be technologically feasible at the scale that would be required to replace the BSPP.

Alternative Methods of Generating Electricity

The following alternative methods of generating or conserving electricity were considered as potential alternatives to the BSPP:

1. natural gas

2. coal
3. nuclear energy

These alternatives are discussed in detail in Section B.2.8.4 of the RSA. The rationale for their elimination from more detailed consideration is provided below.

Rationale for Elimination

Alternative methods of generating or conserving electricity are eliminated from detailed discussion because they would be too great a departure from the application to be considered a modification of the Applicant's proposal, and so are ineffective under NEPA. These alternative methods would not respond to the BLM's purpose and need for the proposed action, which is to is to respond to Palo Verde Solar I's application under Title V of FLPMA (43 U.S.C. 1761) for a ROW grant to construct, operate, and decommission a solar thermal facility on public lands in compliance with FLPMA, BLM ROW regulations, and other Federal applicable laws. Additionally, none of these alternative methods of generating electricity is within the Applicant's area of expertise; therefore, it would not likely be technically or economically feasible for the Applicant to implement them. Moreover, the permitting of new nuclear facilities in California is currently illegal, so this technology also is eliminated as infeasible.

Conservation and Demand-Side Management

Conservation and demand-side management is discussed in detail in Section B.2.8.2 of the RSA. Briefly, however, it consists of a variety of approaches to reduce electricity use, including energy efficiency and conservation, building and appliance standards, and load management and fuel substitution.

Rationale for Elimination

Conservation and demand-side management is eliminated from detailed discussion because it is ineffective. In other words, it does not respond to the BLM's purpose and need for the proposed action, which is to is to respond to Palo Verde Solar I's application under Title V of FLPMA (43 U.S.C. 1761) for a ROW grant to construct, operate, and decommission a solar thermal facility on public lands in compliance with FLPMA, BLM ROW regulations, and other Federal applicable laws. Conservation and demand-side management also is eliminated because it is remote or speculative: with population growth and increasing demand for energy, conservation and demand-management alone is not sufficient to address all of California's energy needs.

CHAPTER 3
Affected Environment

3.1 Introduction

The Applicant proposes the Blythe Solar Power Project (BSPP), a concentrated solar thermal electric generating facility comprised of four 250 megawatt (MW) plant units with a nominal capacity of 1000 MW capable of supplying enough renewable electricity for 300,000 homes.

If approved, the BSPP would be located on public land managed by the Bureau of Land Management (BLM) approximately three miles north of the I-10 freeway, and eight miles west of the City of Blythe, California. See Figure 1. The proposed action includes a 230-kilovolt (kV) transmission line that would interconnect with the regional grid at Southern California Edison’s (SCE) planned Colorado River Substation about five miles southwest of the plant site. The Applicant has applied for a right-of-way (ROW) grant from BLM for approximately 9,400-acres of flat desert terrain. Within these 9,400 acres, construction and operation would disturb approximately 7,025 acres. Remaining acreage that would not be disturbed would not be part of the ROW grant.

The proposed action would utilize solar parabolic trough technology to generate electricity. With this technology, arrays of parabolic mirrors collect radiant energy from the sun and refocus the energy on a receiver tube located at the focal point of the parabola. Through this process, a heat transfer fluid (HTF) is heated to high temperature (approximately 750°F) and piped through heat exchangers, where it is used to generate high-pressure steam. The steam is then fed to a traditional steam turbine generator to generate electricity.

Chapter 3 describes the environmental components of BLM-administered lands in the action area that could be affected by implementation of the BSPP. Chapter 3 describes resources, resource uses, special designations, and other important topics (i.e., public health and safety, social and economic considerations, and environmental justice conditions) that may be impacted by the BSPP. “Resources” include air, soil, water, vegetative communities, wildlife, wildland fire ecology and management, as well as cultural, paleontological, and visual resources. “Resource uses” include livestock grazing management, minerals, recreation management, transportation and public access, and lands and realty. “Special designations” include areas of critical environmental concern (ACECs), wilderness areas (WAs), wilderness study areas (WSAs) and wilderness characteristics.

Information and data used to prepare this chapter were obtained from the 1980 CDCA, as amended, various BLM planning and NEPA documents. Information and data were also collected from many other related planning documents (i.e., RSA, SA/DEIS) and research publications prepared by various federal and state agencies as well as from private sources pertaining to key resource conditions and resource uses found within the Project Area. The purpose of this chapter is to provide a description of affected resources and BLM program areas within the existing environment of the Project Area, which will be used as a baseline to evaluate and assess the impact of the five alternatives described in Chapter 2. Descriptions and analyses of the impacts themselves are presented in Chapter 4, Environmental Consequences.

3.2 Air Resources

The proposed BSPP is within the Mojave Desert Air Basin (MDAB). Elevation is approximately 1,000 feet above sea level. Relatively high daytime temperatures, large variations in relative humidity, large and rapid diurnal temperature changes, occasional high winds, and sand, dust, and thunderstorms characterize the climate. The aridity of the region is influenced by a sub-tropical high-pressure system typically off the coast of California and topographical barriers that effectively block the flow of moisture to the region. The Colorado Desert experiences two rainy seasons per year. The first occurs during the winter, and the second is the summer monsoon.

The monthly average high temperature in Blythe is 109°F in July and the lowest average monthly temperature is 39°F in January and December (WC 2009). Total rainfall in Blythe averages just less than four inches per year with about 50 percent of the total rainfall occurring from December through March, and about 30 percent occurring during the August/September summer monsoon season.

Wind data from the Blythe Airport for the years 2002 to 2004 and 2006 to 2008 indicate the April to November winds are predominately out of the west and southwest while the November to March winds are mostly from the northeast. This is due to the proximity of the MDAB to coastal and central regions of the state and the blocking nature of the Sierra Nevada Mountains to the north. The mountain passes are the main channels for the air masses (MDAQMD 2009). Mixing heights in the area, which represent the altitudes where different air masses mix together, are estimated to be on average 230 feet (70 meters) in the morning to as high as 5,250 feet (1,600 meters) above ground level in the afternoon.

3.2.1 Ambient Air Quality

The Federal Clean Air Act and the California Clean Air Act both require the establishment of standards for ambient concentrations of air pollutants, called Ambient Air Quality Standards (AAQS). The state AAQS, established by the California Air Resources Board, are typically lower (more protective) than the federal AAQS, which are established by the United States Environmental Protection Agency (U.S.EPA). The state and federal air quality standards are listed in Table 3.2-1. The times over which the various air quality standards are measured range from one hour to an annual average. The standards are read as a concentration, in parts per million (ppm), or as a weighted mass of material per a volume of air, in milligrams or micrograms of pollutant in a cubic meter of air (mg/m^3 or $\mu g/m^3$, respectively).

The BSPP area is located within the MDAB. Currently the ambient air quality is classified in the nonattainment category for ozone and fugitive dust PM10 criteria. According to the Northern & Eastern Colorado Desert Coordinated Management Plan, the ozone standard is exceeded due to long distance transport of pollutants from the Los Angeles Basin, while the PM10 standard is due to natural sources found in a desert environment and various land uses. These uses include off-highway vehicle use, mining and livestock grazing.

TABLE 3.2-1
FEDERAL AND STATE AMBIENT AIR QUALITY STANDARDS

Pollutant	Averaging Time	Federal Standard	California Standard
Ozone (O_3)	8 Hour	0.075 ppm[a] (147 µg/m^3)	0.070 ppm (137 µg/m^3)
	1 Hour	—	0.09 ppm (180 µg/m^3)
Carbon Monoxide (CO)	8 Hour	9 ppm (10 mg/m^3)	9.0 ppm (10 mg/m^3)
	1 Hour	35 ppm (40 mg/m^3)	20 ppm (23 mg/m^3)
Nitrogen Dioxide (NO_2)	Annual	0.053 ppm (100 µg/m^3)	0.03 ppm (57 µg/m^3)
	1 Hour	0.100 ppm[b]	0.18 ppm (339 µg/m^3)
Sulfur Dioxide (SO_2)	Annual	0.030 ppm (80 µg/m^3)	—
	24 Hour	0.14 ppm (365 µg/m^3)	0.04 ppm (105 µg/m^3)
	3 Hour	0.5 ppm (1300 µg/m^3)	—
	1 Hour	—	0.25 ppm (655 µg/m^3)
Particulate Matter (PM10)	Annual	—	20 µg/m^3
	24 Hour	150 µg/m^3	50 µg/m^3
Fine Particulate Matter (PM2.5)	Annual	15 µg/m^3	12 µg/m^3
	24 Hour	35 µg/m^3	—
Sulfates (SO_4)	24 Hour	—	25 µg/m^3
Lead	30 Day Average	—	1.5 µg/m^3
	Calendar Quarter	1.5 µg/m^3	—
Hydrogen Sulfide (H_2S)	1 Hour	—	0.03 ppm (42 µg/m^3)
Vinyl Chloride (chloroethene)	24 Hour	—	0.01 ppm (26 µg/m^3)
Visibility Reducing Particulates	8 Hour	—	In sufficient amount to produce an extinction coefficient of 0.23 per kilometer due to particles when the relative humidity is less than 70%.

NOTES:
[a] The 2008 standard is shown above, but as of September 16, 2009 this standard is being reconsidered. The 1997 8-hour standard is 0.08 ppm.
[b] The U.S. EPA is in the process of implementing this new standard, which became effective April 12, 2010. This standard is based on the 3-year average of the 98th percentile of the yearly distribution of 1-hour daily maximum concentrations.

SOURCE: ARB 2009a.

In general, an area is designated as attainment if the concentration of a particular air contaminant does not exceed the standard. Likewise, an area is designated as non-attainment for an air contaminant if that contaminant standard is violated. In circumstances where there is not enough ambient data available to support designation as either attainment or non-attainment, the area can be designated as unclassified. An unclassified area is normally treated by the EPA the same as an attainment area for regulatory purposes. An area could be attainment for one air contaminant while non-attainment for another, or attainment for the federal standard and non-attainment for the state standard for the same air contaminant.

The MDAB is under the jurisdiction of the Mojave Desert Air Quality Management District (MDAQMD). The Riverside County portion of the MDAB is designated as non-attainment for the state ozone and PM10 standards. This area is designated as attainment or unclassified for all federal criteria pollutant ambient air quality standards and the state CO, NO_2, SO_2, and PM2.5 standards. Table 3.2-2 summarizes the site area's attainment status for various applicable state and federal standards.

TABLE 3.2-2
FEDERAL AND STATE ATTAINMENT STATUS
BSPP SITE AREA WITHIN RIVERSIDE COUNTY

Pollutant	Attainment Status[a]	
	Federal	**State**
Ozone	Attainment[b]	Moderate Nonattainment
CO	Attainment	Attainment
NO_2	Attainment[c]	Attainment
SO_2	Attainment	Attainment
PM10	Attainment[b]	Nonattainment
PM2.5	Attainment	Attainment

NOTES:
[a] Attainment = Attainment or Unclassified, where Unclassified is treated the same as Attainment for regulatory purposes.
[b] Attainment status for the site area only, not the entire MDAB.
[c] Nitrogen dioxide attainment status for the new federal 1-hour NO_2 standard is scheduled to be determined by January 2012.

SOURCE: ARB 2009b, U.S.EPA 2009a.

Ambient air quality monitoring data for ozone, PM10, PM2.5, CO, NO_2, and SO_2, compared to most restrictive applicable standards for the years between 2004 through 2009 at the most representative monitoring stations for each pollutant are shown in Table 3.2-3, and the 1-hour and 8-hour ozone, and 24-hour PM10 and PM2.5 data for the years 1999 through 2009 (2008 for PM10 and PM2.5), collectively “1998-2009 Historical Ozone and PM Air Quality Data,” are shown below. Ozone data are from the Blythe-445 West Murphy Street monitoring station, PM10, PM2.5, NO_2, and CO data are from the Palm Springs Fire Station monitoring station and SO_2 data are from the Victorville-14306 Park Avenue monitoring station.

3.2.2 Ozone

Ozone is not directly emitted from stationary or mobile sources, but is formed as the result of chemical reactions in the atmosphere between directly emitted nitrogen oxides (NOx) and hydrocarbons (Volatile Organic Compounds [VOCs]) in the presence of sunlight. Pollutant transport from the South Coast Air Basin (Los Angeles Area) is one source of the pollution experienced in the eastern Riverside County portion of the MDAB (SCAQMD 2007, p. 1-2).

The 1-hour and 8-hour ozone concentrations measured at the eastern border of Riverside County have been very slowly decreasing over time. The collected air quality data (not shown) indicate that the ozone violations occurred primarily during the sunny and hot periods typical during May through September.

TABLE 3.2-3
CRITERIA POLLUTANT SUMMARY MAXIMUM AMBIENT CONCENTRATIONS (PPM OR µG/M^3)

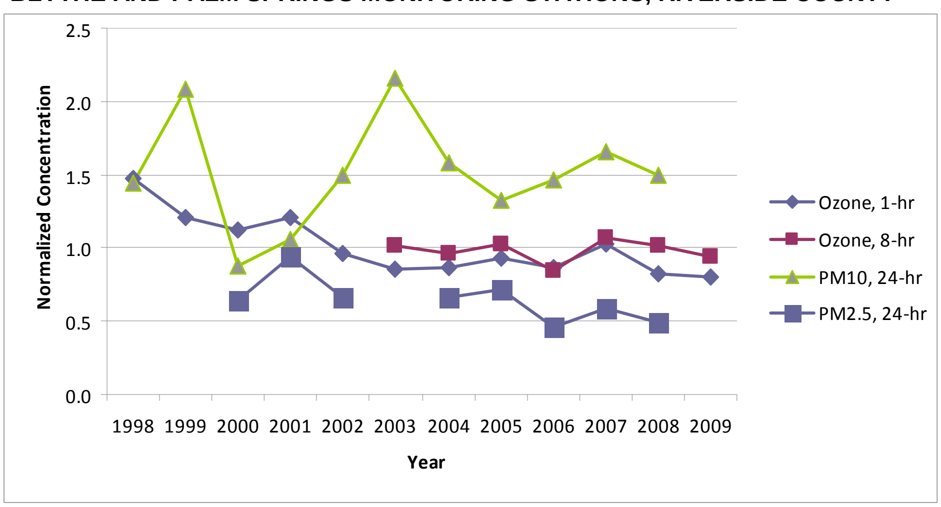
Pollutant	Averaging Period	Units	2004	2005	2006	2007	2008	2009	Limiting AAQS[c]
Ozone	1 hour	ppm	0.078	0.084	0.078	0.092	0.074	0.072	0.09
Ozone	8 hours	ppm	0.067	0.072	0.059	0.075	0.071	0.066	0.07
PM10[a,b]	24 hours	µg/m^3	79	66	73	83	75	--	50
PM10[a,b]	Annual	µg/m^3	26.4	25.9	24.5	30.5	23.2	--	20
PM2.5[a]	24 hours	µg/m^3	23.3	25	15.9	20.5	17.1	--	35
PM2.5[a]	Annual	µg/m^3	9.0	8.4	7.7	8.7	7.2	--	12
CO	1 hour	ppm	2.1	2.1	2.3	1.5	1.3	2.3	20
CO	8 hours	ppm	0.8	0.8	0.85	0.79	0.54	0.67	9.0
NO_2	1 hour	ppm	0.066	0.059	0.093	0.063	0.049	0.048	0.18
NO_2	Annual	ppm	0.013	0.012	0.01	0.01	0.009	0.008	0.03
SO_2	1 hour	ppm	0.011	0.012	0.018	0.009	0.006	0.028	0.25
SO_2	3 hour	ppm	0.007	0.008	0.012	0.005	0.006	0.006	0.5
SO_2	24 hours	ppm	0.003	0.003	0.005	0.005	0.002	0.005	0.04
SO_2	Annual	ppm	0.0013	0.0013	0.0015	0.0013	0.0011	0.000	0.03

NOTES:

[a] Exceptional PM concentration events, such as those caused by wind storms are not shown where excluded by U.S.EPA; however, some exceptions events may still be included in the data presented.
[b] The PM10 data source is in the Coachella Valley that is classified as a serious PM10 nonattainment area.
[c] The limiting AAQS is the most stringent of the CAAQS or NAAQS for that pollutant and averaging period.

SOURCE: ARB 2009c, U.S.EPA 2009b, SCAQMD 2009

INSET 3.2-1
1998-2009 HISTORICAL OZONE AND PM AIR QUALITY DATA
BLYTHE AND PALM SPRINGS MONITORING STATIONS, RIVERSIDE COUNTY[a,b,c]



NOTES:

[a] The highest measured ambient concentrations of various criteria air contaminants were divided by their applicable standard and provided as a graphical point. Any point on the chart that is greater than one means that the measured concentrations of such air contaminant exceed the standard, and any point that is less than one means that the respective standard is not exceeded for that year. For example the 24-hour PM10 concentration in 2008 is 75 µg/m^3/50 µg/m^3 standard = 1.5.
[b] All ozone data are from Blythe-445 West Murphy Street monitoring station. 8-hr ozone data was not available for this station before 2003.
[c] All PM data are from Palm Springs monitoring station. 24-hr PM2.5 data was not available for this station before 2000.

SOURCE: ARB 2009c, U.S.EPA 2009b, SCAQMD 2009

3.2.3 Nitrogen Dioxide

The entire MDAB is classified as attainment for the state 1-hour and annual and federal annual NO_2 standards. The nitrogen dioxide attainment standard could change due to the new federal 1-hour standard, although a review of the air basin-wide monitoring data suggest this would not occur for the MDAB.

Approximately 90% of the NOx emitted from combustion sources is nitric oxide (NO), while the balance is NO_2. NO is oxidized in the atmosphere to NO_2, but some level of photochemical activity is needed for this conversion. The highest concentrations of NO_2 typically occur during the fall. The winter atmospheric conditions can trap emissions near the ground level, but lacking substantial photochemical activity (sun light), NO_2 levels are relatively low. In the summer the conversion rates of NO to NO_2 are high, but the relatively high temperatures and windy conditions disperse pollutants, preventing the accumulation of NO_2. The NO_2 concentrations in the BSPP area are well below the state and federal ambient air quality standards.

3.2.4 Carbon Monoxide

MDAB is classified as attainment for the state and federal 1-hour and 8-hour CO standards. The highest concentrations of CO occur when low wind speeds and a stable atmosphere trap the pollution emitted at or near ground level. These conditions occur frequently in the wintertime late in the afternoon, persist during the night and may extend one or two hours after sunrise. The BSPP area has a lack of significant mobile source emissions and has CO concentrations that are well-below the state and federal ambient air quality standards.

3.2.5 Particulate Matter (PM10) and Fine Particulate Matter (PM2.5)

PM10 can be emitted directly or it can be formed many miles downwind from emission sources when various precursor pollutants interact in the atmosphere.

MDAB is classified as non-attainment for state PM10 standards and unclassified for the federal PM10 standard. Table 3.2-3 and Inset 3.2-1 shows recent PM10/PM2.5 concentrations. The figure shows fluctuating concentrations patterns, and shows clear exceedances of the state 24-hour PM10 standard. It should be noted that exceedance does not necessarily mean violation or nonattainment, as exceptional events do occur and some of those events, which do not count as violations, may be included in the data. The MDAB is designated as nonattainment for the state PM10 standard.

Fine particulate matter, or PM2.5, is derived mainly either from the combustion of materials, or from precursor gases (SOx, NOx, and VOC) through complex reactions in the atmosphere. PM2.5 consists mostly of sulfates, nitrates, ammonium, elemental carbon, and a small portion of organic and inorganic compounds.

The entire MDAB is classified as attainment for the federal standard and, in the BSPP area, is designated unclassified for the state PM2.5 standards. This divergence in the PM10 and PM2.5

concentration levels and attainment status indicates that a substantial fraction of the ambient particulate matter levels are most likely due to localized fugitive dust sources, such as vehicle travel on unpaved roads, agricultural operations, or wind-blown dust.[1]

3.2.6 Sulfur Dioxide

The entire air basin is classified as attainment for the state and federal SO_2 standards.

Sulfur dioxide is typically emitted as a result of the combustion of a fuel containing sulfur. Sources of SO_2 emissions within the MDAB come from a wide variety of fuels: gaseous, liquid and solid; however, the total SO_2 emissions within the eastern MDAB are limited due to the limited number of major stationary sources and California's and U.S. EPA's substantial reduction in motor vehicle fuel sulfur content. The BSPP area's SO_2 concentrations are well below the state and federal ambient air quality standards.

1 Fugitive dust, unlike combustion source particulate and secondary particulate, is composed of a much higher fraction of larger particles than smaller particles, so the PM2.5 fraction of fugitive dust is much smaller than the PM10 fraction. Therefore, when PM10 ambient concentrations are significantly higher than PM2.5 ambient concentrations this tends to indicate that a large proportion of the PM10 are from fugitive dust emission sources, rather than from combustion particulate or secondary particulate emission sources.

3.3 Global Climate Change

On April 2, 2007, in *Massachusetts v. EPA*, 549 U.S. 497 (2007), the U.S. Supreme Court found that greenhouse gases (GHGs)[1] are air pollutants under the federal Clean Air Act. In response, the Environmental Protection Agency issued a final rule on May 13, 2010 to apply Prevention of Significant Deterioration (PSD) requirements to new facilities whose carbon dioxide-equivalent emissions exceed 100,000 tons per year (EPA, 2010a; EPA, 2010b). The GHG emissions for the BSPP are expected to fall below this amount. See Section 4.3, Impacts to Global Climate Change, for estimated emissions for the proposed action.

On September 14, 2009, Secretary of the Interior, Ken Salazar issued Order No. 3289, addressing the impacts of climate change on domestic water, land, and other natural and cultural resources. The Order establishes an approach for increasing understanding of climate change and responding to potential climate change related impacts as relevant to the resources that the Department of the Interior (DOI) manages. The document specifically identifies potential impact areas including potential changes in flood risk and water supply, sea level rise, changes in wildlife and habitat populations and their migration patterns, new invasions of exotic species and increased threat of wildland fire. The Order includes Climate Change Response Planning Requirements, which require each bureau and office within the DOI (including BLM) to consider and analyze potential climate change impacts when undertaking long range planning exercises, setting priorities for scientific research and investigations, developing multi-year management plans, and making major decisions regarding potential use of resources under DOI's purview.

The State of California has demonstrated a clear willingness to address global climate change, as shown by regulatory and other actions taken by the California Energy Commission, the Air Resources Board (ARB), the Legislature, and the Governor. For example, in 1998, the California Energy Commission identified a range of strategies to prepare for an uncertain climate future, including a need to account for the environmental impacts associated with energy production, planning, and procurement (CEC 1998, p. 5). In 2003, the Energy Commission recommended that the state require applicants to report GHG emissions as a condition of state licensing of new electric generating facilities (CEC 2003, IEPR p. 42). In 2005, Governor Schwarzenegger issued Executive Order S-3-05, which established a goal of reducing GHG emissions 80 percent below 1990 levels by 2050.

In 2006, California enacted the California Global Warming Solutions Act of 2006 (AB 32). AB 32 requires the ARB to adopt standards that will reduce statewide GHG emissions to 1990 levels, with such reductions to be achieved by 2020.

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1 The terms greenhouse gases (GHG) and global climate change (GCC) gases are used interchangeably. Global climate change is the result of GHGs, or air emissions with global warming potentials, affecting the global energy balance, and thereby, the climate of the planet. GHGs inherently are a cumulative impacts issue.

The ARB adopted early action GHG reduction measures in October 2007, mandatory reporting requirements and the 2020 statewide limit in December 2007,[2] and a State-wide scoping plan in December 2008 to identify how emission reductions will be achieved from major sources of GHG via regulations, market mechanisms, and other actions. ARB staff is developing regulatory language to implement its plan and holds ongoing public workshops on key elements of the recommended GHG reduction measures, including market mechanisms (See, e.g., ARB 2010). The regulations must be effective by January 1, 2011 and mandatory compliance is to commence on January 1, 2012. The mandatory reporting requirements are effective for electric generating facilities with a nameplate capacity equal or greater than 1 megawatt (MW) if their emissions exceed 2,500 metric tons (MT) per year.

Also in 2006, the State enacted SB 1368 (Public Utilities Code Section 8340 *et seq*.), which limits California utilities' long-term investments in base load[3] generation to power plants that meet an emissions performance standard (EPS) of 0.500 MT CO_2 per megawatt-hour (1,100 pounds CO_2/MWh). The EPS applies only to carbon dioxide; it does not apply to emissions of other GHGs converted to carbon dioxide equivalent. The Energy Commission and the California Public Utilities Commission (CPUC) jointly established the EPS, which applies to base load power from new power plants, new investments in existing power plants, and new or renewed contracts with terms of five years or more, including contracts with power plants located outside of California (CPUC, 2007). If a project, in-State or out-of-State, plans to sell base load electricity to a California utility, the utility will have to demonstrate that the project meets the EPS. As a renewable electricity generating facility, the BSPP is determined by rule to be compliant with the SB 1368 EPS (20 CCR 2903(b)(1)).

Electricity generation can produce GHGs with the criteria air pollutants that traditionally have been regulated under the federal and state Clean Air Acts. For fossil fuel-fired power plants, the GHG emissions include primarily carbon dioxide, with much smaller amounts of nitrous oxide (N_2O, not NO or NO_2, which are commonly known as NOx or oxides of nitrogen), and methane (CH_4 – often from unburned natural gas). Other sources of GHG emissions include sulfur hexafluoride (SF_6) from high voltage equipment and hydrofluorocarbons (HFCs) and perfluorocarbons (PFCs) from refrigeration/chiller equipment. GHG emissions from the electricity sector are dominated by CO_2 emissions from carbon-based fuels; other sources of GHG emissions are small and also are more likely to be easily controlled or reused or recycled, but are nevertheless documented here as some of the compounds have very high global warming potentials.

GHG reductions would be realized by this project. By displacing fossil fuel-based energy generation with renewable energy generation, GHG production would be reduced. Renewables have been given preference over fossil power generation. So when renewable power is available, the Independent Systems Operator (ISO) requests turndown of fossil power production. Then

2 Global warming potential is a relative measure, compared to carbon dioxide, of a compound's residence time in the atmosphere and ability to warm the planet. Mass emissions of GHGs are converted into carbon dioxide equivalent (CO2E) MT for ease of comparison. The 1990 emissions level, and thus the 2020 emissions limit, adopted by ARB is 427 million metric tonnes of carbon dioxide equivalent (MMTCO2e).

3 *Base load* units are defined as units that operate at a capacity factor higher than 60 percent.

when the renewable facility goes off line, if there is still demand, the ISO turns the fossil power plants back on or up. And/or fossil-based load following plants will simply adjust automatically as the renewable plant comes online and offline. See Section 4.3 for GHG emissions and reductions associated with the proposed action and alternative actions.

3.4 Cultural Resources

Cultural resources are categorized as buildings, sites, structures, objects, and districts for the purposes of complying with the National Environmental Policy Act (NEPA) and the National Historic Preservation Act (NHPA) Section 106. Three kinds of cultural resources are considered in this assessment: prehistoric, ethnographic, and historic.

Prehistoric archaeological resources are associated with the human occupation and use prior to sustained European contact. These resources may include sites and deposits, structures, artifacts, rock art, trails, and other traces of Native American human behavior. In California, the prehistoric period began over 12,000 years ago and extended through the eighteenth century until 1769, when the first Europeans permanently settled in California.

Ethnographic resources represent the heritage of a particular ethnic or cultural group, such as Native Americans or African, European, Latino, or Asian immigrants. They may include traditional resource-collecting areas, ceremonial sites, value-imbued landscape features, cemeteries, shrines, or ethnic neighborhoods and structures.

Historic-period resources, both archaeological and architectural, are associated with Euro-American exploration and settlement of an area and the beginning of a written historical record. They may include archaeological deposits, sites, structures, traveled ways, artifacts, or other evidence of human activity. Groupings of historic-period resources are also recognized as historic districts and as historic vernacular landscapes. Under federal and state historic preservation law, cultural resources generally must be at least 50 years old to have sufficient historical importance to merit consideration of eligibility for listing in the National Register of Historic Places (NRHP) or in the California Register of Historical Resources (CRHR). A resource less than 50 years of age must be of exceptional historical importance to be considered for listing.

3.4.1 Environmental Setting

Geology

The landforms in and around the proposed BSPP date, at the earliest, from the Miocene Epoch (23–5.2 million years ago (Ma)), but all subsequent epochs, the Pliocene (5.2–1.8 Ma), the Pleistocene (1.8 million–10,000 years ago), and the Holocene (10,000 years ago to the present) are also represented (Galati & Blek 2010x, p. 8).

The latter two epochs are the time periods in which humans reached and spread over the northern and southern American hemispheres, so landforms remaining from or created during the very late Pleistocene or throughout the Holocene are possible locations for surface or buried archaeological deposits. The surface of the BSPP plant site and environs are predominately Holocene in age (Galati & Blek 2010x, p. 16).

Geologically, the region in which the BSPP would be built consists of broad basins, filled with alluvium, and separated by isolated mountain ranges. The deposition of alluvium in the basins has been ongoing since some 25 Ma, with the sources being the local mountain ranges and, on the east, the Colorado River. The erosion of the flanking mountains has also resulted in the creation of alluvial fans at the bases of the mountains (Solar Millennium 2009a, pp. 5.5-4–5.5-5).

During the Pleistocene, the Colorado River, now located some 15 miles east, ran through the BSPP site, depositing sands and silts. Its periodic flooding also created terraces along what is now the east side of BSPP site, composed of water-rounded cobbles, referred to by archaeologists as “pebble terraces.” As the river moved to the east, these terraces were left behind. These deposits of rocks transported by the river from all along its length, consisting of quartzite, chert, chalcedony, and other cryptocrystalline and volcanic lithic materials were used as sources for Native American flaked stone tools throughout the Holocene (Solar Millennium 2009a, p. 5.4-9). Metavolcanic, metasedimentary and igneous toolstones are all present to some degree on these pebble terraces.

Geomorphology

The dominant geomorphic feature at the BSPP plant site is a broad alluvial fan bajada[1] cut by dry washes. The site slopes from the northwest to the southeast, and the sediments deposited by the parallel drainages grade from coarse to fine in the same direction. The next most prominent geomorphic feature is the raised, remnant gravel (pebble) terraces along the eastern and southern site boundaries (Galati & Blek 2010x, p. 8). These terraces are abandoned gravel deposits of former channels of the Colorado River, dating from the Pleistocene epoch, as noted above, in the Geology subsection.

Surface water at the BSPP site drains from the northwest to the southeast, with numerous dry washes located on the west side of the site. These washes originate in the McCoy Mountains and either coalesce into a larger wash at the southwest corner of the site or dissipate into the sandy alluvium of the northern part of the site (Solar Millennium 2009a, p. 5.5-5).

Most of the surface of the site is Holocene in age, dating from 10,000 years ago to the present. The historical geomorphology of the site is described as having undergone four episodes of deposition: initially fluvial[2] sands of the ancestral Colorado River, then lacustrine[3] clays, followed by sands and gravels of advancing alluvial fans, and finally re-worked sands and gravels originating from alluvial sands. (Galati & Blek 2010x, p. 16):

When the cool, wet Pleistocene gave way to the drier Holocene climate, alluvial fan growth was probably accelerated, so the lake-deposited clays that underlay the alluvial fan deposits could represent the Pleistocene. Therefore, evidence of human use of this area would be found no deeper than the contact between the upper part of the Pleistocene clay deposit and the lower part of the Holocene sand and gravel deposit. That contact generally occurs at about 10 feet, so

[1] An alluvial plain formed as a result of lateral growth of adjacent alluvial fans until they finally coalesce to form a continuous inclined deposit along a mountain front, in this case along the front of the McCoy Mountains.
[2] River flooding.
[3] Associated with a lake environment.

buried archaeological deposits, if any, would be limited to the upper 10 feet of the BSPP site (Galati & Blek 2010x, p. 17).

Paleoclimate

Identifying the kinds and distribution of resources necessary to sustain human life in an environment, and the changes in that environment over time, is central to understanding whether and how an area was used during prehistory and history. During the time that humans have lived in California, the region in which the proposed action is located, the Mojave Desert, has undergone several climatic shifts. These shifts have resulted in variable availability of vital resources, and that variability has influenced the scope and scale of human use of the vicinity of the site. Consequently, it is important to consider the historical character of local climate change, or the paleoclimate, and the effects of the paleoclimate on the physical development of the area and its ecology.

The Pleistocene (1.8 million–10,000 years ago), and the Holocene (10,000 years ago to the present) environmental record from the Mojave Desert provides a model for the Colorado Desert. Summaries of the development and changes in vegetation in the Mojave Desert and surrounding region in these periods are provided by Grayson (1993, pp. 119–128; 139–143; 194–195; 199–202, 215), Spaulding (1990), Tausch et al. (2004), Thompson (1990), and Wigand and Rhode (2002, pp. 332–342). All note the vegetation history of this region has been primarily studied by analysis of plant macrofossils contained in prehistoric packrat middens. Pollen studies from this region are largely lacking.

In general, Tausch et al. (2004, (fig 2.3); see also Wigand and Rhode 2002, pp. 321–332) note the Early Holocene (8,500–5,500 BC) in the Mojave Desert was characterized by a post-glacial warming trend, accompanied by periods characterized by variable moisture. The subsequent Mid-Holocene (5,500–3,000 BC) was the warmest, driest part of the entire Holocene. During the post-Mid-Holocene transition (3,000–1,500 BC), relatively warm, dry conditions prevailed.

In the approximate period from 1,500 to 600 BC, a cool, wet interval has been termed the Neoglacial by climate scientists. It was followed by a much drier, and possibly relatively cooler, period, the Post-Neoglacial Drought (600 BC–400 AD). The next interval, the Medieval Climatic Anomaly (400–1350 AD) was characterized by intensified drought and relatively warm conditions (Meko et al. 2001; Stine 1994, 1996, 1998, 2000). A period called the Little Ice Age followed (1350–1850 AD) that was cold and somewhat dry (Fagan 2000; Grove 1988; Meko et al. 2001; Scuderi 1987a, 1987b, 1990, 1993). Present climate conditions then commenced.

During the wetter periods (the Late Pleistocene, the Neoglacial, and the Little Ice Age), some of the basins in the Mojave Desert Region (and in the Colorado Desert region, as well) became shallow lakes, with extensive marshy shorelines. Being sources of food and materials, these lakes would have drawn Native Americans to them and perhaps would have encouraged settlement (Gallegos et al. 1980, p. 93). The elevation of the Palo Verde Mesa prevented a lake from forming where the BSPP is to be located, but within a few miles to the west, two lakes, Ford Dry Lake and Palen Dry Lake, are known to have formerly existed.

Prehistoric Background

The paucity of data prior to the Late Prehistoric period (discussed below) in the Colorado Desert has hindered development of a comprehensive scheme detailing the cultural chronology for the region. The following chronology is extrapolated from Sutton et al.'s (2007, p. 236, table 15.4) concordance of terms for temporal periods and complexes in the Mojave Desert. Other pertinent chronological schemes for the Colorado Desert occur in Love and Dahdul (2002, p. 69, fig. 2), Warren (1984, pp. 409–430, fig. 8.27), and Weide (1976, p. 82, table 3).

Late Pleistocene

Paleoindian

The Late Pleistocene Paleoindian Period (about 10,000–8000 BC) is better represented in the Mojave Desert than in the Colorado Desert (Beck and Jones 1997). Isolated fluted projectile points, assignable to the Western Clovis Tradition have been recovered from the Pinto Basin, Ocotillo Wells, Cuyamaca Pass, and the Yuha Desert (Dillon 2002, p. 113; Moratto 1984, pp. 77, fig. 3.1, 87; Rondeau et al. 2007, pp. 64–65, fig. 5.1, table 5.1). All are surface finds, and have no associations with extinct fauna.

Early Holocene

Lake Mojave Complex

The Lake Mojave complex, about 8000–6000 BC, is also known as the Western Pluvial Lakes/Western Stemmed Tradition (see Beck and Jones 1997; Erlandson et al. 2007; papers in Graf and Schmitt 2007; Schaefer 1994, pp. 63–64; Sutton et al. 2007; papers in Willig et al. 1988). As with the preceding Paleo-Indian Period, the Lake Mojave Period is better represented in the Mojave Desert than in the Colorado Desert. It is characterized by Great Basin Stemmed Series projectile points (Lake Mojave and Silver Lake), abundant bifaces, steep-edged unifaces, crescents, and occasional cobble tools and ground stone tools. These artifacts often occur in undated surface contexts. Assemblage composition and site structure suggest highly mobile foragers, often traveling considerable distances. Little reliance upon vegetal resources is evidenced. The value of wetland habitats remains unclear. Lake Mojave lifeways may result from relatively rapidly changing climate and habitats during the Early Holocene. This would have produced unpredictability in resource distribution and abundance, producing a high degree of residential mobility.

Middle Holocene

Pinto Complex

The Pinto complex, dated at about 8000–3000 BC, appears to overlap the Lake Mojave complex. During the Lake Mojave and Pinto complexes, stone tools were made from materials other than obsidian and cryptocrystalline silicate (CCS). Pinto Series points are stemmed with indented bases, and display high levels of reworking. Bifacial and unifacial cores/tools are common. Ground stone tools are moderately to very abundant, indicating greatly increased use of plant resources. Pinto complex sites occur in a broad range of topographic and environmental settings, especially within remnant pluvial lake basins. Large apparent residential bases occur. They probably were occupied for prolonged periods by moderate to large numbers of people, practicing a collector subsistence strategy. Logistical forays into surrounding resource patches probably were made from these sites.

Deadman Lake Complex

Currently, the Deadman Lake complex, dating about 7500–5200 BC, appears at this time to be confined to the Twentynine Palms area Sites usually are surficial and located on old alluvial pediments. Artifacts include small-to-medium-size contracting stemmed or lozenge-shaped points, large concentrations of battered cobbles and core tools, and abundant bifaces, simple flake tools, and ground stone tools. The abundance of cobble tools suggests an emphasis upon plant processing. The Deadman Lake and Pinto complexes may represent two different human populations practicing different seasonal/annual rounds, or Deadman Lake may represent a component of the overall Pinto complex adaptation.

Late Holocene

In the approximate period of 3000–2000 BC, environmental conditions in the Mojave Desert were warmer and drier. Few archaeological sites date to this period. This suggests population densities were very low. It is possible some areas were largely abandoned.

Gypsum Complex

Dating between about 2000 BC and 200 AD, the Gypsum complex is characterized by the presence of corner-notched Elko Series points, concave-base Humboldt Series points, and well-shouldered contracting-stemmed Gypsum Series points. Numerous bifaces also occur. Manos and metates are relatively common. During the early portion of the Gypsum complex, settlement-subsistence appears focused near streams. At this time, increased trade and social complexity apparently occurred. Gypsum complex components are smaller, more abundant, and occur over a more diverse suite of settings than those dating previously. Evidence for ritual activities includes quartz crystals, paint, split-twig animal figurines, and rock art. Gypsum complex sites are uncommon in the southern and eastern Mojave Desert.

Rose Spring Complex

Around 200–500 AD, cultural systems profoundly changed in the southern California deserts. Introduction of the bow and arrow, represented by Rosegate Series points, occurred. Previously, at about the beginning of the first millennium AD, moister conditions may have increased wetlands. During Rose Spring complex times, a major population increase, significant changes in artifact assemblages took place. Well-developed middens yielded artifact assemblages containing knives, drills, pipes, bone awls, various ground stone tools, marine shell ornaments, and large amounts of obsidian. Obsidian procurement and processing apparently significantly structured settlement-subsistence.

Rose Spring sites often are located near springs, along washes, and sometimes along lakeshores. Intensive occupation is indicated by the presence of pit houses and other types of structures.

Human populations appear to have peaked, possibly resulting from a more productive environment and a more efficient hunting technology. During the middle of Rose Spring times, climatic conditions became warmer and dryer. Increased populations, the warmer, drier climate, and increased hunting efficiency may have produced resource depletion. This may have resulted in changes ending the Rose Spring complex around 1100 AD.

Late Prehistoric

Starting at approximately 1000–1100 AD, the Late Prehistoric period began. During this time, new technologies were introduced; populations appear to have declined, and historic Native American cultures became established. Lake Cahuilla was a focal point of settlement-subsistence. A complex cultural landscape composed of rock art, trails, and geoglyphs[4] developed. Trade and exchange were elaborated, with an emphasis on links between coastal southern California and the Southwest. In addition to pottery, artifact assemblages include Desert Series projectile points, shell and steatite beads, and a variety of milling tools. Obsidian use declines significantly, with CCS becoming the dominant type of stone used for stone tools.

In the Late Prehistoric period, too, agriculture and pottery were introduced to the native peoples of the Colorado Desert. Agriculture probably began around 700 AD in the Colorado Desert. It most likely was introduced from the Hohokam area in southern Arizona or from northern Mexico and had its greatest impact along the Lower Colorado River (McGuire and Schiffer 1982; Schaefer 1994, pp. 65–74; Schaefer and Laylander 2007, pp. 253–254). At approximately the start of the first millennium AD, ceramic artifacts began to appear in the Colorado Desert. They included pottery types assigned to the Lowland Patayan (Lower Colorado Buff Ware) and Tizon Brown Ware traditions (Lyneis 1988; Waters 1982). At the time of the advent of sustained Euroamerican contact in 1769 AD, a number of Native American groups inhabited the Colorado Desert, using a complex cultural landscape, which appears to have been largely developed during the preceding millennium.

Prehistoric Settlement in the Chuckwalla Valley

Singer (1984) presents a lithic quarry-oriented prehistoric settlement model for the Chuckwalla Valley and environs. Over 200 prehistoric sites occur in the region. Past peoples inhabiting the area appear to have been very mobile, especially during late prehistoric and early historic times. During early historic times, native peoples inhabited towns/hamlets located along the Colorado River, within the Coachella Valley, and at major desert springs/oases.

The Chuckwalla Valley may have been a relatively closed resource exploitation zone. It also may have served as an east-west oriented trade corridor between the Pacific Ocean and the Colorado River and greater Southwest. An extensive network of trails is present within the Chuckwalla Valley. Given its orientation and location, the valley may have been neutral territory (i.e., a buffer zone), unclaimed by neighboring native peoples. Quarry sites probably were “owned” by

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4 Geoglyphs, also known as intaglios, were created on desert pavements by rearranging and/or clearing pebbles and rocks to form alignments, clearings, and/or figures. Rock alignments are present throughout this region, while representational figures only occur close to the Lower Colorado River. It is assumed that they played some role in sacred or ritual activities.

unilinear corporate groups. The distribution of particular types of toolstones may have corresponded to a group's territorial boundaries, and a toolstone type may not have occurred beyond the limits of a group's specific territory.

Within the Chuckwalla Valley, prehistoric sites are clustered around springs, wells, and other obvious important features or resources. Sites include villages with cemeteries, occupation sites with and without pottery, large and small concentrations of ceramic sherds and flaked stone tools, rock art sites, rock shelters with perishable items, rock rings/stone circles, intaglios and cleared areas, and a vast network of trails, trail segments, markers and shrines, and quarry sites. Possible village locations are present at Palen Lake, Granite Well, and Hayfield Canyon.

A cluster of temporary habitation and special activity (task) sites occurs around a quarry workshop in the Chuckwalla Valley. The Chuckwalla Valley quarry workshop complex probably was used throughout the Holocene. During this period, Chuckwalla Valley most likely was occupied, abandoned, and reoccupied by a succession of ethnic groups. In the Early Holocene (i.e., Lake Mojave complex times), the area may have been relatively densely inhabited. During the Middle Holocene (i.e., Pinto and Gypsum complexes period) it only may have been sporadically visited. The subsequent Late Holocene Rose Spring and Late Prehistoric periods probably witnessed reoccupation of the valley by Yuman and Numic-speaking peoples.

Cultural Landscapes

In the Colorado Desert, trails, cairns, geoglyphs, cleared circles, rock rings, other desert pavement features, rock art sites, and artifact scatters appear to be elements of a prehistoric-ethnohistoric cultural landscape[5] (Schaefer and Laylander 2007, pp. 254–255; Cleland and Apple 2003). Specific resources include the Pilot Knob Complex, the rock art complex at Palo Verde Point, the Ripley Locality, and the Quien Sabe-Big Maria complex. Lower Colorado River geoglyph and rock art sites may represent prehistoric ceremonial centers, located along a route extending between sacred places, representing the cosmology and iconography of Yuman peoples (Altschul and Ezzo 1995; Cleland 2005; Ezzo and Altschul 1993; Gregory 2005; Hedges 2005; Johnson 1985, 2004; Woods et al. 1986).

Trails

During Late Prehistoric and ethnohistoric times, an extensive network of Native American trails was present in the Colorado Desert and environs (Heizer 1978; Cleland 2007; Sample 1950, p. 23; Apple 2005; Earle 2005; Melmed and Apple 2009; Von Werlhof 1986). Segments of many trails are still visible, connecting various important natural (for example, springs) and cultural (for example, rock art/petroglyph sites) elements of the landscape. Trail segments no longer visible are often marked by votive rock piles (cairns) and ceramic sherd scatters ("pot drops").

5 "Ethnohistoric" refers to the period during which Euroamerican accounts of Native Americans augment the archaeological record and Native American oral traditions as sources of information on Native Americans. Cultural landscapes, when related to specific ethnic groups, are referred to as "ethnographic landscapes" (Hardesty 2000).

Late Prehistoric-early historic Native American trail segments have been recorded traversing roughly east/west through the Chuckwalla Valley (Johnston and Johnston 1957, map 1). CEC 2010 citing Johnson (1980, pp. 89–93, fig. 1) identifies this route as part of the Halchidhoma Trail (recorded as CA-Riv-53T) running from San Bernardino through San Gorgonio Pass to the Colorado River at present-day Palo Verde Valley. In the vicinity of the Chuckwalla Valley, the trail proceeded roughly east-northeast from Hayfield Dry Lake past the future community of Desert Center, then eastward, south of Palen Dry Lake towards Ford Dry Lake, and then on to the Colorado River.[6]

Rock Alignments and Geoglyphs

In the Mojave Desert, large rock alignments are found in Panamint Valley, Death Valley, Eureka Valley, and the Owens River Valley (Davis and Winslow 1965; Gilreath 2007, pp. 288–289; von Werlhof 1987). They have been interpreted as resulting from group ritual(s) (von Werlhof 1987). Many appear characterized by multiple-use episodes, with portions added through the years as part of ongoing rituals/ceremonies.

Rock alignments and geoglyphs occur throughout the deserts of southeast California and adjacent portions of southern Nevada and western Arizona. Rock alignments are present throughout this region, while representational figures only occur close to the Lower Colorado River.

Colorado River geoglyphs include the Topock Maze (Rogers 1929) and a few dozen giant ground figures (Harner 1953; Setzler and Marshall 1952), often first observed from the air. During historic times, the Top Rock Maze was used by Yuman peoples for spiritual cleansing.

Johnson (1985, 2003), von Werlhof (2004), and Whitley (2000) relate the geoglyphs to Yuman cosmology, origin myths, and religion. Cation-ratio dating[7] of desert varnish has provided estimated ages of approximately AD 800–AD 1000 for the Colorado geoglyphs (Dorn et al. 1992; Schaefer 1994, p. 63; von Werlhof 1995), although use of this dating technique remains controversial (Gilreath 2007, p. 289).

Von Werlhof (1995, 2004) relates these sites to the Yuman creation story. They also may have functioned as focal points for shamanistic activities, vision quests, curing, and group rituals/ceremonies. Symbolic activities also were represented by intentional pot-drop distributions along trails near water sources. The importance to Native Americans of water sources for survival during long-distance trips and seasonal rounds is obvious. Water sources also manifested significant spiritual values and often were associated with major rock art complexes (McCarthy 1993; Schaefer 1992).

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6 A more direct trail route went southeast from Hayfield Dry Lake via Aztec Well/Corn Spring and south from Ford Lake, rejoining the northern route at the south end of the McCoy Mountains.

7 Cation ratios between weathered rock varnish and unweathered rock are used as a relative dating technique to roughly determine the age of prehistoric rock carvings (petroglyphs). The quantity of positively-charged ions within the varnish (a chemically-changed layer built up of calcium and potassium leachate over time) is compared to those within the unweathered rock beneath the varnish.

Ethnographic Background

It is unclear which historic Native American group or groups occupied or used the region in which the BSPP site is located, but the Chemehuevi, Serrano, Cahuilla, Mojave, Quechan, Maricopa, and Halchidhoma may at different times all have used the area.

Singer (1984, pp. 36–38) concluded the Chuckwalla Valley was not clearly assigned to any Native American group on maps depicting group territories. Following Johnston and Johnston (1957), Singer observed that the west end of the Chuckwalla Valley was near the intersecting boundaries of Cahuilla-Serrano-Chemehuevi territory. Possibly before 800 BC, the Chemehuevi may have expanded into Serrano territory, occupying the Chuckwalla Valley. No evidence suggested that the Cahuilla occupied the area. Given its east-west orientation and location, however, the Chuckwalla Valley may have been neutral territory, occupied by no Native American group in particular, which served as an east-west trade and travel route.

The Cahuilla

A wealth of information exists regarding traditional and historic Cahuilla society and culture (see Bean and Lawton 1967 for a comprehensive bibliography of sources). Primary sources for the Cahuilla include Bean (1972; 1978), Bean and Saubel (1972), Drucker (1937), Gifford (1918), Hooper (1920), James (1960), Kroeber (1908; 1925, pp. 692–708), and Strong (1929, pp. 36–182). The Cahuilla language, divided into Desert, Pass, and Mountain dialects, has been assigned to the Takic subfamily of the Uto-Aztecan family (Golla 2007; Moratto 1984; Shipley 1978).

Territory traditionally claimed by the Cahuilla was topographically complex, including mountain ranges, passes, canyons, valleys, and desert. Bean (1978, p. 375) described it as, "…from the summit of the San Bernardino Mountains in the north to Borrego Springs and the Chocolate Mountains in the south, a portion of the Colorado Desert west of Orocopia Mountain to the east, and the San Jacinto Plain near Riverside and the eastern slopes of Palomar Mountain to the west." The natural boundaries of the desert, mountains, hills, and plains separated the Cahuilla from surrounding Native American groups. The Cahuilla interacted with surrounding peoples via intermarriage, ritual, trade, and war. The Cahuilla, Gabrielino, Serrano, and Luiseño shared common cultural traditions, with the Cahuilla having especially close ties to the two former groups.

Cahuilla villages usually were located in canyons or on alluvial fans near water and food patches. The area immediately around a village was owned in common by a lineage. Other lands were divided into tracts owned by clans, families, and individuals. Numerous sacred sites with rock art were associated with each village. Villages were connected by trail networks used for hunting, trading, and social visiting. Trading was a prevalent economic activity. Some Cahuilla were trading specialists. The Cahuilla went as far west as the Channel Islands and east to the Gila River to trade.

Hunting and meat processing were done by men. Game included deer, mountain sheep, pronghorn, rabbits, rodents, and birds. These were hunted by individuals and communal hunting groups. Blinds, pits, bows and arrows, throwing sticks, nets, snares, and traps were used to procure game. Communal hunts with fire drives sometimes occurred.

The Cahuilla had access to an immense variety of plant resources present within a diverse suite of habitats (Barrows 1900; Bean and Saubel 1972). Several hundred plant species were used for food, manufacture, and medicine. Acorns, mesquite and screw beans, pinyon nuts, and cactus fruits were the most important plant foods. They were supplemented by a host of seeds, tubers, roots, bulbs, fruits and berries, and greens. Corn, beans, squash, and melons were cultivated. Over 200 species of plants were used as medicines.

Structures varied in size from brush structures to dome-shaped or rectangular houses, 15–20 feet long, and ceremonial houses. The chief's house usually was the largest. Used for many social, ceremonial, and religious functions, it was located near a good water source. It generally was next to the ceremonial house, which was used for rituals, curing, and recreational activities. Other structures included a communal men's sweathouse and granaries.

Mortars and pestles, manos and metates, pottery, and baskets were used to process and prepare plant and animal foods. Cahuilla material culture included a variety of decorated and plain baskets; painted/incised pottery; bows, arrows, and other hunting-related equipment; clothing, sandals, and blankets; ceremonial and ritual costumes and regalia; and cordage, rope, and mats. Games and music were important social and ritual activities for the Cahuilla.

The Cahuilla had named clans, composed of 3–10 lineages, with distinct dialects, common genitors, and a founding lineage. Each lineage owned particular lands, stories, songs, and anecdotes. Each lineage occupied a village and controlled specific resource areas. Clan territory was jointly owned by all clan members. Territory ownership was established by marked boundaries (rock art, geographic features), and oral tradition. Most of a clan's territory was open to all Cahuilla. Kinship rules determined rights to assets and responsibilities within a lineage. Each lineage cooperated in defense, large-scale subsistence activities, and ritual performance. The founding lineage within a clan often owned the office of ceremonial leader, the ceremonial house, and sacred bundle. Artifacts and equipment used in rituals and subsistence was owned by individuals and could be sold or loaned.

The office of lineage leader usually passed from father to eldest son. He was responsible for correct performance of rituals, care of the sacred bundle, and maintenance of the ceremonial house. The lineage leader also determined when and where people could gather and hunt, administered first-fruits rites, and stored food and goods. He knew boundaries and ownership rights, resolving conflict with binding decisions. The lineage leader met with other lineage leaders concerning various issues. He was assisted in his duties by a hereditary official responsible for arranging details for performance of rituals. Other functionaries included song leaders/ceremonialists, assisted by singers and dancers.

Laws were enforced by ritual, stories, anecdotes, and direct action. Supernatural and direct sanctions were used. Tradition provided authority. The past was the referent for the present and future. Old age provided access to privilege, power, and honor. Reciprocity was a significant expectation. Doing things slowly, deliberatively, and thoughtfully was stressed. Integrity and dependability in personal relations were valued. Secrecy and caution were exercised in dealing with knowledge.

Disputes between Cahuilla villages usually arose over access to resources. Other causes included sorcery, personal insults, kidnapping of women, nonpayment of bride price, and theft. Armed conflict occurred after all other efforts to resolve things had failed. A lineage leader and/or skillful warrior lead a temporary war party. Community rituals were held before and after a fight, which usually involved ambush.

Ritual and ceremony were a constant factor in Cahuilla society. Some ceremonies were scheduled and routine, while others were sporadic and situational. The most important ceremonies were the annual mourning ceremony, the eagle ceremony, rites of passage (especially those associated with birth, naming, puberty, marriage), status changes of adults, and rituals directed towards subsistence resources. The main focus was upon performance of cosmologically-oriented song cycles, which placed the Cahuilla universe in perspective, reaffirming the relationship(s) of the Cahuilla to the sacred past, present, to one another, and to all things.

The Serrano

Sources for the Serrano include Bean and Smith (1978), Benedict (1924,1929), Drucker (1937), Gifford (1918), Johnson (1965), Kroeber (1925, pp. 615–619), and Strong (1929, pp. 5–35). The Serrano Cahuilla shared many traits and artifacts with the Cahuilla, discussed above. The Serrano spoke a language belonging to the Serean Group of the Takic subfamily of the Uto-Aztecan family (Golla 2007; Moratto 1984; Shipley 1978).

It is nearly impossible to assign definite boundaries to Serrano territory. Territory traditionally claimed by the Serrano included the San Bernardino Mountains east of Cajon Pass, lands at the base and north of the San Bernardinos in the desert near Victorville, and territory extending east in the desert to Twentynine Palms and south to, and including, the Yucaipa Valley.

The Serrano occupied small village-hamlets located mainly in the foothills near water sources. Others were at higher elevations in coniferous forest, or in the desert. The availability of water was a critical determinant of the nature, duration, and distribution of Serrano settlements.

Women gathered, and men hunted and occasionally fished. Topography, elevations, and biota present within the Serrano territory varied greatly. Primary plant foods varied with locality. In the foothills, they included acorns and pinyon nuts. In the desert, honey mesquite, pinyon, yucca roots, and cactus fruits were staples. In both areas they were supplemented by a variety of roots, bulbs, shoots, and seeds, especially chia. Among primary game animals were deer, mountain sheep, pronghorn, rabbits, rodents, and quail. Large game was hunted with bows and arrows. Small game was taken with throwing sticks, traps, snares, and deadfalls. Meat was cooked in earth ovens. Meat and plant foods were parched or boiled in baskets. Plant foods were ground, pounded, or pulverized in mortars and pestles or with manos and metates. Processed meat and plant foods were dried and stored. Occasional communal deer and rabbit hunts were held.

Communal acorn, pine nut, and mesquite gathering expeditions took place. These communal activities involved several lineages under a lineage leader's authority.

Serrano houses were circular, domed, individual family dwellings, with willow frames and tule thatching. They were occupied by a husband and wife along with their children, and often other kin. Houses were mainly used for sleeping and storage. Most daily activities occurred outside, often in the shade of a ramada (a flat-roofed, open-sided shade structure) or other sun cover.

Settlements usually had a large ceremonial house where the lineage leader and his family lived. It was the social and religious center for each lineage/lineage set. The latter was two or more lineages linked by marriage, economic reciprocity, and ritual participation. Other structures included semi-subterranean, earth-covered sweathouses located near water, and granaries.

Serrano material culture was very similar to that of the Cahuilla. Stone, wood, bone, plant fibers, and shell were used to make a variety of artifacts. These included highly decorated baskets, pottery, rabbit skin blankets, bone awls, bows and arrows, arrow straighteners, fire drills, stone pipes, musical instruments, feathered costumes, mats, bags, storage pouches, cordage, and nets.

The clan was the largest autonomous landholding and political unit. No pan-tribal union between clans existed. Clans were aligned through economic, marital, and ceremonial reciprocity. Serrano clans often were allied with Cahuilla clans and Chemehuevi groups. The core of a clan was the lineage. A lineage included all men recognizing descent from a common ancestor, their wives, and their descendants. Serrano lineages were autonomous and localized, each occupying and using defined, favored territories. A lineage rarely claimed territory at a distance from its home base.

The head of a clan was a ceremonial and religious leader. He also determined where and when people could hunt and gather. Clan leadership was passed down from father to son. The clan leader was assisted by a hereditary ceremonial official, from a different clan. This official held ceremonial paraphernalia (the sacred bundle), notified people about ceremonies, and handled ceremonial logistics.

Serrano shamans were primarily healers who acquired their powers through dreaming. A shaman cured illness by sucking it out of the sick person and by the administration of herbal medicines. Various phases of an individual's' life cycle were occasions for ceremonies. After a woman gave birth, the mother and baby were "roasted," and a feast held. Differing puberty ceremonies were held for boys (*datura* ingestion used in a structured ceremonial vision quest) and girls ("pit roasting," ingestion of bitter herbs, dietary restrictions, instruction on how to be good wives). The dead were cremated, and a memorial service was held. During the annual seven-day mourning ceremony, the sacred bundle was displayed, the eagle-killing ceremony took place, a naming ceremony for all those born during the preceding year was held, images were made and burned of those who had died in the previous year, and the eagle dance was performed.

The Chemehuevi

Sources for the Chemehuevi include Drucker (1937), Kelly (1934; 1936), Kelly and Fowler (1986), Kroeber (1925, pp. 593–600), Miller and Miller (1967), and Roth (1976; 1977). Carobeth Laird married a Chemehuevi and collected a large corpus of data, primarily on ritual, religion, and myth (Laird 1974a; 1974b; 1975a; 1975b; 1976; 1977a; 1977b; 1977c; 1978a; 1978b; 1984). The Chemehuevi spoke a language belonging to the Southern Group of the Numic subfamily of the Uto-Aztecan family (Golla 2007; Moratto 1984; Shipley 1978). Many traits characterizing Chemehuevi culture are very similar or identical to those of the Mojave, discussed below. Several probable Quechan traits also were noted for the Chemehuevi.

For the territory traditionally claimed by the Chemehuevi, the Colorado River formed the eastern boundary south to the Palo Verde Mountains. The boundary then ran northwest, passing east of the Ironwood Mountains, crossing the Maria Mountains, paralleling the Iron Mountains, and then running between Old Woman Mountain and Cadiz Dry Lake (Kelly 1934; Kelly and Fowler 1986, p. 369, fig. 1). Mojave territory lay to the northeast, and that of the Las Vegas group of Southern Paiute to the north-northwest.

The Chemehuevi lacked any form of overall “tribal” organization. Anthropologists refer to territorial subdivisions among the Chemehuevi as “bands.” Each band was composed of a small number of camps/communities/villages. Bands most likely correspond to economic clusters (Kelly 1964). Each group was a geographic unit, associated with a definite territory. In general, each band was economically self-sufficient.

In general, Chemehuevi settlement was mobile and scattered, with residence recurring within a fixed area. Houses were closely grouped. Their occupants usually were related by blood or marriage. Settlement size ranged from 1–2 households to 10–20. Springs often were inherited private property. Married siblings often camped at the same spring.

The Chemehuevi traveled widely. They had amicable contact with the Serrano, Cahuilla, Quechan/Yumans, and other Native American groups. The Chemehuevi sometimes joined with the Mojave/Quechan to fight the Cocopa/Halchidhoma. The Chemehuevi often crossed the Colorado River and hunted deer in Quechan, Yavapai, and Western Walapai territory. They also traded, intermarried, and competed in games with the Yavapai. To the west, the Chemehuevi hunted in the Tehachapi area and went to the Pacific Coast along the Santa Barbara Channel to get abalone shell. Sometimes, a party of 8–10 Chemehuevi men joined men from neighboring groups to make a two-month journey to the Hopi villages (in what is now New Mexico) to trade.

The Chemehuevi apparently did not eat fish, but bighorn sheep, deer, pronghorn antelope, and desert tortoise were among the animal food resources they used (Kelly and Fowler (1986, p. 369). Plant foods in this region included pinyon nuts and mescal. Men inherited rights to hunt large game within certain tracts, defined in songs using geographic references. Women gathered a great variety of plant foods, which were more important in the Chemehuevi diet than game. In addition to pinyon nuts and mescal, agave and seeds were staples. Along the Colorado River, the Chemehuevi practiced floodplain agriculture. They grew corn, squash, gourds, beans, sunflowers, amaranth, winter wheat, grasses, and devil's claw using techniques similar to Mojave agricultural practices (see below).

Chemehuevi winter houses were conical/subconical structures. They also built earth-covered houses without a front wall, similar to those constructed by the Mojave. During the summer, many Chemehuevi lived outside, often building and occupying armadas and windbreaks.

With respect to material culture, Chemehuevi baskets and cradles were made from plant fibers. Plant fibers also provided materials for rope, string, and cordage nets. Pottery, which followed Mojave patterns and styles, included cooking pots, water jars, seed germination and storage pots, spoons/scoops, and large pots for ferrying children across the Colorado River. Watercraft included log rafts and reed balsas. Clothing consisted of double skin or fiber aprons and sandals for men and women. The Chemehuevi commonly had pierced ears and wore body paint.

Monogamy was the commonest form of marriage among the Chemehuevi, but some men had more than one wife. Women gave birth in a special enclosure, followed by a 30-day period of seclusion for mother, father, and child. Puberty rites for boys and girls were held, with the former focused on acquisition of hunting skills. Cremation of the dead was traditional, replaced by in-ground burial in the historic period.

In general, no central political control existed. Territorial boundaries were not rigid, and some bands were named, while others were not. The basic social and economic unit was the nuclear family and could include other close kin. Groups of individual households moved together on hunting and gathering trips, returning to the same spring or agricultural site. Most large bands had a headman whose leadership was more advisory than authoritative. He was usually succeeded by his eldest son.

The principal role of Chemehuevi shamans was curing illness. They acquired their healing powers through dreams rather than through the use of *datura* or a trance. Chemehuevi families held a mourning ceremony ("cry"), with which several speeches and songs were associated, within the year after the death of a relative. The "cry" was sponsored by the family and included the ceremonial burning of material goods.

The Chemehuevi had deer and mountain sheep song-dances, held for entertainment and hunting success. The Chemehuevi had other songs, as well: bird, salt, quail, and funeral songs. During winter evenings, men narrated a rich body of traditional stories and myths. These performances often included mimicry, song, and audience participation. Oral tradition related people to social norms, their territories, and to the subsistence resources present within them.

The Mojave

Information regarding the traditional lifeways of the Mojave has mainly been drawn from the accounts of early explorers and/or fur trappers who were among the first to encounter native groups, as well as from the later ethnographic accounts of anthropologists, usually well after the influences of Euro-American contact had begun to alter traditional ways of life. The following summary derives mainly from Kroeber (1925) and Stewart (1983a, 1983b).

The name Mojave is a variation on the name Hamakhava, which is what the tribal people called themselves (Kroeber 1925, p. 727). The Mojave language is classified into the Yuman subfamily of the Hokan language family. The Mojave were the northernmost and largest tribe of the River and Delta Yumans, who comprised a series of agricultural tribes that occupied the lower Colorado and Gila Rivers. The traditional ethnographic territory attributed to the Mojave includes the Mojave, Chemehuevi, and Colorado River Valleys along the lower Colorado River at the intersection of the borders of Arizona, Nevada, and California. In pre-contact times, Mojave tribal settlement is reported to have centered in the Mojave Valley where their population densities were observed to be the greatest (Stewart 1983b, p. 55).

The Colorado River served as something of an oasis in the otherwise harsh, dry environment that surrounded the river valleys. The spring overflow of the river, which spread gently over the bottomlands, left behind a rich silt deposit in its recession. It is within these bottomlands that the Mojave cultivated crops, which served as the foundation of their subsistence economy. Their agricultural methods were relatively simple, consisting of planting seeds on the richly silted floodplains and allowing their crops to mature with a minimum of maintenance or effort. Corn was the primary crop, but several varieties of tepary beans, pumpkins, melons, and other plants were also grown. Once harvested, the portions of the harvest that were not immediately consumed were dried in the sun and stored in large basketry granaries. The Mojave supplemented their diet mainly by gathering wild plants and by fishing, which served as their principle source of flesh non-plant food. Hunting played a minor role in the Mojave subsistence economy (Stewart 1983b, pp. 56–59).

Technology of the Mojave was relatively simple, and tools were reported to have been crafted to meet only the minimum requirements of utility (Stewart 1983b, p. 59). According to Kroeber (1925, p. 736), the farming implements consisted of only two items: a heavy wooden staff or digging stick for planting and a spatulate wooden hoe-like implement, whose square edge was pushed flat over the ground to control weeds. Metates, consisting of a rectangular block of stone, were used for grinding corn, wheat, and beans, and both stone and wooden pestles, as well as stone mortars, were also used for food processing (Kroeber 1925, pp. 736–737). Fish were commonly taken with seines, large basketry scoops, sieves, dip nets, and weirs. The bow and arrow and cactus-spine fish hooks were also used for fishing. Mojave basketry was crudely woven, and their pottery was basic and utilitarian (Stewart 1983b, p. 59). Since hunting was of relatively little significance to the Mojave, hunting devices and techniques were not well developed, consisting mainly of snares, nets, bow and arrow, or curved throwing sticks (Stewart 1983b, pp. 59–61).

Mojave political and social organization was very informal, and no one individual or group had significant authority over another. Despite the Mojave’s loose division into bands or local groups that were spread out over great distances, their cohesion as a tribe was very strong, and they considered themselves as one people occupying a nation with a well-defined territory (Stewart 1983a, 1983b).

The nuclear family was the basic unit of economic and social cooperation, although the extended family constituted the core of a settlement. Rather than large centralized villages, Mojave settlements were widely distributed along the riverbanks in close proximity to arable lands. Houses were situated on low rises above the floodplain and often separated by as much as a mile or two (Stewart 1983b, p. 57). During most of the year, the Mojave slept under ramadas; however, during the colder season, they occupied more substantial, semi-subterranean, rectangular earth-covered houses.

Warfare was a dominant strain in River Yuman culture, and the Mojave's strong tribal unity served them well in times of warfare. They apparently traveled great distances to do battle, and their principle weapons were bows and arrows and hard wood clubs. According to Kroeber (1925, p. 727), their main motivation was sheer curiosity, as they liked to see other lands and were eager to know the manners of other peoples, but were not heavily interested in trade.

The Mojave were culturally similar to the other River and Delta Yumans: the Quechan, Halichidhoma, Maricopa, and Cocopa. During ethnographic times, the Quechan were considered friends and allies of the Mojave, while the Halchidhoma, Maricopa, and Cocopa were considered to be enemies with whom the Mojave engaged in warfare (Stewart 1983b, p. 56). The Mojave were also friendly with the Upland Yuman tribes of the Yavapai and Walapai of western Arizona, although relations with the Walapai were somewhat mixed.

One of the most important rituals observed by the Mojave centered on death, namely the funeral and subsequent commemorative mourning ceremony. As soon as possible after death, the deceased was cremated upon a funeral pyre along with all of his or her possessions. The house and granary of the deceased were also burned. It was believed that by burning, these things would be transmitted to the land of the dead along with the soul of the deceased (Stewart 1983b, pp. 65–67).

Due to their relatively remote location inland, the Mojave maintained their independence throughout the Spanish period of the sixteenth and seventeenth centuries and were only rarely visited by explorers during that time. The few Spanish accounts of encounters with the Mojave provided similar descriptions of Mojave lifeways as those reported later by ethnographers. It is believed that the ancestors of the Mojave resided in the area for at least 1000 years and the mode of life in prehistoric times is thought to be similar to that observed historically (Stewart 1983b, p. 56).

The Quechan/Yuma

The following summary of the Quechan or Yuma is derived mainly from Bee (1983), Kroeber (1925), and Stewart (1983a).

Quechan is a variation on the names Kwichyan or Kuchiana, which are the names the tribe called themselves, but this group is also commonly known as the Yuma. The Quechan are among the Yuman-speaking tribes who occupied the lower Colorado River where it forms the boundary between California and Arizona. According to Kroeber (1925, p. 782), the Quechan and their neighbors to the north, the Mojave, appear to be virtually identical in terms of their agriculture, manufactures, clothing, hair dress, houses, warfare, and sense of tribal unity.

The ethnographic territory traditionally associated with the Quechan, now divided between the states of California and Arizona, is centered around the confluence of the Colorado and the Gila Rivers, extending several miles north and south along the Colorado and east along the Gila. Quechan legend tells of a southward migration of their ancestors from a sacred mountain; however, it is not known when the ancestors of the Quechan first settled near the confluence (Bee 1983, p. 86). No group of this name was mentioned in the account of Hernando de Alarcón when he passed through the area during an expedition in 1540, and the first reference to this group did not appear in Spanish documents until the late seventeenth century, at which time they were settled around the river confluence area (Bee 1983, p. 86).

In an environment otherwise surrounded by dry desert terrain, the subsistence economy of the Quechan focused on riverine agriculture, which was one of the main sources of food for the tribe. Crops were cultivated in the richly silted river bottomlands following the recession of the spring floods and provided a relatively high yield in exchange for relatively low labor output (Bee 1983, pp. 86–87). The main cultivated crops included corn, tepary beans, pumpkins, and gourds. In post-contact times, watermelons, black-eyed peas, muskmelons, and wheat were introduced by Europeans and brought into cultivation by the Quechan, as well. The Quechan also relied on the gathering of wild foods, the most important of which were mesquite and screw-bean pods, although a variety of other wild plants were also collected (Bee 1983, p. 87; Castetter and Bell 1951, pp. 187–188). Fishing was of minor importance, as there were few species in the lower Colorado River suitable for eating. Among the fish sought were the humpback, white salmon, and boneytail, which were sometimes caught with unfeathered arrows or cactus spine hooks, but more often taken with traps and nets during floods (Forde 1931, pp. 107–120). Given the low incidence of game available in the area, hunting played a minor role in the overall subsistence economy (Bee 1983, p. 86).

Like the Mojave, Quechan tribal settlements, or rancherias, consisted of extended family groups that were widely dispersed along the riverbanks. Settlements shifted throughout the year, dispersing into smaller groups along the bottomlands during the spring and summer farming seasons and reconvening into larger groups on higher ground, away from the river, during the winter and spring flood periods (Bee 1983, pp. 87–88). The geographic dispersion of the households within the rancheria groups was closely correlated with the condition of the rivers and the technology of riverine agriculture (Bee 1983, p. 89). The warm climate and scant precipitation made substantial housing unnecessary for most of the year, so most people made use of ramadas or dome-shaped arrowweed shelters. Each rancheria typically had one or two large, earth-covered shelters for the rancheria leaders’ families, but these shelters also accommodated small crowds during colder weather (Forde 1931, p. 122).

Much like the Mojave, Quechan technology lacked technical or decorative elaboration beyond the demands of minimal utility (Bee 1983, p. 89). Quechan bows did not feature “backed” construction and so lacked power, and their arrows were frequently untipped, so the bow and arrow’s range was short and the penetrating power weak. Sharpened staffs served as digging sticks or, when cut in longer lengths, as weapons (Bee 1983, p. 89).

In terms of property, there were no marked gradations in wealth, and social pressure favored the sharing of one's abundance with others who were less fortunate. Land ownership was informal, and people did not show much interest in the accumulation of material goods beyond the immediate needs of the family group or the surplus maintained by local leaders for redistribution to needy families within their rancheria (Bee 1983, p. 89). Lands were not inherited by family members upon the death of an individual; rather, the lands of the deceased were abandoned, and replacement plots were sought by the family members.

Despite the wide distribution of settlements, the Quechan had a strong sense of tribal unity. As with their neighbors and allies, the Mojave, warfare played a major role in Quechan culture, and it was during times of warfare that tribal unity was most prevalent among the individual settlements (Bee 1983, p. 92). Their major enemies were the Cocopa and the Maricopa, and they often allied themselves with the Mojave in strikes against common enemies (Bee 1983, p. 93). Bee (1983, p. 93) suggests that warfare among the riverine peoples may have increased in scale and intensity during the eighteenth and early nineteenth centuries due to new economic incentives, such as the opportunity to trade captives to the Spaniards or to other tribes for horses or goods.

Quechan social and political organization, like that of the Mojave, appears to have been very informal, with no one individual or group having significant authority over others. Two types of tribal leadership have been reported for the Quechan, one for civil affairs and the other for war, but it is questionable how influential these leadership roles may have been. Each rancheria had one or more headmen, but their authority was contingent upon public support and continued demonstration of competence. According to Bee (1983, p. 92), important matters at either the tribal or the rancheria level were always decided by consensus, sometimes after long debates dominated by the better and more forceful speaker.

Another important aspect of Quechan society that was shared with the Mojave concerns the commemoration of the dead, which was an elaborate ceremony involving wailing and the destruction of property and ritual paraphernalia. All possessions of the deceased, including the family home, were destroyed or given away (Bee 1983, pp. 89, 93–94).

The Maricopa and the Halchidhoma

Ethnographic information for the Maricopa and the Halchidhoma is meager in comparison to the Mojave and the Quechan. The following brief summary is derived from Harwell and Kelly (1983) and Stewart (1983a).

The Halchidhoma first entered written history in the early seventeenth century with the account of Juan de Oñate, who encountered the "Alebdoma" or "Halchedoma" during a Spanish expedition on the lower Colorado River, below its junction with the Gila River. When later encountered by missionary-explorer Eusebio Francisco Kino in the early eighteenth century, the Halchidhoma (or "Alchedoma," as they were referred to by Kino) had moved farther north up the Colorado beyond the Gila. The traditional territory attributed to the Halichidhoma lay along the lower Colorado between the Mojave and the Quechan territories. They were later driven from that area under pressure from their hostile Mojave and Quechan neighbors and moved to the middle Gila River area, where some merged with the Maricopa (Stewart 1983a).

The term Maricopa refers to the Yuman-speaking groups who in the early nineteenth century occupied the area along or near the Gila River and its tributaries (in what is now southern Arizona), but who earlier had occupied the lower Colorado River area. The Maricopa language is closely related to Quechan and Mojave, all three of which are classified as members of the River branch of the Yuman language family (Harwell and Kelly 1983, p. 71). The Maricopa call themselves *pi•pa•s*, "the people." The name Maricopa is an English abbreviation of the name Cocomaricopa, first used by Eusebio Kino in the late seventeenth century (Harwell and Kelly 1983, p. 83).

The Maricopa, who by the early nineteenth century included remnant tribes of the Halyikwamai, Kahwan, Halchidhoma, and Kavelchadom, share common origins and are culturally similar to both the Quechan and the Mojave, the most prominent traits of which included floodwater agriculture and cremation of the dead. Their material culture was also essentially the same (Harwell and Kelly 1983, p. 71). The Colorado River Maricopa lived in low, rectangular, earth-covered houses, but the Maricopa of the Gila River had adopted the round houses of their Piman neighbors. Technology was of little interest to the River Yumans and remained at a low level of development (Stewart 1983a).

Historical Background

The Colorado Desert area, in which the BSPP would be located, has remained one of the more sparsely populated regions of the American West. The harsh arid environment and paucity of natural water supply has presented a challenge to the development of trans-desert routes for the movement of people and goods, the exploitation of resources in the area, and the establishment of permanent settlement. The major historical themes for the Colorado Desert region and the BSPP area in eastern Riverside County, in particular, are centered on the establishment of transportation routes, water access and control, agriculture, ranching, mineral exploitation, and military uses. The following brief historical background of the Colorado Desert area in eastern Riverside County is derived from the following sources: Bischoff 2000; Castillo 1978; CEC 2010 citing Farmer et al 2009; Solar Millennium 2009a; von Till Warren et al. 1980; and WESTEC 1982.

The earliest recorded history of the lower Colorado River region began with the expeditions of Spanish explorers, who were lured by rumors of a rich northern Indian civilization. However, due to the Spaniards' failure to find the fabled northern treasures and the remoteness of the region, the Colorado Desert was seldom visited during the Spanish and Mexican periods.

The desert region has produced a variety of mineral deposits, including gold, silver, fluorite, manganese, copper, gypsum, and uranium, and mining activities played a significant role in stimulating early occupation and travel across the arid desert. Following the end of the Mexican period in 1848 and the onset of the California Gold Rush in 1849, a flood of gold-seeking emigrants began to pour into California, some choosing the southern overland route through the desert, many of whom were unprepared and suffered extreme hardships. The construction and expansion of the Southern Pacific Railroad into the desert in the late 1870s was a major factor in facilitating travel and transport of supplies to the remote areas of eastern Riverside County, enabling further development of mines, irrigation, and settlement in the area.

The 1880s and 1890s were years of relative prosperity for mining regions of eastern Riverside County. Intermittent mining activity has occurred in the area since that time; however, in the Palo Verde Valley area, mining has remained a relatively small part of the local economy. While no mines or significant prospects exist within the BSPP area, evidence of past mining activity in the region is evidenced by a scattering of abandoned prospecting pits, collections of food trash and other debris, and a handful of prospect claim markers in the form of wooden stakes, small stone cairns, and metal cans, which may have originally contained claim papers.

Automobile travel across and within the Colorado Desert area initially developed using existing wagon roads or following railroad rights of way. By the early twentieth century, the automobile became the preferred mode of transportation. In 1914, Riverside County established the route from Mecca to Blythe as an official County road, which served as a main route across the desert. County officials dug wells and erected signposts along this road to serve its few travelers. In the early 1920s, Highway 60 was built to the south of the original route through Shavers Valley and Chuckwalla Valley. In the 1960s, the current Interstate Highway 10 was constructed along the old route of Highway 60. With the arrival of roads, settlement patterns changed from occasional miners' camps to roadside businesses serving travelers.

With the passage of the Homestead Act in 1862, vast areas of public land were opened up to private citizens, and agriculture became an economically important industry in California. Although much of the desert lands were poorly suited to farming, the Palo Verde Valley of the lower Colorado River was an exception. Thomas H. Blythe, who is known as "the father of the Palo Verde Valley," was the first to develop large tracts of land along the west bank of the Colorado River, across from the established portage point at Ehrenberg, Arizona, near the present-day town of Blythe. Blythe died in 1883 before his development could be fully completed, but agricultural practices had already begun to take place and continued to be developed in the area. The town of Blythe was incorporated in 1916. By the late 1920s, the Palo Verde Irrigation District Act was passed, and the region's irrigation and drainage needs were facilitated by one district. Farming continues to be a commercial industry in Blythe. On the Palo Verde Mesa, however, in the vicinity of the BSPP, agriculture was never a significant pursuit due to the poor soils and lack of readily accessible water. In the early twentieth century, some ranching activities were attempted on the mesa, as evidenced by ranch remains identified during the inventory of the BSPP area.

The BSPP area falls within the limits of Gen. George S. Patton's World War II Desert Training Center/California-Arizona Maneuver Area (DTC/C-AMA), which was in operation from 1942-1944. The area was chosen by Patton to prepare troops for the harsh conditions and environment of combat for the North Africa Campaign. At 12,000,000 acres, the DTC/C-AMA was the largest-ever military training center, stretching from west of Pomona, California, to Yuma, Arizona, and north into Nevada. The valley bordered by the Palen, Little Maria, and McCoy

Mountains is considered one of the most extensive maneuver areas in the DTC/C-AMA. After two years in operation and the training of one million troops, the DTC/C-AMA was closed in 1944 as a result of the allied victory in North Africa and the need for trained troops elsewhere. Following the closure of the DTC/C-AMA, dismantling and salvage efforts began and the land was ultimately returned to private and government holdings. The remains of the DTC/C-AMA areas consist of rock features, faint roads, structural features, concertina wire, tank tracks, footprints of runway and landing strips, large base camps such as those at Camp Rice, Coxcomb, and Young, foxholes and bivouacs, concrete defensive positions, refuse, and trails.

Cultural Resources Inventory

This subsection provides the results of cultural resource inventories for the BSPP, including literature and records searches (California Historical Resources Information System (CHRIS) and local records), archival research, Native American consultation, and field investigations.

Background Inventory Research

To compile information on known cultural resources and previously conducted cultural resources studies pertinent to the location of the proposed BSPP, records searches were conducted at the Eastern Information Center (EIC, part of the CHRIS) at the University of California, Riverside. Searches were conducted for the area within a 1.0-mile radius of the proposed plant site and within a 0.25-mile radius of the routes of all proposed linear facilities (Solar Millennium 2009a, vol. 1, p. 5.4-18; EDAW 2009b, p. 16).

Additionally, the following sources were searched to identify other known cultural resources (Solar Millennium 2009a, vol. 1, p. 5.4-18):

1. National Register of Historic Places (NRHP)
2. California Register of Historical Resources (CRHR)
3. Local listings
4. BLM site files

CHRIS Records Search

Twenty-six reports of previous investigations covering parts of the area within a 1.0-mile radius of all BSPP project components were obtained. Ten of these were cultural resources survey reports covering parts of the BSPP Area of Potential Effects (APE) (King et al.1973, Greenwood 1977, Cowan and Wallof 1977, BLM 1978, Reed 1984, Wilson 1984, Padon et al. 1990, McDonald and Schaefer 1998, McDougall et al. 2006, and Schaefer et al. 1998). One study was a records search (Schaefer 2003), one reported site sampling and evaluation (Mitchell 1989), and one was a regional overview (Von Till Warren et al. 1980). The surveys covered only small areas of the proposed BSPP APE, so the most pertinent of the 13 studies to the BSPP cultural resources assessment are the regional overview by Von Till Warren et al. (1980) and the sampling and evaluation of prehistoric quarry sites by Mitchell (1989).

The regional overview by Von Till Warren et al. depicts a region of archaeological resources that, for both the prehistoric and historic periods, represent primarily transportation and resource exploitation. In this landscape, people have mostly left remains of being in transit or of extracting useful or valuable materials—Native Americans sought and removed food, toolstones, and other raw materials for manufacturing, and Euro-Americans sought and removed various minerals. The trails and roads that cross the BSPP APE either took people across the region or went to the places where the desired resources were found (Von Till Warren et al. 1980). An important exception to this generality is the use of the region by the U.S. military for training on a large scale, both early in World War II and just prior to involvement in Vietnam.

Mitchell (1989) sampled and evaluated ancient Colorado River pebble terraces (one of which is located at the edge of the proposed BSPP plant site) and explored Native American extractive behavior at several sites recognized as prehistoric quarries. He analyzed Native American behavior in assaying, roughly preparing, and collecting material appropriate for the manufacture of stone tools elsewhere. Additionally the study identified other nearby sites indicative of other aspects of toolstone acquisition behavior, such as temporary habitation sites. The study also evaluated the NRHP eligibility of the terrace quarries and their integrity, which has suffered in recent times from the mechanized removal of the water-rounded rocks for use in masonry and landscaping—another desert extractive activity (Mitchell 1989).

Records from the Eastern Information Center identified 71 previously known cultural resources located within a 1.0-mile radius of the APE, including:

4 prehistoric trail segments, 1 with an associated lithic scatter

1 prehistoric rock alignment

1 prehistoric geoglyph

7 prehistoric quarries, 1 with an associated lithic scatter

2 prehistoric cleared areas, both with associated lithic scatters, and 1 with a trail segment

1 prehistoric temporary camp

6 prehistoric ceramic sherd scatters

16 prehistoric lithic scatters

1 prehistoric fire-affected rock feature

1 prehistoric lithic and ceramic sherd scatter

1 historic-period two-track road

1 historic-period refuse deposit, with structural remains

2 historic-period military camps, with tent platforms, animal enclosures, and refuse deposits

9 historic-period refuse deposits

18 isolated finds (10 prehistoric and 8 historic-period)

Eight of these previously known resources were located within or near the boundary of the proposed BSPP. Seven of these resources were prehistoric or historic-period archaeological sites, and one was a prehistoric isolated find. Two of the prehistoric sites were located on a private property in-holding within the proposed plant site. When relocated in 2009, one of the latter (CA-Riv-1464), recorded in 1978 as a prehistoric trail segment, was found to have been replaced by a graded road. Consequently, this resource is not included in the inventory. Isolated finds are also not included, but the other six known sites (CA-Riv-1136, CA-Riv-2846, CA-Riv-3419, CA-Riv-7175, CA-Riv-9011, and P-33-9670) are listed in Appendix D, Table D-1, with all newly identified archaeological sites, as resources located within the BSPP APE. The other resource located on the private in-holding is also included in that list because the BSPP Applicant is negotiating the purchase of the in-holding and so could have eventual responsibility for the site.

Archival and Library Research

To identify any sites or structures older than 45 years, historic maps dating between 1903 and 1983 were reviewed. The General Patton Memorial Museum and the Palo Verde Historical Museum and Society were also visited. The Palo Verde Irrigation District was visited for the purpose of reviewing additional historic maps and examining historic aerial photographs from 1938, 1942, 1951, 1953, 1959, 1960, 1965, 1970, 1973, 1992, and 1994 (EDAW 2010a, p. 87). No additional cultural resources in or near the BSPP APE were identified as a result of these investigations (EDAW 2010a, pp. 86–87).

Inquiries to Local Agencies and Organizations

The following public agencies and historical and archaeological societies were contacted requesting information regarding historic or other cultural resources within or adjacent to the BSPP:

1. Riverside County Historical Commission;
2. General Patton Memorial Museum;
3. Historic Resources Management Programs, University of California, Riverside;
4. Palm Springs Air Museum;
5. Palm Springs Historical Society; and
6. Palo Verde Historical Museum and Society.

No additional cultural resources were identified as a result of these inquiries (EDAW 2010a, p. 91).

Native American Consultation

The Native American Heritage Commission (NAHC) maintains two databases to assist in identifying cultural resources of concern to California Native Americans. The NAHC's Sacred Lands database has records for places and objects that Native Americans consider sacred or otherwise important, such as cemeteries and gathering places for traditional foods and materials. The NAHC Contacts database has the names and contact information for individuals, representing a group or themselves, who have expressed an interest in being contacted about development projects in specified areas.

The NAHC was asked to search its Sacred Lands File for any places of traditional importance to Native Americans in the APE and to request a list of Native Americans who wished to be informed about new development projects in Riverside County. The NAHC identified no places of traditional cultural importance within the BSPP APE from the search of their Sacred Lands File (EDAW 2010a, p. 88). The NAHC also provided contact information for 15 Native American individuals or groups, representing the Cahuilla, the Serrano, the Chemehuevi, the Mojave, and the Luiseño. Letters to these persons were sent on May 1, 2009, describing the proposed BSPP and requesting information on known cultural resources that could be affected by the proposed action. At various later dates, follow-up contacts were made by telephone calls, faxes, and emails. Upon the recommendation of one of the initial contacts, a representative of the Cocopah Tribe was also contacted (EDAW 2010a, p. 88).

No response was received from nine Native American contacts. The responses received included indications of no comment from representatives of the Mojave and the Luiseño, requests for additional information from representatives of two Cahuilla groups and of the Cocopah, and three letters expressing concern about project impacts and cultural resources that could be present. Appendix D contains a summary of responses from the Native Americans contacted.

In addition to contacts made pursuant to information requested from the NAHC, the BLM Palm Springs Field Office conducted formal government-to-government consultation with Native Americans pursuant to the NHPA as well as other laws and regulations. BLM initiated Indian tribal consultation in the early stages of BSPP planning by letter in November 2009, and has followed up with an additional letter and other information since then. To date, 13 tribes or related entities have been identified and invited to consult on this project, including those listed below. Tribes were also invited to a general information meeting and proposed project site visit, held on January 25, 2009. BLM has thus far received one written comment letter, from the Torres-Martinez Desert Cahuilla Indian Tribe. Letters to request consultation to develop a Section 106 Programmatic Agreement with tribes, the State Historic Preservation Officer, and the Advisory Council on Historic Preservation were mailed out to the below-listed tribes on February 25, 2010.

Cabazon Band of Mission Indians
Augustine Band of Cahuilla Mission Indians
Agua Caliente Band of Cahuilla Indians
Morongo Band of Mission Indians
Chemehuevi Indian Tribe
Fort Mojave Indian Tribe
Colorado River Indian Tribes
Cocopah Tribal Council
San Manuel Band of Mission Indians
Ft. Yuma Quechan Indian Tribe
Torres-Martinez Desert Cahuilla Indians
Twentynine Palms Band of Mission Indians

To date, consultation with Indian tribes has identified no additional cultural resources within the BSPP APE.

In a February 8, 2010, e-mail to the BLM Palm Springs Field Office, the Chairperson of the La Cuna de Aztlan Sacred Sites Protection Circle expressed concern that the proposed BSPP would be constructed on a Kokopeli geoglyph and other images and ancient trails that lead to other geoglyphs a few miles away. The geoglyph and other resources have been evaluated by the BLM and under two independent third party research reports which found that the geoglyph figures south of the project area and west of the airport are of recent origin and therefore not subject to Section 106.

Field Inventory Investigations

A Class III archaeological survey of the proposed BSPP was conducted in two phases. The first was of the proposed plant site (plus 200 feet around the site perimeter). The second was of a newly defined 100-foot-wide corridor in which would be located the routes of the plant access road, the natural gas pipeline, and the transmission gen-tie line (EDAW 2010a, p. 93; EDAW 2009b, p. 2). The survey team sought to relocate previously recorded sites and assess their current condition, and recorded all new sites and architectural resources over 45 years of age with the data required by Department of Parks and Recreation (DPR) series 523 forms.

A built-environment field survey was also completed with an APE extending out 0.5 mile beyond the proposed BSPP plant. An additional built-environment survey was subsequently conducted with an APE extending out 0.5 mile beyond the newly defined linear facilities corridor (EDAW 2009d, p. v; EDAW 2009e, p. 21).

Results of Class III Cultural Resource Inventory. A total of 210 archaeological sites were identified as a result of the Class III cultural resource inventory within the BSPP's archaeological APE, including seven previously known and relocated sites and 1,210 isolates. Of these sites, 180 were historic-period, and 30 were prehistoric.

The four prehistoric site types reported as present on the BSPP were:

1. Prehistoric Lithic Scatters (debris from the production of one or more flaked stone tools, possibly tools used to make flaked stone tools, and occasionally the flaked stone tools themselves);

2. Prehistoric Quarry Sites (a geological deposit of stone material suitable for the manufacture of flaked stone tools);

3. Prehistoric Sites with Features (features are remains of non-residential human modifications or additions to the natural landscape, such as hearths, arrangements of stones, cleared areas), all but one of which in the BSPP were "thermal cobble features"—probably the remains of roasting pits;

4. Prehistoric Trails (footpaths evidencing denuding of desert pavement, with possible shallow depression from compaction of soils); and

5. "Pot Drop" (isolated scatter of sherds from a single pot).

Three broad categories of historic-period sites were identified: Early Twentieth-Century Mining and Ranching Sites, World War II-era DTC/C-AMA Sites, and Other Historic-period Sites, consisting of 10 site types.

The Early Twentieth-Century Mining and Ranching Sites consisted of:

1. Early twentieth-century habitation sites (residential structural remains and domestic non-biodegradable refuse);

2. Early twentieth-century sites with features (features are remains of non-residential human modifications or additions to the natural landscape, such as non-residential structural remains, mining claim markers, prospecting, refuse, and privy pits); and

3. Early twentieth-century refuse scatter sites (deposits of non-biodegradable refuse of all kinds).

The World War II-era DTC/C-AMA Sites consisted of:

1. World War II-era sites with features (features are remains of non-residential human modifications or additions to the natural landscape, such as fortified positions, cleared areas for tent pads, and hearths);

2. World War II-era refuse dump sites (distinguished from refuse scatter sites by the greater volume of material and multi-episodic deposition); and

3. World War II-era refuse scatter sites (recognized by the presence of military-issued rations containers or cans opened with the military-issued P-38 can-opener or a bayonet).

The Other Historic-period Sites consisted of:

1. Transportation routes (pre-1967 dirt roads traversing the proposed plant site);

2. Non-specific twentieth-century sites with features (these lacked materials that could be dated or associated with a specific activity);

3. Non-specific twentieth-century refuse dump sites; and

4. Non-specific twentieth-century refuse scatter sites.

Cultural Landscapes

Using a “landscape approach” to characterize groups of related cultural resources in the APEs, two potential cultural landscapes and an archaeological district could be described as follows:

DTC/C-AMA Cultural Landscape. A DTC/C-AMA Cultural Landscape would consist of all the remains of the WWII military training activities that were conducted across the entire region. The period of significance would be 1942-1944. As represented within the BSPP, these remains consist primarily of refuse scatters and dumps, with some fortified positions, cleared areas and possible tent camps, plus the remains of a structure evidencing possible weapons testing. Outside the BSPP boundaries, additional potential contributors have been identified, for example, CA-

Riv-7174H which consists of tent platforms and animal enclosures, as well as refuse. These sites are important for their association with Gen. George S. Patton and for their ability to contribute to an understanding of how American soldiers were trained during WWII.

Existing information is not sufficient to determine the boundaries of a DTC/C-AMA Cultural Landscape (Historic District) or to specify the contributors to the district. Further research would be needed to determine the landscape boundaries, its period of significance, and all additional contributing resources.

Prehistoric Trails Network Cultural Landscape. A Prehistoric Trails Network Cultural Landscape would consist of the Halchidhoma Trail and the associated joining and diverging trails (and trail-related features such as pot drops and rock cairns), and the varied loci of importance to prehistoric Native Americans that these trails connected. These loci included springs (and the dry lakes when they were not dry), food and materials resource areas, and ceremonial sites (geoglyphs, rock alignments, petroglyphs). The Halchidhoma Trail (CA-Riv-53T) does not run through the BSPP plant site, but probable contributors to this cultural landscape within the BSPP include a trail segment (SMB-P-410), a pot-drop (CA-Riv-1136), a rock cairn (SMB-P-270), and an archaeological district consisting of four prehistoric quarries and associated features (see below). Outside the BSPP boundaries are additional potential contributors: possible trail segments (CA-Riv-53T, CA-Riv-885, CA-Riv-3673, CA-Riv-4568), a rock alignment (CA-Riv-661), a geoglyph (CA-Riv-662), and possible pot drops (CA-Riv-1481, CA-Riv-7176).

Existing information is not sufficient to determine the boundaries of a Prehistoric Trails Network Cultural Landscape (Historic District) or to specify the contributors to the district. Further research would be needed to determine the landscape boundaries, its period of significance, and all additional contributing resources.

Prehistoric Quarries Archaeological District. A discontiguous prehistoric archaeological district may be present, encompassing prehistoric quarry sites and associated roasting pit and chipping station features. Along the east side of the proposed BSPP plant site and beyond, five previously recorded prehistoric quarry sites (two small—CA-Riv-3417 and CA-Riv-3672)—and three large—CA-Riv-2846, CA-Riv-3418, CA-Riv-3419—have been recognized as coincident with remnant pebble terraces. These terraces are abandoned gravel deposits of former channels of the Colorado River, dating from the Pleistocene epoch. These terraces have been a source of abundant material for stone tools throughout California prehistory for Native Americans in this area. The CHRIS record for quarry site CA-Riv-3418 also noted the presence of four associated roasting pit features. These roasting pit features are almost certainly the same as the "thermal cobble features" identified along the west side of the quarry site CA-Riv-2846.

This district evidences repetitive visits by Native Americans to the quarries to assay and mine toolstone and the subsistence activities associated with these visits. Known contributors, at this time, to this potential district are:

1. The previously known quarry sites noted above, two of which, CA-Riv-2846 and CA-Riv-3419, are in part located within the BSPP plant site and the linear facilities corridor;

2. Three newly identified possible quarry sites, SMB-P-270, SMB-P-272, SMB-P-275, located in part in the BSPP linear facilities corridor;

3. The 10 thermal cobble feature sites located within the plant site (SMB-P-434, SMB-P-436, SMB-P-437, SMB-P-438, SMB-P-440, SMB-P-441, SMB-P-445, SMB-P-448, SMB-P-452, SMB-P-454);

4. The four roasting pit features (trinomials unknown) associated with CA-Riv-3418;

5. Thermal cobble feature SMP-P-435, located in the plant site buffer; and

6. The lithic scatter site located near the quarry sites (SMB-P-453).

Existing information is not sufficient to determine the boundaries of a Prehistoric Quarries Archaeological District or to specify the contributors to the district. Further research would be needed to determine the potential district's boundaries, its period of significance, and all additional contributing resources.

Results of Survey for Built-Environment Resources

An architectural historian identified two built-environment resources, aged 45 years or older, that are located within 0.5-mile of the linear facilities corridor: a reservoir to the west that was constructed to serve the former Blythe Army Air Base (BAAB) of World War II vintage, and a radio communications facility, built in 1950, to the south of the corridor (EDAW 2009e, p. 22; fig. 3).

The BAAB reservoir is in the foothills of the McCoy Mountains and more than 0.5 mile west of the BSPP proposed linear facilities corridor. Water from on-base wells was pumped to the reservoir, then returned to the base by gravity flow. The reservoir is no longer in use, and associated nearby structures and a covering structure are no longer present. The reservoir is an open concrete bowl with a 557,000-gallon capacity (EDAW 2009e, p. 25).

The radio communications facility is nearly 0.5 south of the linear facilities corridor. The building is one-story, square, and constructed of concrete blocks. A tower in the shape of a truncated cone rises from the middle of the flat, circular roof, around which instruments are installed. An antenna tower is located nearby. Significant alterations to this building appear to have been made in the 1980s (EDAW 2009e, p. 26). The building may still be in use.

Cultural resources identified as a result of the Class III inventory and the survey for built-environment resources are described more specifically in Appendix D.

Results of Geoarchaeological Investigations

The drilling of 22 geotechnical borings located throughout the proposed plant site were observed by a geoarchaeologist. The geoarchaeologist sorted and examined all the removed sediments for evidence of paleosols, archaeological deposits, or isolated finds. The sediments were also hand-sampled at five-foot intervals as the borings progressed. The geoarchaeologist recorded the sediments and stratigraphy before the borings were backfilled (Galati & Blek 2010x, p. 3). The geotechnical investigations also included the excavation of test pits.

The distribution of the borings was sufficient to provide an adequate characterization of the subsurface stratigraphy of the BSPP plant site. The site is underlain by (from the oldest to the youngest): ancestral Colorado River sands, lake-deposited clays, alluvial fan sands and gravels, and moderately well-developed soils based on alluvial fan sands and gravels.

The geoarchaeological investigation suggested that when cool, wet Pleistocene conditions gave way to a drier Holocene climate, alluvial fan growth was probably accelerated, so lake-deposited clays that underlay the alluvial fan deposits could represent the Pleistocene. Therefore, evidence of human use of this area would be found no deeper than the contact between the upper part of the Pleistocene clay deposit and the lower part of the Holocene sand and gravel deposit. That contact generally occurs at about 10 feet, indicating that buried archaeological deposits, if any, would be limited to the upper 10 feet of the BSPP site (Galati & Blek 2010x, p. 17).

No paleosols or buried archaeological deposits were observed, but a buried A horizon was recorded by the geotechnical staff in two of the test pits at a depth of one meter below the surface in the northeastern part of the plant site. This indicates that a stable surface existed for long enough for soil development to take place, so human occupation would also have been possible on such a surface (Galati & Blek 2010x, p. 17).

3.4.2 Determining the Historical Significance of Cultural Resources

A key part of any cultural resources analysis under NEPA and Section 106 of the NHPA is to determine which of the cultural resources that a proposed or alternative action may affect directly or indirectly, are historically significant. Subsequent effects assessments are made for those cultural resources that are determined to be historically significant. Cultural resources that can be avoided by construction may remain unevaluated if the values they possess are only informational in nature. Unevaluated cultural resources that cannot be avoided are managed for project purposes as eligible for the National Register of Historic Places under Section 106 when determining effects.

Evaluation of Historical Significance Under Section 106

Cultural resources are considered during federal undertakings chiefly under Section 106 of the NHPA through its implementing regulations, 36 CFR Part 800. Properties of traditional, religious, and cultural importance to Native Americans are considered under Section 101(d)(6)(A) of the NHPA.

The Section 106 process requires federal agencies to consider the effects of their undertakings on any district, site, building, structure, or object that is included in or eligible for inclusion in the NRHP and to afford the Advisory Council on Historic Preservation (ACHP) a reasonable opportunity to comment on such undertakings (36 CFR Section 800.1). Significant cultural resources (historic properties) are those resources, districts, sites, buildings, structures, or objects, that are listed in or are eligible for listing on the NRHP per the criteria listed at 36 CFR Section 60.4 and presented below.

Per National Park Service (NPS) regulations, 36 CFR Section 60.4, and guidance published by the NPS, National Register Bulletin, Number 15, *How to Apply the National Register Criteria for Evaluation*, different types of values embodied in districts, sites, buildings, structures, and objects are recognized. These values fall into the following categories:

1. Associate Value (Criteria A and B): Properties significant for their association with or linkage to events (Criterion A) or persons (Criterion B) important in our past.

2. Design or Construction Value (Criterion C): Properties significant as representatives of the man-made expression of culture or technology.

3. Information Value (Criterion D): Properties significant for their ability to yield important information about prehistory or history.

The quality of significance in American history, architecture, archaeology, engineering and culture is present in districts, sites, buildings, structures, and objects that possess integrity of location, design, setting, materials, workmanship, feeling and association. Cultural resources that are determined eligible for listing in the NRHP are termed “historic properties” under Section 106, and are afforded the same protection as sites listed in the NRHP.

NRHP determinations of eligibility have not yet been formally made for the cultural resources that might be affected by the BSPP under any of the alternatives. BLM has informed all consulting parties in the Section 106 process what the agency’s proposed determinations are, and are currently taking comments. Final determinations will be made in accordance with Section 106 or a Programmatic Agreement being developed for the BSPP by the BLM in consultation with the California State Historic Preservation Officer, Indian tribes and other interested parties. Until NRHP eligibility determinations are formally made, the cultural resources potentially affected by the BSPP will be assumed to be eligible for the purpose of assessing effects under all alternatives.

3.5 Environmental Justice

Title VI of the Civil Rights Act of 1964 (Public Law 88-352, 78 Stat.241) prohibits discrimination on the basis of race, color, or national programs in all programs or activities receiving federal financial assistance.

Executive Order 12898, “Federal Actions to address environmental justice in Minority Populations and Low-Income Populations,” focuses federal attention on the environment and human health conditions of minority communities and calls on agencies to achieve environmental justice as part of this mission (59 Fed. Reg. 7629 (Feb. 16, 1994)). The order requires the US Environmental Protection Agency (EPA) and all other federal agencies (as well as state agencies receiving federal funds) to develop strategies to address this issue. The agencies are required to identify and address any disproportionately high and adverse human health or environmental effects of their programs, policies, and activities on minority and/or low-income populations.

The Council on Environmental Quality (CEQ) has oversight responsibility for the Federal Government’s compliance with Executive Order 12898 and NEPA. The CEQ, in consultation with the EPA and other agencies, has developed guidance to assist Federal agencies with their NEPA procedures so that environmental justice concerns are effectively identified and addressed. According to the CEQ’s “Environmental Justice Guidance Under the National Environmental Policy Act,” agencies should consider the composition of the affected area to determine whether minority populations or low-income populations are present in the area affected by the proposed action, and if so whether there may be disproportionately high and adverse environmental effects (CEQ, 1997).

3.5.1 Minority Populations

According to the CEQ, minority individuals are defined as members of the following groups: American Indian or Alaskan Native; Asian or Pacific Islander; Black, not of Hispanic origin; or Hispanic. A minority population, for the purposes of environmental justice, is identified when the minority population of the potentially affected area is greater than 50 percent or meaningfully greater than the percentage of the minority population in the general population or other appropriate unit of geographical analysis (CEQ, 1997).[1]

Figure 8 shows the distribution of minority populations within a six-mile radius of the center of the BSPP site. As shown, the radius encompasses parts of census block groups 458.00.4, 458.00.6, and 459.00.1. The total population of the three block groups within the six-mile radius is 2,604, of which 1,326 are classified as Black or African-American, American Indian (or Alaskan Native), Asian, Native Hawaiian (or other Pacific Islander, some other race (including two or more races), and/or Hispanic or Latino.

1 According to the CEQ guidelines, “Minority” is defined as all persons except non-Hispanic whites. In order words, minority is defined as all racial groups other than white, and all persons of Hispanic origin, regardless of race.

Table 3.5-1 presents the minority population composition of the Census Block Groups within the study area, the nearby city of Blythe, and Riverside County as a whole. Riverside County as a whole exhibits a proportion of minority residents of 49 percent, which is lower than the City of Blythe and block group 458.00.6, but higher than 459.00.1, which is at the eastern edge of the six-mile radius and closest to the City of Blythe. Block Group 458.00.4, which is located to the northeast of the proposed action, has a very low population and a small percentage of minority residents. The minority population within both Census Block 458.00.6 and the City of Blythe as the whole are more than 50 percent and therefore both represent a community of concern for the purposed of environmental justice analysis.

TABLE 3.5-1
RACIAL AND INCOME CHARACTERISTICS FOR RESIDENTS WITHIN THE ENVIRONMENTAL JUSTICE STUDY AREA

Geographic Area (Census Block Group)	Total Population	Total Minority (Percentage Minority)		Median Household Income (1999)	Proportion of the Population Living Below the Poverty Level (Percentage Low-Income)
458.00.6	1,453	829	(57.1%)	$27,404	28.3%
458.00.4	115	14	(12.2%)	$28,684	0.0%
459.00.1	1,036	483	(46.6%)	$40,893	15.3%
Blythe	12,155	7,050	(58%)	$35,324	20.9%
Riverside County	1,545,387	756,556	(49%)	$42,887	14.2%

SOURCE: U.S. Census, 2000

3.5.2 Low Income Populations

Unlike the CEQ (1997) guidance on minority populations, none of the environmental justice guidance documents contain a quantitative definition of how many low-income individuals it takes to comprise a low-income population. In the absence of guidance, for this analysis the density used to identify minority populations (i.e., 50 percent or greater) was also used as a minimum to identify low-income populations. In addition, a local population is judged to be "meaningfully greater" than the general population if the proportion of individuals living under the poverty line is 100 percent or more that of the general population.

In this analysis, the current below-poverty-level population is based on Year 2000 U.S. Census block group data within a six-mile radius of the BSPP site. As shown in Table 3.5-1, the 2000 census data reported that the median household income for Riverside County was $42,887. The median household income for Riverside County is higher than all of the three block groups within the six-mile radius of the site and the City of Blythe. Block group 459.00.1, which is located east of the site on the western side of Blythe, has the highest median household income of the three block groups within the six-mile radius. The block group in which the Project is situated, 458.00.6, has the lowest median household income at $27,404 and the highest proportion of residents below the poverty level (28.3 percent) – a proportion of low-income residents is nearly twice that for Riverside County as a whole. Consequently, it is conservatively judged that the Census Block Group 458.00.6 is also identified as a low income population that represents a community of concern for the environmental justice analysis.

3.6 Lands and Realty

3.6.1 Introduction

BLM manages a diverse combination of lands and resources administered by BLM in eastern Riverside County, including but not limited to, land uses for utility corridors, communication sites, land tenure (disposal, acquisition or easement) issues, land use authorizations (permits and rights-of-way), withdrawals and renewable energy activities. Within the immediate and surrounding areas of the BSPP, there are no communications sites, land use permits, leases or easements of record, nor are any land tenure issues identified in close proximity to or that would be affected by the BSPP. There are, however, utility corridors, rights-of-way, renewable energy activities and a withdrawal application (see Figure 6).

3.6.2 Background

Title V of the Federal Land Policy and Management Act of 1976, as amended, (FLPMA), Section 503, requires the establishment of corridors to the extent practical to minimize adverse environmental impacts and the proliferation of separate rights-of-way. Through its planning efforts, the BLM Palm Springs-South Coast Field Office has designated corridors throughout the Field Office boundaries (generically identified as “locally-designated corridors” and specifically identified by an alphabetical reference).

Additionally, the *Approved Resource Management Plan/Record of Decision for Designation of Energy Corridors on Bureau of Land Management-Administered Lands in the 11 Western States* signed January 14, 2009, established corridors (generically identified as “368 corridors”) pursuant to Section 368 of the Energy Policy Act of 2005.

Further, lands identified in the Notice of Availability of Maps and Additional Public Scoping for the *Programmatic Environmental Impact Statement to Develop and Implement Agency-Specific Programs for Solar Energy Development* (Solar Energy Development PEIS or PEIS) released by the Departments of the Interior and Energy identified Solar Zones determined to have high potential for development of solar energy facilities. As a result of the release of these maps, the BLM filed an application for withdrawal with the Secretary of the Interior identifying 676,048 acres of land in Arizona, California, Colorado, Nevada, New Mexico and Utah to be “withdrawn from settlement, sale, location or entry under the general land laws, including the mining laws, on behalf of the BLM to protect and preserve solar energy study areas for future solar energy development.” The Notice of Proposed Withdrawal, published June 30, 2009 in the Federal Register (Vol. 47 No. 124), segregated certain lands for up to two years to provide time for various studies and analyses in support a final decision on the withdrawal application. The lands remain open to discretionary actions, such as rights-of-way and land use permits and to the mineral leasing laws.

3.6.3 Existing Situation

There are no existing authorized uses within the proposed boundaries of the solar generating site.

Part of the land involved with the BSPP (T. 6 S., R. 21 E., SBM) lies within the land segregated by the above-referenced withdrawal application.

Interstate10 lies within a Section 368 Designated Corridor as defined by the Energy Policy Act[1] (identified as Corridor 30-52, 2 miles in width) as well as a locally-designated Corridor K (two miles in width) (each of which is shown in Figure 6, both of which lie south of the site on a generally east-west heading. Numerous other linear rights-of-way also lie within and to the north and south of these two designated corridors. Locally-designated Corridor J (two miles in width) follows a north-south heading to the east of the proposed action but would not be affected by it.

The BSPP solar generating facilities would not be within the designated corridors; however, ancillary facilities associated with the BSPP would. The proposed gen-tie line would cross I-10, and thus Corridor K and 30-52, on a nearly perpendicular path, to connect to the proposed expanded Colorado River Substation southwest of the BSPP area. Likewise, the proposed gas pipeline would cross the same corridors and be bored under I-10 on a nearly perpendicular path, to connect to the existing gas pipeline south of I-10. The primary fiber optic line would be co-located with the gen-tie line and another buried in a shallow ditch alongside the access road to the site within the corridors. Access to the BSPP from I-10 would be from the existing Exit #232, Airport/Mesa Drive via Mesa Drive Road. A new access road from the frontage road on the north side of I-10 heading north to the site is proposed along the same alignment as the gen-tie line, gas pipeline and fiber optic line. This road would cross, on a nearly perpendicular route, the northern portion of the Corridors 30-52 and K.

In addition to BSPP, four other “fast track” proposed solar generation projects in eastern Riverside County – Genesis Solar Energy Project, Desert Sunlight Solar Farm, Rice Solar Energy Project, and Palen Solar Power Project – are currently under review. Figure 9 identifies these proposed actions by letter: BSPP (L), Genesis (O), Desert Sunlight (V), Rice (R), and Palen (K). The combined total number of acres identified for consideration in these applications, including BSPP, is approximately 32,700 acres. Each of these proposed actions has identified an “action area” that includes more acreage than what would be needed for construction, operation and maintenance to allow for flexibility in final design. Should one or more ROW grants be authorized, the acreage included in the grant(s) would be only that which is actually needed for an action(s), not the total number of acres identified in the application(s).

The Devers-Palo Verde No. 1 (DPV1) is an existing 500-kV transmission line which spans approximately 128 miles of land within California paralleling I-10 (see Figure 9 Number 4). The transmission line is within Corridors K and 30-52. DPV1 was approved by the California Public Utilities Commission (CPUC) in 1979 and constructed in 1982.

[1] Section 368 of the Energy Policy Act directs the Secretaries to designate corridors for oil, gas, hydrogen pipe and electric transmission lines on federal land in the 11 western states, perform necessary reviews, incorporate those designations into land use, land management or equivalent plans.

The Blythe 230-kV Transmission Line Project involves the building of two 230-kV transmission lines spanning approximately 70 miles between the Julian Hinds and Bucks substations, and construction of a new midpoint substation. See Figure 9 Letter F. Construction on the transmission line began in February 2009, was completed in 2010, and has since been energized. The transmission line lies within the existing federally-approved utility corridor along I-10.

The Devers-Palo Verde 2 Transmission Line Project, approved by the CPUC in January 2007, involves the construction of two 500 kV transmission lines. See Figure 9 Letter D. The proposed route for the Devers-Palo Verde 2 (DPV2) Transmission Line is along the south side of I-10, parallel to the existing DPV1 transmission line route. BLM anticipates issuance of a ROD in Fall of 2010 for the DPV2 project to address the request for a right-of-way grant from SCE to construct, operate, and maintain DPV2 across BLM-administered land. In 1989, the U.S. Fish and Wildlife Service issued a Certificate of Right-of-Way Compatibility for the portion of the DPV2 route that crosses the Kofa National Wildlife Refuge in Arizona, but a Right-of-Way Permit authorizing construction across the refuge was never issued (CPUC 2006, pg. A-2). The CPUC is modifying its permit to authorize only the California portion of the project, and, as discussed above, BLM is preparing a ROD with a final decision likely in the Fall of 2010.

The Desert Southwest Transmission Line project consists of construction of an approximately 118 mile 500 kV transmission line and a new substation/switching station. See Figure 9 Letter G). The BLM Palm Springs-South Coast Field Office approved a ROW grant for the construction of the transmission line which crosses public lands between Blythe and the western end of the Coachella Valley. The project is being constructed within an existing federal utility corridor. Plans for development are being finalized with a possible near-term start date for construction.

Two substations are identified as part of the solar generating facilities in the area - the Colorado River substation, which is awaiting issuance of the BLM’s ROD for DPV 2, and the Red Bluff Substation, which is being analyzed with the Desert Sunlight Solar Power Project. The location of the Colorado River Substation is shown in Figure 9, Letter E; the location of the Red Bluff Substation, which will connect to DPV 1, is designated “Y” but is not yet finalized.

3.7 Livestock Grazing

As shown on Map 2-8 of the Approved Northern and Eastern Colorado Desert Coordinated Management Plan (December 2002), there are no livestock grazing allotments within or adjacent to the proposed BSPP area or right-of-way application area.

3.8 Mineral Resources

3.8.1 Geologic Environment

Depending on the published reference, the proposed BSSP site is located in either the southeastern portion of the Mojave Desert geomorphic province (CGS 2002a), or the northeastern quarter of the Colorado Desert geomorphic province (Norris and Webb 1990), in the Mojave Desert of Southern California near the Arizona border. The region is more characteristic of the Mojave Desert geomorphic province in terms of geology, structure and physiography. The Mojave Desert is a broad interior region of isolated mountain ranges that separate vast expanses of desert plains and interior drainage basins. The physiographic province is wedge-shaped, and separated from the Sierra Nevada and Basin and Range geomorphic provinces by the northeast-striking Garlock fault on the northwest side. The northwest-striking San Andreas Fault defines the southwestern boundary, beyond which lie the Transverse Ranges and Colorado Desert geomorphic provinces. The topography and structural fabric in the Mojave Desert is predominately southeast to northwest, and is associated with similarly-oriented faulting similar to the San Andreas Fault. A secondary east to west orientation correlates with structural trends in the Transverse Ranges geomorphic province. The site is located within the Palo Verde Mesa. This alluvial-filled basin is bounded by the McCoy Mountains, Little Maria Mountains, and Big Maria Mountains to the west, northwest, and northeast, respectively, and extends southwest to the Palo Verde Mountains (USGS 1973). The Palo Verde Mesa is bounded by the Palo Verde Valley to the east, which is generally formed by flood plain deposits of the Colorado River (USGS 1973).

The proposed BSPP site would be situated on the alluvial-filled basin of the Palo Verde Mesa just east of the McCoy Mountains. Overall, the proposed site gently slopes down from the McCoy Mountains in the west in a southwesterly direction at an approximate gradient of less than 1 percent toward the low topographic elevations of the Palo Verde Valley. Locally, steeper grades up to 15 percent are present along the western side of an unnamed mound beyond the northeast corner of the BSPP area. The site topographic elevation within the plant site varies from 830 feet above mean sea level (msl) in the west to 410 feet above msl in the east.

The BSPP site is underlain by younger and older Quaternary age alluvium and alluvial deposits (CDMG 1967; USGS 1990; USGS 2006; Solar Millennium 2009a). Marine and transitional sediments of the Pliocene age Bouse formation are presumed to underlie these Quaternary deposits (USGS 1968; Solar Millennium 2009a), and metasedimentary bedrock of the McCoy Mountains formation outcrops in the McCoy Mountains (Harding and Coney 1985). The local stratigraphy as interpreted by several cited authors is presented in Table 3.8-1.

Holocene age alluvium of modern washes from the McCoy Mountains is mapped as west-east-trending individual strips in the west-center and southern portions of the BSPP site surface. The width of these washes varies along their path and can be as wide as 1,500 feet in some areas. The modern alluvium washes generally contain unconsolidated, angular to subangular gravel and sand derived from the McCoy Mountains and include boulder- and cobble-rich wash deposits in the proximity of the McCoy Mountains. The alluvium wash deposits grade laterally towards the

TABLE 3.8-1
CORRELATION AND AGES OF STRATIGRAPHIC UNITS

Age	Unit/Description	Jennings (CDMG 1967)	Stone (USGS 1990)	Stone (USGS 2006)
Holocene	Alluvium of modern washes	Qal	Qw	Qw
	Alluvial-fan and alluvial-valley deposits		QTa	Qa_6
Holocene ± Pleistocene	Alluvial-fan deposits (Intermediate Alluvium)	Qc		Qa_3
Pleistocene	Alluvial deposits of Palo Verde Mesa			Qpv
Pleistocene ± Pliocene	Alluvial deposits of the McCoy Wash area	QP	QTfg	QTmw
Pleistocene ± Miocene	Alluvial-fan and alluvial-valley deposits (Older Alluvium)	Qc_o	QTdf	QTa_2
Pliocene ± Miocene	Bouse Formation[a]	Pu	Tbx	Tbx
Cretaceous and Jurassic?	McCoy Mountains Formation[b]	ms, mv	Km*(x)*, Kja, Kima?	Km*(x)*, Kja, Kima?

NOTES:
[a] Not mapped at the surface within the BSPP area and expected to present at depth below the alluvial-filled basin.
[b] Mapped only in a small portion at the southwest corner and expected to present at shallow depths near the McCoy Mountains.

eastern portion of the site into Holocene age alluvial fan and alluvial valley deposits. The younger alluvium deposits are characterized by the lack of desert varnish, generally fine grain size, and evidence of sediment transport that could have occurred within the last 2,000 years. The younger alluvium deposits generally form a very gently sloping to nearly flat surface and consist of sand, pebbly sand, and sandy pebble-gravel (USGS 2006).

The intermediate alluvium, Holocene to Pleistocene in age, occurs as desert varnished pavement surfaces generally in the western half of the BSPP site and as small isolated strip surfaces between younger alluvium deposits in the eastern half of the site. These alluvial-fan deposits of gravel and sand form relatively old, dissected surfaces and are generally characterized by smooth, varnished desert pavement. Most of the intermediate alluvium surfaces have a dark brown to nearly black desert varnish and can be distinguished by the change in color on aerial photographs. Older alluvium is mapped as high and deeply dissected narrow ridges away from the McCoy Mountains along the western margin of the site, and is interpreted to be older than 1.2 million years ago (Ma). These older alluvial-fan deposits of fine to coarse, poorly sorted gravel and sand generally form sharp to rounded ridge crests and presumably have been eroded to a level below that of any pre-existing alluvial surfaces (USGS 2006). The approximate transitions from Pleistocene to Holocene age sediments is marked by the change from older alluvium that exhibits an erosional, dissected surface to a setting in which neither deposition nor erosion is occurring (intermediate alluvium), and then to areas undergoing active fan deposition (younger alluvium).

The Pleistocene age alluvial deposits of the Palo Verde Mesa are mapped in a small portion in the southeastern corner of the site. These unconsolidated to weakly consolidated deposits of sand, gravelly sand, silt, and clay form the lower portion of the Palo Verde Mesa and are mapped approximately 60 feet below the upper portion of the Palo Verde Mesa (alluvial filled basin). This unit extends up to the Colorado River flood plain to the east. The Pleistocene and/or Pliocene age alluvial deposits of the McCoy Wash area are mapped in the southeastern end and along the eastern edge of the BSPP site. This alluvial unit consists of rounded river gravel and minor locally derived gravel that is underlain by well consolidated calcareous or gypsiferous sandstone, and forms two broad hills standing 50 to 80 feet above the Palo Verde Mesa. The stratigraphic relations between the alluvial deposits of the McCoy Wash area and the Palo Verde Mesa are unclear (USGS 2006).

Interbedded clay, silt, sand, limestone and tufa of the Bouse formation were deposited in a marine to brackish water environment during the Pliocene epoch in Coachella Valley (USGS 1968; USGS 2006). The sediments were deposited in a marine embayment of the Gulf of California that encroached northward into the Colorado River Valley during the late Tertiary period. The nearest exposure relative to the proposed BSPP site is mapped at the eastern side of the Big Maria Mountains approximately 10 miles northeast of the northeastern corner of the site (USGS 1968), and is mapped as interpreted landslide deposits in the McCoy Mountains approximately 6 miles west of the western boundary of the site. The depth to the Bouse formation below the Palo Verde Mesa alluvium deposit is unknown and is expected to be at least several hundred feet based on the site topography and the available depth to the Bouse formation along the Colorado River (USGS 1968; USGS 1973). The McCoy Mountains formation is mapped as a small area in the southwestern corner of the site. Weakly metamorphosed sandstone and conglomerate, and lesser shale, mudstone and siltstone, of the Cretaceous age McCoy Mountains formation are the predominant lithologies in the McCoy and Palen Mountains (CDMG 1967; USGS 1968; USGS 1990; USGS 2006). The quartzose members of the McCoy Mountains formation are believed to be as old as Late Jurassic age (USGS 2006).

A preliminary geotechnical investigation including 30 exploratory borings and 16 test pits has been completed for the general area of the BSPP site (Kleinfelder 2009). The geotechnical investigation report does not cover the alignment of the proposed off-site linears to the south. The preliminary geotechnical investigation reveals that the BSPP site is underlain by younger and older alluvium that generally consists of sand and gravel to the maximum depth of exploration (approximately 76.5 feet below the existing ground surface). The BSPP site is generally surfaced with unconsolidated soils due to desiccation and/or wind deposition to a maximum depth of two feet below the existing grade. The soils below the surficial materials are generally dense to very dense poorly graded sand, silty sand and clayey sand to poorly graded gravel with sand. Very stiff to hard fine grain soils and sandy clays are locally present as interbedded layers of one to three feet thickness at depths generally greater than 15 feet below existing grade. The near surface soils at the site are primarily granular with no to low swell potential. Collapse potential tests indicate the site soils exhibit a collapse potential in the range of 0 to 3.6 percent when inundated with water.

The proposed BSPP plant site is not crossed by any known active faults or designated Alquist-Priolo Earthquake Fault Zones (EFZs, formerly called Special Studies Zones) (CGS 2002b). A number of major, active faults lie within 62 miles of the site. These faults are discussed in detail in Section 3.12, *Public Health and Safety* under the Geologic Hazards heading. Several northwest-striking basement faults are mapped at the nearby McCoy, Big Maria, and Little Maria Mountains (CDMG 1967; USGS 1984, USGS 1990, USGS 2006). The faults are part of a major Mesozoic terrain-bounding structural zone that was active during late Jurassic time, and are associated with folding and metamorphism of the McCoy Mountains formation. The basement faults are no longer active, and are not exposed anywhere on the surface of the proposed site. The Blythe Graben is mapped as cutting the Quaternary alluvial deposits about six miles northeast of the site; its tectonic significance is unknown (USGS 2006).

3.8.2 Mineral Resources Potential

Lands identified in the Notice of Availability of Maps and Additional Public Scoping for the *Programmatic Environmental Impact Statement to Develop and Implement Agency-Specific Programs for Solar Energy Development* (Solar Energy Development PEIS or PEIS) released by the Departments of the Interior and Energy identified Solar Study Areas determined to have high potential for development of solar energy facilities. As a result of the release of these maps, the BLM filed an application for withdrawal with the Secretary of the Interior identifying 676,048 acres of land in Arizona, California, Colorado, Nevada, New Mexico and Utah to be “withdrawn from settlement, sale, location or entry under the general land laws, including the mining laws, on behalf of the BLM to protect and preserve solar energy study areas for future solar energy development.” The Notice of Proposed Withdrawal, published June 30, 2009 in the Federal Register (Vol. 47 No. 124), segregated certain lands for up to two years to provide time for various studies and analyses in support a final decision on the withdrawal application. The lands remain open to discretionary actions, such as rights-of-way and land use permits and to the mineral leasing laws.

Locatable Minerals

There are no active mining claims within the BSPP area nor is there any locatable mineral activity within its boundaries. Based on the geological environment and historical trends, the potential for occurrence of locatable minerals is low within the BSSP area.

Leasable Minerals

There are no mineral leases within the BSPP area.

The BLM’s Prospectively Valuable maps for leasable minerals show that there is low potential for the occurrence of oil and gas, geothermal resources, oil shale or tar sands, coal, sodium, potassium and phosphate.

Saleable Minerals/Mineral Materials

Sand and gravel deposits are ubiquitous throughout the BSPP area and the region. The proposed action would have no adverse affect on the availability of mineral materials. There is potential for the BSPP to use mineral materials on or near the site for its own construction needs after proper permitting for use of the material.

3.9 Multiple Use Classes

The California Desert Conservation Area Plan (CDCA) (DOI BLM 1980, as amended) developed a classification system that places BLM-administered public lands in the CDCA into one of four multiple-use classes, based on the sensitivity of the resources and types of uses for each geographic area. The classification system used in the CDCA Plan identifies four multiple-use classes. The CDCA lands in Eastern Riverside County are assigned to the classes in the proportions shown in Table 3.9-1 below.

TABLE 3.9-1
MULTIPLE-USE CLASS DESIGNATIONS

Class	Acreage	% of Total Planning Area Public Lands
C	576,858	38
L	550,087	36
M	399,024	26
I	0	0
U	1,886	0
Total	***1,527,855***	***100***

The Multiple-use Class Guidelines, as delineated in Table 1, pages 15-20 of the CDCA Plan (DOI BLM 1980), apply to CDCA lands in Eastern Riverside County.

Descriptions of the multiple-use classes are:

> **Class C:** Multiple-use Class C (Controlled) has two purposes. First, it shows those areas which are being “preliminarily recommended” as suitable for wilderness designation by Congress. This process is explained in the Wilderness Element of the CDCA Plan (DOI BLM 1980). Second, it will be used in the future to show those areas formally designated as “wilderness” by Congress.
>
> The Class C Guidelines are different from the guidelines for other classes. They summarize the kinds of management likely to be used in these areas when and if the areas are formally designated wilderness by Congress. These guidelines will be considered in the public process of preparing the final Wilderness Study Reports. However, the final management decisions depend on Congressional direction in the legislation that makes the formal designation.
>
> **Class L:** Multiple-use Class L (Limited Use) protects sensitive natural, scenic, ecological, and cultural resource values. Public lands designated as Class L are managed to provide for generally lower-intensity, carefully controlled multiple use of resources, while ensuring that sensitive values are not significantly diminished.
>
> **Class M:** Multiple-use Class M (Moderate Use) is based upon a controlled balance between higher-intensity use and protection of public lands. This class provides for a wide variety of present and future uses such as mining, livestock grazing, recreation, energy, and

utility development. Class M management is also designed to conserve desert resources and to mitigate damage to those resources which permitted uses may cause.

Class I: Multiple-Use Class I is an “Intensive use” class. Its purpose is to provide for concentrated use of lands and resources to meet human needs. Reasonable protection will be provided for sensitive natural and cultural values. Mitigation of impacts on resources and rehabilitation of impacted areas will occur insofar as possible.

Unclassified Lands: Scattered and isolated parcels of public land in the CDCA that have not been placed within multiple-use classes are “unclassified” land. These parcels will be managed on a case-by-case basis, as explained in the Land Tenure Adjustment Element of the CDCA Plan.

Plan Elements: The CDCA Plan Elements provide specific application of the multiple-use class guidelines for specific resources or activities about which the public has expressed significant concern.

3.10 Noise

The BSPP site is located in the Colorado Desert in eastern Riverside County. Most of the surrounding land is covered by desert scrub. The site is approximately eight miles from the City of Blythe and two miles north of I-10 in Riverside County. The significant noise source in the area is vehicle traffic on I-10. Secondary noise sources include aircraft operations associated with the Blythe Airport, agricultural operations, the Blythe Skeet and Trap Shooting Club, and individual vehicles operating on surrounding local roadways.

The land use of the BSPP site is undeveloped open space, and the surrounding land uses include undeveloped land and a small developed private parcel adjacent and to the south. Noise levels at the nearest residence are dominated by wind, which ebbs and flows throughout the day as the temperature climbs and drops (Solar Millennium 2009a, AFC Section 5.8.2.3).

The only identified sensitive noise receptor, in the vicinity of the proposed action, is a mobile home located approximately 725 feet east and 775 feet south of the site boundary (Solar Millennium 2009a, AFC Section 1.3.7).

The Applicant conducted a baseline survey to establish an ambient noise level. Levels were measured at the boundary of the BSPP site and nearest residence on June 2 to June 4, 2009. One long-term measurement was taken at the nearest residence over a 25-hour period between 2:00 p.m., June 2, and 1:00 p.m., June 4, 2009 (see Table 3.10-1). The survey was performed using acceptable equipment and techniques.

TABLE 3.10-1
SUMMARY OF MEASURED NOISE LEVELS

	Measured Noise Levels, dBA	
Measurement Sites	**Average During Daytime Hours L_{eq}**	**Average During Nighttime Hours L_{90}/L_{eq}**
LT, Nearest Residence	45[a]	36[b]

NOTES:
a Average of the daytime hours
b Average of the nighttime hours. The nighttime L_{eq} and the corresponding L_{90} values are equal (AFC § 5.8.2.4, p. 5.8-10); this is likely due to the proximity of the project site to I-10 (nighttime noise is likely dominated by the relatively steady noise from I-10).

SOURCE: Solar Millennium 2009a, AFC Section 5.8.2.4; Tables 5.8-5, 5.8-6

The construction and operation of any power plant creates noise or unwanted sound. The character and loudness of this noise, the times of day or night that it is produced, and the proximity of the facility to sensitive receptors all combine to determine whether the work would meet applicable noise control laws and ordinances. In some cases, vibration may be produced as a result of power plant construction practices such as blasting or pile driving. The ground-borne energy of vibration has the potential to cause structural damage and annoyance. Definitions of some technical terms related to noise are provided in Table 3.10-2.

TABLE 3.10-2
DEFINITION OF SOME TECHNICAL TERMS RELATED TO NOISE

Terms	Definitions
Decibel, dB	A unit describing the amplitude of sound, equal to 20 times the logarithm to the base 10 of the ratio of the pressure of the sound measured to the reference pressure, which is 20 micropascals (20 micronewtons per square meter).
A-Weighted Sound Level, dBA	The sound pressure level in decibels as measured on a Sound Level Meter using the A-weighting filter network. The A-weighting filter de-emphasizes the very low and very high frequency components of the sound in a manner similar to the frequency response of the human ear and correlates well with subjective reactions to noise. All sound levels in this testimony are A-weighted.
L_{90}	The A-weighted noise level that is exceeded 90 percent of the time during the measurement period. L_{90} is generally taken as the background noise level.
Equivalent Noise Level, L_{eq}	The energy average A-weighted noise level during the Noise Level measurement period.
Community Noise Equivalent Level, CNEL	The average A-weighted noise level during a 24-hour day, obtained after addition of 4.8 decibels to levels in the evening from 7 p.m. to 10 p.m., and after addition of 10 decibels to sound levels in the night between 10 p.m. and 7 a.m.
Day-Night Level, L_{dn} or DNL	The Average A-weighted noise level during a 24-hour day, obtained after addition of 10 decibels to levels measured in the night between 10 p.m. and 7 a.m.
Ambient Noise Level	The composite of noise from all sources, near and far. The normal or existing level of environmental noise at a given location (often used for an existing or pre-project noise condition for comparison study).
Pure Tone	A pure tone is defined by the Model Community Noise Control Ordinance as existing if the one-third octave band sound pressure level in the band with the tone exceeds the arithmetic average of the two contiguous bands by 5 decibels (dB) for center frequencies of 500 Hz and above, or by 8 dB for center frequencies between 160 Hz and 400 Hz, or by 15 dB for center frequencies less than or equal to 125 Hz.

SOURCE: Guidelines for the Preparation and Content of Noise Elements of the General Plan, *Model Community Noise Control Ordinance*, California Department of Health Services 1976, 1977.

BLM does not establish noise thresholds for public lands, but defers to other Federal, State and Local regulatory agencies. Table 1-1, *Introduction*, lists the laws, ordinances, regulations and standards (LORS) applicable to the relevant area.

3.11 Paleontological Resources

The Paleontological Resources Preservation Act of 2009 requires the Secretaries of the United States Department of the Interior and Agriculture to manage and protect paleontologic resources on Federal land using scientific principles and expertise. The potential for discovery of significant paleontologic resources or the impact of surface disturbing activities to such resources is assessed using the Potential Fossil Yield Classification (PYFC) system. This system includes three conditions (Condition 1 [areas known to contain vertebrate fossils]; Condition 2 [areas with exposures of geological units or settings that have high potential to contain vertebrate fossils]; and Condition 3 [areas that are very unlikely to produce vertebrate fossils]). The PYFC class ranges from Class 5 (very high) for Condition 1 to Class 1 (very low) for Condition 3 (USDI 2007).

The BSPP site is underlain by younger and older Quaternary age alluvium and alluvial deposits (CDMG 1967; USGS 1990; USGS 2006; Solar Millennium 2009a). Marine and transitional sediments of the Pliocene age Bouse formation are presumed to underlie these Quaternary deposits (USGS 1968; Solar Millennium 2009a), and metasedimentary bedrock of the McCoy Mountains formation outcrops in the McCoy Mountains (Harding and Coney 1985). The local stratigraphy as interpreted by several authors cited and presented below in Table 3.11-1.

TABLE 3.11-1
CORRELATION AND AGES OF STRATIGRAPHIC UNITS

Age	Unit/Description	Jennings (CDMG 1967)	Stone (USGS 1990)	Stone (USGS 2006)
Holocene	Alluvium of modern washes	Qal	Qw	Qw
	Alluvial-fan and alluvial-valley deposits		QTa	Qa$_6$
Holocene ± Pleistocene	Alluvial-fan deposits (Intermediate Alluvium)	Qc		Qa$_3$
Pleistocene	Alluvial deposits of Palo Verde Mesa			Qpv
Pleistocene ± Pliocene	Alluvial deposits of the McCoy Wash area	QP	QTfg	QTmw
Pleistocene ± Miocene	Alluvial-fan and alluvial-valley deposits (Older Alluvium)	Qc$_o$	QTdf	QTa$_2$
Pliocene ± Miocene	Bouse Formation[a]	Pu	Tbx	Tbx
Cretaceous and Jurassic?	McCoy Mountains Formation[b]	ms, mv	Km*(x)*, Kja, Kima?	Km*(x)*, Kja, Kima?

NOTES:
[a] Not mapped at the surface within the project area and expected to present at depth below the alluvial-filled basin.
[b] Mapped only in a small portion at the southwest corner and expected to present at shallow depths near the McCoy Mountains.

Holocene age alluvium of modern washes from the McCoy Mountains is mapped as west-east-trending individual strips in the west-center and southern portions of the BSPP site surface. The width of these washes varies along their path and can be as wide as 1,500 feet in some areas. The modern alluvium washes generally contain unconsolidated, angular to subangular gravel and sand derived from the McCoy Mountains and include boulder- and cobble-rich wash deposits in the proximity of the McCoy Mountains. The alluvium wash deposits grade laterally towards the eastern portion of the site into Holocene age alluvial fan and alluvial valley deposits. The younger alluvium deposits are characterized by the lack of desert varnish, generally fine grain size, and evidence of sediment transport that could have occurred within the last 2,000 years. The younger alluvium deposits generally form a very gently sloping to nearly flat surface and consist of sand, pebbly sand, and sandy pebble-gravel (USGS 2006).

The intermediate alluvium, Holocene to Pleistocene in age, occurs as desert varnished pavement surfaces generally in the western half of the BSPP site and as small isolated strip surfaces between younger alluvium deposits in the eastern half of the site. These alluvial-fan deposits of gravel and sand form relatively old, dissected surfaces and are generally characterized by smooth, varnished desert pavement. Most of the intermediate alluvium surfaces have a dark brown to nearly black desert varnish and can be distinguished by the change in color on aerial photographs. Older alluvium is mapped as high and deeply dissected narrow ridges away from the McCoy Mountains along the western margin of the site, and is interpreted to be older than 1.2 million years ago (Ma). These older alluvial-fan deposits of fine to coarse, poorly sorted gravel and sand generally form sharp to rounded ridge crests and presumably have been eroded to a level below that of any pre-existing alluvial surfaces (USGS 2006). The approximate transitions from Pleistocene to Holocene age sediments is marked by the change from older alluvium that exhibits an erosional, dissected surface to a setting in which neither deposition nor erosion is occurring (intermediate alluvium), and then to areas undergoing active fan deposition (younger alluvium).

The Pleistocene age alluvial deposits of the Palo Verde Mesa are mapped in a small portion in the southeastern corner of the site. These unconsolidated to weakly consolidated deposits of sand, gravelly sand, silt, and clay form the lower portion of the Palo Verde Mesa and are mapped approximately 60 feet below the upper portion of the Palo Verde Mesa (alluvial filled basin). This unit extends up to the Colorado River flood plain to the east. The Pleistocene and/or Pliocene age alluvial deposits of the McCoy Wash area are mapped in the southeastern end and along the eastern edge of the BSPP site. This alluvial unit consists of rounded river gravel and minor locally derived gravel that is underlain by well consolidated calcareous or gypsiferous sandstone, and forms two broad hills standing 50 to 80 feet above the Palo Verde Mesa. The stratigraphic relations between the alluvial deposits of the McCoy Wash area and the Palo Verde Mesa are unclear (USGS 2006).

Interbedded clay, silt, sand, limestone and tufa of the Bouse formation were deposited in a marine to brackish water environment during the Pliocene epoch in Coachella Valley (USGS 1968; USGS 2006). The sediments were deposited in a marine embayment of the Gulf of California that encroached northward into the Colorado River Valley during the late Tertiary period. The nearest exposure relative to the proposed BSPP site is mapped at the eastern side of the Big Maria Mountains approximately 10 miles northeast of the northeastern corner of the site (USGS 1968), and is mapped as interpreted landslide deposits in the McCoy Mountains approximately six miles west of the western boundary of the site. The depth to the Bouse formation below the Palo Verde Mesa alluvium deposit is unknown and is expected to be at least several hundred feet based on the site topography and the available depth to the Bouse formation along the Colorado River (USGS 1968; USGS 1973). The McCoy Mountains formation is mapped as a small area in the southwestern corner of the site. Weakly metamorphosed sandstone and conglomerate, and lesser shale, mudstone and siltstone, of the Cretaceous age McCoy Mountains formation are the predominant lithologies in the McCoy and Palen Mountains (CDMG 1967; USGS 1968; USGS 1990; USGS 2006). The quartzose members of the McCoy Mountains formation are believed to be as old as Late Jurassic age (USGS 2006).

A preliminary geotechnical investigation including 30 exploratory borings and 16 test pits has been completed for the general area of the BSPP site (Kleinfelder 2009). The geotechnical investigation report does not cover the alignment of the proposed off-site linears to the south. The preliminary geotechnical investigation reveals that the BSPP site is underlain by younger and older alluvium that generally consists of sand and gravel to the maximum depth of exploration (approximately 76.5 feet below the existing ground surface). The BSPP site is generally surfaced with unconsolidated soils due to desiccation and/or wind deposition to a maximum depth of two feet below the existing grade. The soils below the surficial materials are generally dense to very dense poorly graded sand, silty sand and clayey sand to poorly graded gravel with sand. Very stiff to hard fine grain soils and sandy clays are locally present as interbedded layers of one to three feet thickness at depths generally greater than 15 feet below existing grade. The near-surface site soils are primarily granular with no to low swell potential. Collapse potential tests indicate the site soils exhibit a collapse potential in the range of 0 to 3.6 percent when inundated with water.

A paleontological resources assessment is provided in Appendix E. Existing paleontological information was reviewed and records searches were requested from the Natural History Museum of Los Angeles County (McCleod 2009) and the University of California Berkeley (UCMP 2009) online database for the site area. Site-specific information generated by the Applicant for the proposed action was also reviewed. All research was conducted in accordance with accepted assessment protocol (Society of Vertebrate Paleonology [SVP 1995]) to determine whether any known paleontological resources exist in the general area.

The western boundary of the BSPP site surface is dominated older alluvium derived as coarse fan deposits from the exposure of metamorphic rocks in the McCoy Mountains to the west. These coarse fan deposits typically do not contain significant vertebrate fossils, at least in the uppermost layers (McLeod 2009) and are assigned a low paleontologic sensitivity. The center portion of BSPP site is surfaced by young to older alluvium and Holocene age modern washes. Shallow excavations in the Holocene age modern washes and young alluvium at the surface are unlikely to encounter significant vertebrate fossil remains; however, deeper excavations that extend into older alluvium deposits may uncover significant vertebrate fossils (McLeod 2009). Therefore, the paleontologic sensitivity in the center portion of the site where younger alluvium and modern washes are mapped varies from low in shallow excavations to high in deeper excavations. The older alluvium mapped at the surface in the central portion of the site is considered to have significant fossil remains and is assigned a high paleontologic sensitivity (Solar Millennium 2009a). Older alluvial deposits of the McCoy Wash area are mapped at the surface in the northeastern and the southern portions of the BSPP site. These broad hill areas are likely to contain significant vertebrate fossil remains and therefore are assigned a high paleontologic sensitivity. The alluvial deposits of the Palo Verde Mesa are mapped at the surface in a small area in the eastern boundary portion of BSPP site. This older alluvium in the lower portions of the Palo Verde Mesa is likely to contain significant fossil remains and is also assigned a high paleontologic sensitivity. The McCoy Mountains formation that is mapped in the southeastern corner portion of the BSPP site is unlikely to contain any significant vertebrate fossils and is assigned a low paleontologic sensitivity (Solar Millennium 2009a).

The results of a site-specific comprehensive field survey recorded a total of 37 non-significant fossil occurrences yielding petrified wood and 64 non-significant fossil points yielding non-diagnostic vertebrate material within the eastern portion of the BSPP site (SWCA 2009). However, none of these localities are considered scientifically significant due to the lack of diagnostic characteristics. The closest recorded significant fossil specimen was a pocket mouse, *Perognathus*, which was recovered in the southwestern portion of Ford Dry Lake, just south and due west of the southern-most portion of the BSPP area north of I-10 (McLeod 2009). The next closest vertebrate localities in older Quaternary deposits are located in the Pinto formation about 35 miles west to northwest of BSPP site between Eagle Mountains and the Coxcomb Mountains. These localities have produced fossil specimens of tortoise, *Gopherus*, horse, *Equus*, and camel, *Camelops* and *Tanupolama stevensi* (McLeod 2009). Numerous vertebrate localities have been reported in same or similar geologic units to the alluvial deposits of the Palo Verde Mesa elsewhere in the eastern Mojave Desert, in Arizona, and in Sonora, Mexico to yield scientifically significant fossil remains of *Mammuthus* (Solar Millennium 2009a).

Based on the above discussion, SVP criteria, the paleontologic report in Appendix E and the confidential paleontologic information filing, there is a high probability that paleontologic resources exist in the alluvial deposits of the McCoy Wash area located in the northeastern and southern portions of the BSPP site; older alluvium deposits; and in the central portion of the BSPP site. Further, project activities involving deeper excavations in the younger alluvium that would encounter the underlying older alluvium soils also would have a high probability to encounter paleontologic resources.

3.12 Public Health and Safety

3.12.1 Introduction

The affected environment for Public Health and Safety includes evaluation of several program areas, including hazardous materials/hazardous waste management, unexploded ordnance (UXO), abandoned mined lands (AML), undocumented immigrants (UDI), transmission line safety and nuisance, traffic and transportation (including aviation) safety, worker safety and fire protection, public and private air strips/airfields, and geologic hazards.

3.12.2 Hazardous Materials

Several factors associated with the area in which a project is to be located affect the potential for an accidental release of a hazardous material that could cause public health impacts. These include:

1. local meteorology;
2. terrain characteristics;
3. location of population centers and sensitive receptors relative to the project;
4. existing public health concerns; and
5. existing environmental site contamination.

Meteorological Conditions

Meteorological conditions, including wind speed, wind direction, and air temperature, affect both the extent to which accidentally released hazardous materials would be dispersed into the air and the direction in which they would be transported. This affects the potential magnitude and extent of public exposure to such materials, as well as exposure to associated health risks. When wind speeds are low and the atmosphere stable, dispersion is reduced but could lead to increased localized public exposure. Recorded wind speeds and ambient air temperatures are described in PA/FEIS Section 3.02, *Air Quality*.

Terrain Characteristics

The location of elevated terrain is often an important factor in assessing potential exposure. An emission plume resulting from an accidental release could impact high elevations before impacting lower elevations. The topography of the site is mostly flat (ranges between 130 and 200 feet above sea level), with elevated terrain beginning to the northeast and southwest within three to four miles of the site.

Location of Exposed Populations and Sensitive Receptors

The general population includes many sensitive subgroups that could be at greater risk from exposure to emitted pollutants. These sensitive subgroups include the very young, the elderly, and those with existing illnesses. In addition, the location of the population in the area surrounding a project site may have a major bearing on health risk. However, there are no sensitive receptors within a three-mile radius of the BSPP site. The nearest sensitive receptor is the Eagle Mountain Elementary School, which is located about 10 miles west of the site.

There is a residential development approximately 2.1 miles south of the site, and a mobile home located approximately 725 feet east of the site.

Existing Public Health Concerns

Analyses of existing public health issues typically are prepared in order to identify the current status of respiratory diseases (including asthma), cancer, and childhood mortality rates in the population located near proposed action sites to provide a basis on which to evaluate any additional health impacts from the proposed action. Because of the very low population in the immediate vicinity of the BSPP and because no existing health concerns within a six-mile radius of the site have been identified by the Applicant (Solar Millennium 2009a, Section 5.10.2), no analysis of existing public health issues has been conducted.

Existing Environmental Site Contamination

The Phase I Environmental Site Assessment conducted for preferred Project site in 2009 found no “Recognized Environmental Conditions” per the American Society for Testing and Materials Standards (ASTM) definition. That is, there was no evidence or record of any use, spillage, or disposal of hazardous substances on the site, nor was there any other environmental concern that would require remedial action (Solar Millennium 2009a, Section 5.16.2.3 & Appendix I).

3.12.3 Waste Management

The Riverside County Waste Management Department operates six landfills, has a contract agreement for waste disposal with an additional private landfill, and administers several transfer station leases. Among the six, the Blythe Landfill is located approximately 6.4 miles from the site. The next closest landfills are the Desert Center Landfill (about 48.3 miles from the site), Mecca II Landfill (about 81.5 miles from the site) and Oasis Landfill (about 86.7 miles from the site). Riverside County has a minimum of 15 years of capacity for future landfill disposal. (RCWMD 2010).

3.12.4 Unexploded Ordnance (UX0)

There are no known occurrences of UXO within the boundaries of the BSPP, along the access routes, or the existing or proposed corridors for the power lines or natural gas lines. However, historical use of the site included General George Patton’s Desert Training Camps during World War II. Live-fire training has occurred in the general vicinity of the site, and conventional and unconventional land mines and improvised personnel mines have been detected in addition to UXO.

The former Blythe Army Airfield is located adjacent to the south of the BSPP site, approximately six miles due west of Blythe on West Hobson Way, adjacent to I-10. The airfield has been open since 1940, when it was known as Bishop Army Airfield. The airport later became a part of Muroc Army Air Field, now known as Edwards Air Force Base. The airfield was a second Army Air Forces heavy bombardment crew training base during World War II. Multiple bombardment groups were active at the airfield in 1942 and 1943, and up to 75 B-17 bombers were flown and maintained at this site. Historical records and drawings indicate that bombs and explosive materials, and possibly incendiary and pyrotechnic materials, were stored on airfield grounds in up to five magazines or bunkers. A gunnery range, skeet range, and jeep type target range, all with ammunition storage, were constructed and used by Army personnel. (CSMM, 2008).

3.12.5 Abandoned Mined Lands (AML)

There are approximately 30 abandoned mine land (AML) features on public lands on lands managed by the BLM's Palm Springs Field Office. Two openings to AMLs are located near the northwest corner of the BSPP site, and appear to be on public land. An opening to an additional AML is located outside the BSSP site, near its southeast corner. This opening appears to be on private land.

3.12.6 Undocumented Immigrants (UDI)

There are no known incidents with undocumented immigrants at or near the BSPP area.

3.12.7 Transmission Line Safety and Nuisance

The affected environment analysis focuses on the following issues, taking into account both the physical presence of the line and the physical interactions of its electric and magnetic fields:

1. aviation safety;
2. interference with radio-frequency communication;
3. audible noise;
4. fire hazards;
5. hazardous shocks;
6. nuisance shocks; and
7. electric and magnetic field (EMF) exposure

The site is in an uninhabited open desert land with no existing structures. The available land for the line's right-of-way would traverse some BLM-administered land in a largely uninhabited desert area, which has only two residences within two miles of the site and transmission line route. The closest residence is approximately 725 feet east of the southern site boundary and the next closest is approximately one mile southeast of the site boundary (Solar Millennium 2009a, p. 5.8-7). The general absence of residences in the immediate vicinity of BSPP and the area available for its related lines means that there would not be the type of residential field exposure that has been of health concern in recent years.

Aviation Safety

The Blythe Municipal Airport is located six miles west of Blythe; the BSPP site is located about one mile northwest of the airport. The airport is owned by the County of Riverside and is open to the public. Ten aircraft are based at the airport, including nine single-engines and one multi-engine aircraft. (AirNav, 2010). The airport has two operating runways, Runway 8-26 (oriented east-west), the primary runway, is 6,562 feet long, 150 feet wide. Runway 17-35 (oriented north-south) is 5,820 feet long, 100 feet wide. The Blythe Airport primarily is used for general aviation, i.e., flights other than military and regularly scheduled airline service and regular cargo flights.

The Riverside County Airport Land Use Commission (ALUC) published an airport compatibility plan in 2004. The *Compatibility Plan* is based on the Airport Master Plan adopted by the Riverside County Board of Supervisors in 2001. The plan is based on an assumption of long-range future activity of 58,100 annual aircraft operations, including up to 2,200 airline aircraft operations. The theoretical ultimate airport activity as envisioned in the *Compatibility Plan* includes a large number of large jet transport aircraft operations. Accordingly, the Airport Master Plan includes a proposal for extending Runway 8-16 to 3,450 feet westward for a total length of 10,012 feet.

The airport influence area boundary for the Blythe Airport is measured from a point 200 feet beyond where a runway ends (see FAR Part 77), and includes Zone A, Zones B1 and B2, Zone C, Zone D and Zone E. The *Compatibility Plan* identifies allowable and prohibited uses within each of these zones for various types of uses. Table 3.12-1 summarizes the compatible land uses by Zone for Transportation, Communications, and Utilities - Electrical Substations, Power Plants, and Power Lines.

TABLE 3.12-1
COMPATIBLE LAND USES BY ZONE

Component	Zone A	Zone B1	Zone B2	Zone C	Zone D	Zone E
Electrical Substations	-	0	0	0	0	+
Power Plants	-	-	-	0	0	+
Power Lines	-	0	0	0	0	+

NOTES:
- \- Generally Incompatible
- 0 Potentially compatible with restrictions (see Table 2A)
- \+ Generally Compatible

SOURCE: AECOM, 2010.

In Zone D, potentially compatible uses require review of structures greater than 70 feet in elevation (14 CFR 77, Objects Affecting Navigable Airspace). In Zone B1, airspace review is required for structures greater than 35 feet in elevation; in Zones C and D, such review is required for structures greater than 70 feet in elevation; and in Zone E, such review is required for structures greater than 100 feet in elevation. Land uses that create “Hazards to Flight” are prohibited in Zones B1, C, D, and E. (AECOM, 2010).

Hazards to Flight are defined to include physical (e.g., tall objects), visual, and electronic forms of interference with the safety of aircraft operations. Land use development that may cause an increase in the level of attraction to birds also is prohibited. Other potential hazards to aviation of solar energy projects located in sufficient proximity to airports include potential electromagnetic interference from the power plant and transmission lines, potential glare from the parabolic mirrors used to collect solar energy, potential vapor plumes emitted from cooling towers, potential thermal turbulence created by thermal releases from cooling towers, and bird attraction. (AECOM, 2010).

Policy 4.3.7 of the 2004 Riverside County Airport Land Use Compatibility Plan states, "New land uses that may cause visual, electronic, or increased bird strike hazards to aircraft in flight shall not be permitted within any airport's influence area." Specifically, glare or distracting lights which could be mistaken for airport lights; sources of dust, steam, or smoke which may impair pilot visibility; sources of electrical interference with aircraft communications or navigation; and any proposed use, especially landfills and certain agricultural uses, that creates an increased attraction for large flocks of birds all should be avoided. (FAA 5200.5A; FAA 150/5200-33A)

Interference with Radio-Frequency Communication

Potential transmission line-related radio frequency interference is a potential indirect effect of transmission line operation and is produced by the physical interactions of line electric fields. Such interference is due to the radio noise produced by the action of the electric fields on the surface of the energized conductor. The process involved is known as *corona discharge*, but is referred to as *spark gap electric discharge* when it occurs within gaps between the conductor and insulators or metal fittings. Because of the power loss from such corona discharges, it is in the interest of each line proponent to employ design, construction and maintenance plans that minimize them. When generated, such corona noise manifests itself as perceivable interference with radio or television signal reception or interference with other forms of radio communication when the signal is amplitude modulated (AM). Such radio interference is the buzzing and crackling noise one might hear from the speaker of amplitude modulated (AM) broadcast receiver when near a transmission line. The potential for corona-related interference generally becomes a concern for lines of 345 kV and above.

Frequency modulated (FM) signals are normally unaffected as are modern digital signals such as those involved in cellular telephone communication or modern airport and other types of radio communication. Since the level of the AM interference in any given case would depend on factors such as line voltage, distance from the line to the receiving device, orientation of the antenna, signal level, line configuration and weather conditions, maximum interference levels are not specified as design criteria for modern transmission lines. The level of any such AM interference usually depends on the magnitude of the electric fields involved and the distance from the line. The potential for such impacts is therefore minimized by reducing the line electric fields and locating the line away from inhabited areas. The FCC requires the line's owner to mitigate such interference in any specific case.

Glare

Under certain circumstances, light reflection and scattering optics in a parabolic mirror and the heat conduction element (HCE) at the focal point, could affect the vision of pilots flying to, from, or in the vicinity of the mirrors.

Industrial Plumes

In January 2006, the FAA conducted a Safety Risk Analysis (SRA) of industrial plumes. In this analysis, "Safety Risk Analysis of Aircraft Overflight of Industrial Exhaust Plumes," the FAA included the following conclusions about turbulence associated with plumes. Specifically, the FAA concluded that plumes could result in the following:

1. Possible airframe damage or negative effects on aircraft stability in flight or both;

2. Adverse effects on aircraft due to high levels of water vapor, engine and aircraft contaminants, icing, and restricted visibilities; and

3. Loss of the aircraft or fatal injury to the crew as well as substantial damage to ground facilities.

As a result, the FAA recommended that FAA Order 7400.2 be amended to consider a plume-generating facility as a hazard to navigation when expected flight paths pass less than 1,000 feet above the top of the object. In addition, the FAA included in its 2006 Safety Risk Analysis three other recommendations concerning plumes:

1. Amend the Aeronautical Information Manual (AIM), Chapter 7, Section 5, with wording that overflights at less than 1,000 feet vertically above plume-generating industrial sites should be avoided;

2. Where operationally feasible, make permanent the temporary flight restriction (TFR) that pertains to the overflight of power plants; and

3. Amend Advisory Circular 70.7460-2K, *Proposed Construction of Objects that May Affect Navigable Airspace*, by changing Instructions to completing FAA Form 7460-1, *Notice of Proposed Construction or Alternation*, Item #21 by adding "For structures such as power plants or any industrial facility where exhaust plume discharge could reasonably be expected and reportable under the provisions of Part 77, thoroughly explain the nature of the discharge."

According to the FAA, those actions would serve to further enhance aviation safety within the National Airspace System.

Audible Noise

Audible noise usually results from the action of the electric field at the surface of the line conductor and could be perceived as a characteristic crackling, frying, or hissing sound or hum, especially in wet weather. The noise-reducing designs related to electric field intensity are not specifically mandated by federal or state regulations in terms of specific noise limits. As with radio noise, such noise is limited instead through design, construction, or maintenance practices established from industry research and experience as effective without significant impacts on line safety, efficiency, maintainability, and reliability. Audible noise usually results from the action of the electric field at the surface of the line conductor and could be perceived as a characteristic crackling, frying, or hissing sound or hum, especially in wet weather.

Fire Hazards

The fire hazards caused by transmission lines are those that could be caused by sparks from conductors of overhead lines, or that could result from direct contact between the line and nearby trees and other combustible objects.

Hazardous Shocks

Hazardous shocks are those that could result from direct or indirect contact between an individual and the energized line, whether overhead or underground. Such shocks are capable of serious physiological harm or death and remain a driving force in the design and operation of transmission and other high-voltage lines. No design-specific federal regulations have been established to prevent hazardous shocks from overhead power lines. However, safety is assured within the industry from compliance with the requirements specifying the minimum national safe operating clearances applicable in areas where the line might be accessible to the public.

Nuisance Shocks

Nuisance shocks are caused by current flow at levels generally incapable of causing significant physiological harm. They result mostly from direct contact with metal objects electrically charged by fields from the energized line. Such electric charges are induced in different ways by the line's electric and magnetic fields. The potential for nuisance shocks around the proposed line would be minimized through standard industry grounding practices specified in the National Electrical Safety Code (NESC) and the joint guidelines of the American National Standards Institute (ANSI) and the Institute of Electrical and Electronics Engineers (IEEE). (Solar Millennium 2009a, p.5, 14-7).

Electric and Magnetic Field Exposure

The possibility of deleterious health effects from EMF exposure has increased public concern in recent years about living near high-voltage lines. Both electric and magnetic fields occur together whenever electricity flows, and exposure to them together is generally referred to as *EMF exposure*. The available evidence as evaluated by the CPUC, CEC, and other regulatory agencies is that a significant health hazard to humans exposed to such fields has not been established. There are no health-based federal regulations or industry codes specifying environmental limits on the strengths of fields from power lines. Most regulatory agencies believe that health-based limits are inappropriate at this time. They also believe that the present knowledge of the issue does not justify any retrofit of existing lines.

While there is considerable uncertainty about EMF health effects, the following facts have been established from the available information and have been used to establish existing policies:

1. Any exposure-related health risk to the exposed individual will likely be small.
2. The most biologically significant types of exposures have not been established.
3. Most health concerns are about the magnetic field.
4. There are measures that can be employed for field reduction, but they can affect line safety, reliability, efficiency, and maintainability, depending on the type and extent of such measures.

3.12.8 Traffic and Transportation Safety

Roadway Access

Access to the BSPP would be off I-10 to Mesa Drive either by Exit 232 (West) or Mesa Drive (East) interchange. Travelers would drive northerly about 300 feet to Black Rock Road, then westerly on Black Rock Road to a new driveway extending northerly into the site. For setting information relative to these roadways, see Section 3.18, Traffic and Public Access.

The proposed action also would include a seven-mile transmission line running south from the site; crossing I-10; and turning west to hook up to Southern California Edison's proposed Colorado River substation as well as a four-inch diameter natural gas pipeline heading two miles south from the proposed site and connecting to an existing Southern California Gas Company main pipeline south of I-10.

Airports

The one operating airport facility located in the general vicinity of the BSPP site – the Blythe Municipal Airport – is discussed above.

Emergency Services Vehicle Access

Riverside County has adopted the 2007 California Fire Code and 2007 California Building Standards Code in their entirety regulating and governing the safeguard of life and property from fire and explosion hazards arising from the storage, handling and use of hazardous substances, materials and devices and from conditions hazardous to life or property in the occupancy of buildings and premises in the Riverside County. (Riverside County Ord. No. 787).Accordingly, emergency services access roads must be installed and made serviceable prior to and during the time of construction. The grade of the fire department access road must be within the limits established by the Fire Chief and may not exceed 15 percent. The BSPP would provide two all-weather access roads in accordance with County and fire code requirements to provide adequate access for emergency vehicles.

Water and Rail Obstructions

The proposed BSPP is not located adjacent to a navigable body of water; therefore, the BSPP is not expected to alter water-related transportation. In addition, the proposed action is not located near a crossing of a railroad line.

3.12.9 Worker Safety and Fire Protection

Worker safety and fire protection is regulated through laws, ordinances, regulations, and standards (LORS), at the federal, state, and local levels. See Table 1-1.

3.12.10 Public and Private Airstrips/Airfields

The one operating airport facility located in the general vicinity of the BSPP site – the Blythe Municipal Airport – is discussed above.

3.12.11 Geologic Hazards

The proposed site is located in a moderately active geologic area of the eastern Mojave Desert geomorphic province in eastern Riverside County in southeastern California. This discussion presents the existing geologic hazards in the region of the proposed BSPP site. A brief geologic overview is provided and includes information from a preliminary geotechnical investigation completed by Kleinfelder in 2009. This study investigated soils and geologic hazards at the project site with the exception of the alignment of the project off-site linears to the south. The preliminary geotechnical investigation has been completed for the general area of the BSPP site and included 30 exploratory borings and 16 test pits (Kleinfelder 2009).

Regional Geology

The proposed BSSP site is located in the southeastern portion of the Mojave Desert geomorphic province (CGS 2002a). The Mojave Desert is a broad interior region of isolated mountain ranges that separate vast expanses of desert plains and interior drainage basins. The physiographic province is wedge-shaped, and separated from the Sierra Nevada and Basin and Range geomorphic provinces by the northeast-striking Garlock fault on the northwest side. The northwest-striking San Andreas fault defines the southwestern boundary, beyond which lie the Transverse Ranges and Colorado Desert geomorphic provinces.

Local Geology

The site is located within the Palo Verde Mesa. This alluvial-filled basin is bounded by the McCoy Mountains, Little Maria Mountains, and Big Maria Mountains to the west, northwest, and northeast, respectively, and extends southwest to the Palo Verde Mountains. The Palo Verde Mesa is bounded by the Palo Verde Valley to the east, which is generally formed by flood plain deposits of the Colorado River (USGS 1973). The site is underlain by younger and older Quaternary age alluvium and alluvial deposits (CDMG 1967; USGS 1990; USGS 2006; Solar Millennium 2009a). Marine and transitional sediments of the Pliocene age Bouse formation are presumed to underlie these Quaternary deposits (USGS 1968; Solar Millennium 2009a) and metasedimentary bedrock of the McCoy Mountains formation outcrops in the McCoy Mountains (Harding and Coney 1985). See PA/FEIS Section 3.15, Soils.

Topography

The topography and structural fabric in the Mojave Desert is predominately southeast to northwest, and is associated with faulting similarly-oriented to the San Andreas fault. A secondary east to west orientation correlates with structural trends in the Transverse Ranges geomorphic province. The proposed site gently slopes down from the McCoy Mountains in the west in a southwesterly direction at an approximate gradient of less than 1 percent toward the low topographic elevations of the Palo Verde Valley. Steeper grades up to 15 percent are present along the western side of an unnamed mound beyond the northeast corner of the BSPP area. The site topographic elevation within the plant site varies from 830 feet above mean sea level (msl) in the west to 410 feet above msl in the east.

Soils

The preliminary geotechnical investigation reveals that the BSPP site is underlain by younger and older alluvium that generally consists of sand and gravel to the maximum depth of exploration (approximately 76.5 feet below the existing ground surface) (Kleinfelder, 2009). The site is generally surfaced with unconsolidated soils due to desiccation and/or wind deposition to a maximum depth of two feet below the existing grade. The soils below the surficial materials are generally dense to very dense poorly graded sand, silty sand and clayey sand to poorly graded gravel with sand. Very stiff to hard fine grain soils and sandy clays are locally present as interbedded layers of one to three feet thickness at depths generally greater than 15 feet below existing grade. The near surface site soils are primarily granular with no to low swell potential. Collapse potential tests indicate the site soils exhibit a collapse potential in the range of 0 to 3.6 percent when inundated with water.

Faulting and Seismicity

The proposed BSPP plant site is not crossed by any known active faults or designated Alquist-Priolo Earthquake Fault Zones (CGS 2002b). A number of major, active faults lie approximately 60 miles from the site. The fault type, potential magnitude, and distance from the site are summarized in Table 3.12-2 (Blake 2000a; CDMG 1994b). Each of the faults listed are considered active. Because of the large size of the proposed site, the distances to faults were measured from the approximate center of the site. The closest mapped active faults to the plant site are the faults attributed to the Brawley Seismic Zone located approximately 59 miles to the southwest.

TABLE 3.12-2
ACTIVE FAULTS RELATIVE TO THE PROPOSED BLYTHE SOLAR POWER PROJECT SITE

Fault Name	Distance from Site (miles)	Maximum Earthquake Magnitude (Mw)	Estimated Peak Site Acceleration (g)
Brawley Seismic Zone	58.8	6.4	0.049
San Andreas: Coachella M-1c-5	59.0	7.2	0.075
San Andreas SB-Coachella M-1b-2	59.0	7.7	0.098
San Andreas: Whole	59.0	8.0	0.115
Elmore Ranch	59.8	6.6	0.054

SOURCE: CEC RSA June 2010 Geology and Paleontology Table 3

Seismic Hazards

Surface Fault Rupture

Seismically induced ground rupture is defined as the physical displacement of surface deposits in response to an earthquake’s seismic waves. The magnitude and nature of fault rupture can vary for different faults, or even along different strands of the same fault. Ground rupture is considered most likely along active faults.

No active or potentially active faults are mapped within the study area (CDMG, 2003). The closest fault zone to the site zoned under the Alquist-Priolo Special Studies Zone Act is the Brawley Seismic Zone.

Ground Shaking

Generally, the greater the earthquake magnitude and the closer the fault rupture to a site, the greater the intensity of ground shaking. The amplitude and frequency of ground shaking is related to the size of an earthquake, the distance from the causative fault, the type of fault (e.g., strike-slip), and the response of the geologic materials at the site. Ground shaking can be described in terms of acceleration, velocity, and displacement of the ground.

A common measure of ground motion during an earthquake is the peak ground acceleration (PGA). The PGA for a given component of motion is the largest value of horizontal acceleration obtained from a seismograph. PGA is expressed as the percentage of the acceleration due to gravity (g), which is approximately 980 centimeters per second squared. Unlike measures of magnitude, which provide a single measure of earthquake energy, PGA varies from place to place, and is dependent on the distance from the epicenter and the character of the underlying geology (e.g. hard bedrock, soft sediments or artificial fills). According to California Geologic Survey, the PGA value at the study area is 0.094g with a 10percent probability of being exceed in the next 50 years (CGS, 2010 as cited in the CEC RSA June 2010).

The Modified Mercalli Intensity Scale (Table 3.12-3) assigns an intensity value based on the observed effects of ground-shaking produced by an earthquake. Unlike measures of earthquake magnitude, the Modified Mercalli (MM) intensity scale is qualitative in nature (i.e. it is based on actual observed effects rather than measured values). MM intensity values for an earthquake at any one place can vary depending on its magnitude, the distance from its epicenter, and the type of geologic material. The MM values for intensity range from I (earthquake not felt) to XII (damage nearly total), and intensities ranging from IV to X could cause moderate to significant structural damage. Because the MM is a measure of ground-shaking effects, intensity values can be related to a range of PGA values, also shown in Table 3.12-3.

The close proximity of the proposed BSPP site to the Mojave-Sonoran belt and relatively great distance from more seismically active areas to the west and northwest would suggest a relatively low to moderate probability of intense ground shaking in the project area. However, there are seventeen historic earthquakes of Magnitude 6.0 (M6.0) or greater that have occurred between 62 and 100 miles of the site. Most of these historic earthquakes are associated with the strike-slip faulting located approximately 60 miles southwest of BSPP site including the Brawley Seismic Zone, San Andreas Fault Zone-Coachella Section, San Jacinto Fault Zone, and Imperial fault. The highest peak acceleration at the project site is expected to occur from a Mw 7.9 maximum credible earthquake (MCE) event on the Northern Segment of the San Andreas fault. Strong ground shaking could either be amplified or dampened depending on the engineering properties of the soils.

Secondary Earthquake Hazards

Secondary earthquake hazards at the site include earthquake-induced land sliding, settlement, and liquefaction. Liquefaction is a condition in which a saturated cohesionless soil may lose shear strength because of a sudden increase in pore water pressure caused by an earthquake. Lateral spreading of the ground surface can occur within liquefiable beds during seismic events. Lateral spreading generally requires an abrupt change in slope; that is, a nearby steep hillside or deeply eroded stream bank. Other factors such as distance from the epicenter, magnitude of the seismic event, and thickness and depth of liquefiable layers also affect the amount of lateral spreading. The potential for liquefaction of strata deeper than approximately 40 feet below the ground surface is considered negligible due to the increased confining pressure and because geologic strata at this depth are generally too compact to liquefy. Earthquake-induced settlement of soils results when relatively unconsolidated granular materials experience vibration associated with seismic events. The vibration causes a decrease in soil volume, as the soil grains tend to rearrange into a more dense state. The decrease in volume can result in settlement of overlying structural improvements. Loose soils identifies at the site could potentially settle during a seismic event.

Slope failures, commonly referred to as landslides, include many phenomena that involve the downslope displacement and movement of material, either triggered by static (i.e., gravity) or dynamic (i.e., earthquake) forces. Slope stability can depend on several complex variables, including the geology, structure, the amount of groundwater present, as well as external processes such as climate, topography, slope geometry, and human activity. The factors that contribute to slope movements include those that decrease the resistance in the slope materials and those that increase the stresses on the slope.

TABLE 3.12-3
MODIFIED MERCALLI INTENSITY SCALE

Intensity Value	Intensity Description	Average Peak Ground Acceleration[a]
I	Not felt except by a very few persons under especially favorable circumstances.	< 0.0017 g
II	Felt only by a few persons at rest, especially on upper floors on buildings. Delicately suspended objects may swing.	0.0017-0.014 g
III	Felt noticeably indoors, especially on upper floors of buildings, but many people do not recognize it as an earthquake. Standing motor cars may rock slightly, vibration similar to a passing truck. Duration estimated.	0.0017-0.014 g
IV	During the day felt indoors by many, outdoors by few. At night, some awakened. Dishes, windows, doors disturbed; walls make cracking sound. Sensation like heavy truck striking building. Standing motor cars rocked noticeably.	0.014–0.039g
V	Felt by nearly everyone, many awakened. Some dishes and windows broken; a few instances of cracked plaster; unstable objects overturned. Disturbances of trees, poles may be noticed. Pendulum clocks may stop.	0.035 – 0.092 g
VI	Felt by all, many frightened and run outdoors. Some heavy furniture moved; and fallen plaster or damaged chimneys. Damage slight.	0.092 – 0.18 g
VII	Everybody runs outdoors. Damage negligible in buildings of good design and construction; slight to moderate in well-built ordinary structures; considerable in poorly built or badly designed structures; some chimneys broken. Noticed by persons driving motor cars.	0.18 – 0.34 g
VIII	Damage slight in specially designed structures; considerable in ordinary substantial buildings, with partial collapse; great in poorly built structures. Panel walls thrown out of frame structures. Fall of chimneys, factory stacks, columns, monuments, walls. Heavy furniture overturned. Sand and mud ejected in small amounts. Changes in well water. Persons driving motor cars disturbed.	0.34 – 0.65 g
IX	Damage considerable in specially designed structures; well-designed frame structures thrown out of plumb; great in substantial buildings, with partial collapse. Buildings shifted off foundations. Ground cracked conspicuously. Underground pipes broken.	0.65 – 1.24 g
X	Some well-built wooden structures destroyed; most masonry and frame structures destroyed with foundations; ground badly cracked. Rails bent. Landslides considerable from riverbanks and steep slopes. Shifted sand and mud. Water splashed (slopped) over banks.	> 1.24 g
XI	Few, if any, (masonry) structures remain standing. Bridges destroyed. Broad fissures in ground. Underground pipelines completely out of service. Earth slumps and land slips in soft ground. Rails bent greatly.	> 1.24 g
XII	Damage total. Practically all works of construction are damaged greatly or destroyed. Waves seen on ground surface. Lines of sight and level are distorted. Objects are thrown upward into the air.	> 1.24 g

NOTES:
[a] Value is expressed as a fraction of the acceleration due to gravity (g). Gravity (g) is 9.8 meters per second squared. 1.0 g of acceleration is a rate of increase in speed equivalent to a car traveling 328 feet from rest in 4.5 seconds.

SOURCE: ABAG, 2010a as cited in the CEC RSA June 2010

Landslides can occur on slopes of 15 percent or less, but the probability is greater on steeper slopes that exhibit old landslide features such as scarps, slanted vegetation, and transverse ridges. Landslides typically occur within slide-prone geologic units that contain excessive amounts of water or are located on steep slopes, or where planes of weakness are parallel to the slope angle. Landslide potential at the BSPP site is low since the proposed energy facility is located on a broad, gently southeast-sloping alluvial fan and alluvial valley deposits of the Palo Verde Mesa.

Other Geologic Hazards

Subsidence and Settlement

Potential hazards in the study area include subsidence, settlement, and earthquake-induced settlement (discussed above). Subsidence of the land surface is a general process that can be attributed to natural phenomena, such as tectonic deformation, consolidation, hydro compaction, collapse of underground cavities, oxidation of organic-rich soils, or rapid sedimentation, and also by the activities of man, such as the withdrawal of groundwater. Local subsidence or settlement may also occur when areas containing compressible soils are subjected to foundation or fill loads.

The Riverside County Land Information System indicates the alluvial filled basin sediments in the Palo Verde Mesa are susceptible to subsidence (RCLIA 2009). Regional ground subsidence is typically caused by petroleum or groundwater withdrawal that increases the weight per unit volume of the soil profile, which in turn increases the effective stress on the deeper soils. This results in consolidation or settlement of the underlying soils. The dense to very dense granular site soils are indicative of low to negligible local subsidence. Groundwater levels in the area have been steady in recent years and petroleum withdrawals do not occur locally. There is no evidence of subsidence or settlement at the BSPP site.

Hydrocompaction

Hydrocompaction (also known as hydro-collapse) is generally limited to young soils that were deposited rapidly in a saturated state, most commonly by a flash flood. The soils dry quickly, leaving an unconsolidated, low density deposit with a high percentage of voids. Foundations built on these types of compressible materials can settle excessively, particularly when water infiltration dissolves the weak cementation that is preventing the immediate collapse of the soil structure. The depositional environment of the Palo Verde Mesa suggests that the soils may be subjected to hydrocompaction.

Expansive Soils

Expansion and contraction of expansive soils in response to changes in moisture content can cause movements that result in damage and/or distress to structures and equipment with shallow foundations. Issues with expansive soils occur near the ground surface where changes in moisture content typically occur. Often times, grading, site preparations, and backfill operations associated with subsurface structures can eliminate the potential for expansion. The addition of moisture from irrigation, capillary tension, water line breaks, etc. causes the clay soils to collect water molecules in their structure, which in turn causes an increase in the overall volume of the soil. This increase in volume can correspond to movement of overlying structural improvements. The soils encountered in the explorations are primarily granular soils and do not have expansive properties (Kleinfelder 2009).

Corrosive Soils

Corrosivity refers to potential soil-induced electrochemical or chemical action that could corrode or deteriorate concrete, reinforcing steel in concrete structures, and bare-metal structures exposed to these soils. The rate of corrosion is related to factors such as soil moisture, particle-size distribution, and the chemical composition and electrical conductivity of the soil. Fine grain soils with high in-situ moisture contents that contain sulfides can be corrosive to buried metal pipe, which can lead to premature pipe failure and leaking. Such soils are present at this site, and the preliminary geotechnical investigation (Kleinfelder 2009) indicates that site soils could be potentially corrosive to metal pipe.

Erosion

Erosion is the wearing away of soil and rock by processes such as mechanical or chemical weathering, mass wasting, and the action of wind. Additionally, local flash flooding contributes to erosion. Excessive soil erosion can eventually lead to damage of building foundations and roadways. Areas that are susceptible to erosion are soils that would be exposed during the construction phase. Typically, the soil erosion potential is reduced once the soil is graded and covered with concrete, structures, asphalt, or slope protection features.

Volcanic Hazards

The proposed BSPP site is located approximately 40 miles west of the Lavic Lake volcanic hazard area (VHA), an approximately 14-square-mile area within the Mojave Desert comprised of Miocene to Holocene age dacitic to basaltic flows, pyroclastic rocks, and volcaniclastic sediments. The Lavic Lake VHA has been designated by the USGS as an area subject to lava flows and tephra deposits associated with basalt or basaltic andesite vents (Miller 1989). The Lavic Lake VHA is also considered to be subject to future formation of cinder cones, volcanic ash falls, and phreatic explosions. The recurrence interval for eruptions has not been determined, but is likely to be in the range of one thousand years or more. However, the BSPP would be a sufficient distance to be out of the range of volcanic hazards.

3.12.12 Site Security

The energy generation sector is one of 14 areas of Critical Infrastructure listed by the U.S. Department of Homeland Security (DHS). Nearly all of the other areas of Critical Infrastructure are reliant, at least in part, on the energy sector. The level of security needed for any particular facility depends on the threat imposed, the likelihood of an adversarial attack, the likelihood of success in causing a catastrophic event, and the severity of consequences of that event.

On April 9, 2007, the U.S Department of Homeland Security published, in the Federal Register (6 CFR Part 27), an Interim Final Rule setting forth Chemical Facility Anti-Terrorism Standards requiring facilities that use or store certain hazardous materials to conduct vulnerability assessments and implement certain specified security measures. This rule was implemented with the publication of Appendix A, the list of chemicals of interest, on November 2, 2007. Neither the chemical constituents of Therminol VP-1 (diphenyl ether and biphenyl) nor other chemicals proposed to be used and stored at this proposed power plant are on the chemicals of interest list and, thus, the proposed facility would not be covered by the standards. However, the Energy Commission's position is that all power plants under its jurisdiction should implement a minimum level of security consistent with the Standards.

Energy sector members also are leading a significant voluntary effort to increase planning and preparedness, including infrastructure protection and cyber security. The North American Electric Reliability Corporation (NERC) published *Security Guidelines for the Electricity Sector* in 2002 (NERC, 2002) as well as issued a Critical Infrastructure Protection standard for cyber security (NERC, 2009), and the U.S. Department of Energy published a draft *Vulnerability Assessment Methodology for Electric Power Infrastructure* in 2002 (DOE, 2002).

3.13 Recreation

3.13.1 On-site Allowable Recreational Uses

The types of recreational uses that may be made of the site are governed by the California Desert Conservation Area Plan 1980, as amended (CDCA Plan) (BLM 1980); and the Northern and Eastern Colorado Desert Coordinated Management Plan (NECO) (BLM 2002). The site is designated in the CDCA Plan for Multiple Use Class L – Limited Use (BLM 1980). Multiple Use Class L is suitable for recreation activities that generally involve low to moderate user densities, including backpacking, primitive unimproved site camping, hiking, horseback riding, rockhounding, nature study and observation, photography and painting, rock climbing, spelunking, hunting, landsailing on dry lakes, noncompetitive vehicle touring, and events only on "approved" routes of travel. (BLM 1980; BLM 2002). Stopping, parking and vehicle camping are allowed to occur within 300 feet of a route, except within sensitive areas (such as Areas of Critical Environmental Concern) where the limit is 100 feet. (BLM 2002). Trails are open for non-vehicular use and new trails for non-motorized access may be allowed. (BLM 1980). Recreational vehicle use, including off-highway vehicle (OHV) use, is discussed in FEIS Section 3.18. There are no recreation facilities or specific recreational attractions on the site. The BLM has no visitor counts for the site but visitor use is estimated to be low due to the availability and accessibility of recreation opportunities in the surrounding area.

3.13.2 Recreational Areas and Opportunities in the Vicinity of the Site

The Palo Verde Valley offers myriad outdoor recreational opportunities for boating, water skiing, jet skiing, swimming, fishing, canoeing, camping, rock hounding, hiking, archery, hunting, horseback riding, trapping, trap & skeet shooting, and OHV use. Within the Palo Verde Valley, the City of Blythe provides for year-round sporting activities. The Blythe Parks Department oversees eight parks (approximately 74 acres total), including five neighborhood parks, two community parks, and one regional park. The "Big Foot Skate-board Park" is located at Todd Park. Other recreational opportunities in Blythe include the Blythe Municipal Golf Course; Blythe Skeet & Trap Club (a shooting range and gun club); Blythe Marina; soccer, football, track and volleyball leagues; and indoor racquetball, basketball, aerobic activities, weight room, and summer swimming. Various nearby privately-owned recreational vehicle (RV) parks and campgrounds also provide recreational facilities, including a boat dock, launch ramp, fishing, swimming, horseshoe pits, wildlife observation and other active and passive recreation opportunities. (City of Blythe, 2007).

Recreational opportunities along the Colorado River include power boating, canoeing, fishing, hunting and other water sports, among others. In addition, two wildlife preserves border the Colorado River just south of Blythe. First, the Cibola National Wildlife Refuge can be reached from the California side of the Colorado River, just south of Blythe, or, from the Arizona side, south of Quartzsite. This refuge was established in 1964 as mitigation for dam construction on the Colorado River, and provides important habitat for migratory birds, wintering waterfowl and resident species.

Second, the Kofa National Wildlife Refuge is located approximately 30 miles east of Blythe in southern Arizona. Bird-watching and wildlife-viewing occur in each of these preserves.

In addition, the BLM administers wilderness areas, long term visitor areas (LTVAs), areas of critical environmental concern (ACECs), and other recreational areas and opportunities in the vicinity of the site. Areas of critical environmental concern (ACECs) and wilderness also provide dispersed recreation opportunities in the region. Overall, recreation use on BLM lands in the vicinity of the project is limited to the cooler months of September –May, with little of no use in the summer. Popular recreation activities include car and RV camping, OHV riding and touring, hiking, photography, hunting (dove, quail, deer), sightseeing and visiting cultural sites. Outside of fee collection sites, the BLM has no accurate estimates of visitor use, but staff observations and Ranger patrols indicate the area described in this section received 2,000 – 3,000 visitors per year. Local residents and long-term winter visitors make up the majority of the use. Such areas are identified in Table 3.13-1, beginning with the area closest to the site, and are discussed below.

TABLE 3.13-1
BLM-ADMINISTERED RECREATIONAL AREAS AND OPPORTUNITIES IN THE VICINITY OF THE SITE

Recreation Area	Approximate Distance from the Site Boundary	Approximate Size
Palen/McCoy Wilderness	4 miles northwest	236,488 acres
Midland LTVA	4 miles northeast	512 acres
Mule Mountains ACEC	7 miles south	4,092 acres
Big Maria Mountains Wilderness	7 miles northeast	45,384 acres
Big Marias ACEC	8 miles northeast	4,500 acres
Chuckwalla Valley Dune Thicket ACEC	9 miles southwest	2,273 acres
Mule Mountains LTVA	11 miles south	3,424 acres
Wiley's Well Campground	12 miles southwest	14 units
Little Chuckwalla Mountains Wilderness	14 miles southwest	28,034 acres
Coon Hollow Campground	15 miles southwest	28 units
Bradshaw Trail	12-15 miles south	65 miles long
Palen Dry Lake ACEC	18 miles west	3,632 acres
La Posa LTVA	28 miles east of the site	11,400 acres

SOURCES: BLM 2010a, 2010b, 2010c, 2010d, 2010e, 2010f; Wilderness.net 2010a, 2010b, 2010c; Wildernet, 2010

Wilderness Areas

Wilderness Areas are shown in Figure 6 and described in FEIS Section 3.16. As indicated in Table 3.13-1, three wilderness areas are located in the vicinity of the site: the Palen/McCoy Wilderness, Big Maria Mountains Wilderness and Little Chuckwalla Mountains Wilderness.

The Wilderness Act limits allowable types of recreation on wilderness lands to those that are primitive and unconfined, depend on a wilderness setting, and do not degrade the wilderness character of the area. Motorized or mechanized vehicles or equipment are not permitted in wilderness. The BLM regulates such recreation on such lands within its jurisdiction in accordance with the policies, procedures and technologies set forth in the Code of Federal Regulations (43 CFR 6300), BLM Manual 8560 (*Management of Designated Wilderness Areas*) (BLM 1983), BLM Handbook H-8560-1 (*Management of Designated Wilderness Areas*) (BLM 1986), and BLM's Principles For Wilderness Management In The California Desert (BLM 1995). More specifically, camping, hiking, rockhounding, hunting, fishing, non-commercial trapping, backpacking, climbing, and horseback riding are permissible. (BLM 1988; BLM 1983). By contrast, physical endurance contests (such as races, competitive trail rides and survival contests), commercial recreational activities, and the use of motorized or mechanized vehicles (including off-highway vehicles [OHVs], aircraft and motor boats) generally are prohibited. (16 USC 1133(c); BLM 1995; BLM 1988; BLM 1983).

The five wilderness areas in the vicinity of the project have no developed trails, parking/trailheads, or other visitor use facilities. These areas are generally steep, rugged mountains, with no permanent natural water sources, thus limiting extensive hiking or backpacking opportunities. Visitor use within the wilderness areas is very light, though BLM has no visitor use counts. Observations by staff and Law Enforcement Rangers indicate only 100-200 hikers per year within the wilderness areas. More popular is vehicle camping along roads that are adjacent to the wilderness areas. RV camping near wilderness areas, with associated hiking, OHV use, photography, sightseeing, etc. accounts for up to 2,000 visitors per year.

Long Term Visitor Areas (LTVAs)

The BLM manages seven Long Term Visitor Areas (LTVAs): five are in California, two are in Arizona. LTVAs accommodate visitors who wish to camp for as long as seven consecutive months. Winter visitors who wish to stay in an LTVA must purchase either a long term permit for $180 that is valid for the entire season or any part of the season (which runs from September 15 through April 15), or a short visit permit for $40 that is valid for 14 consecutive days. Permit holders may move from one LTVA to another within the permitted timeframe without incurring additional fees. Activities in and use of LTVAs are regulated by the rules of conduct set forth in 43 CFR subpart 8365 and the more than 30 supplemental rules that the BLM has determined are necessary to provide for public safety and health and to reduce the potential damage to natural and cultural resources of the public lands.

As indicated in Recreation Table 1, three LTVAs are located in the vicinity of the BSPP site: Midland LTVA, Mule Mountains LTVA and La Posa LTVA. The Midland LTVA and Mule Mountains LTVA provide long-term camping opportunities. In addition to long-term camping, recreational opportunities at LTVAs include hiking, OHV use, rockhounding; viewing cultural sites, wildlife and unique desert scenery; and solitude. (BLM 2010g [Supplementary Rule 21]; BLM 2010f; Wildernet 2010). By contrast, the landing or take-off of aircraft, including ultra-lights and hot air balloons, is prohibited in LTVAs. (BLM 2010g [Supplementary Rule 25]).

Two campgrounds are located within the boundaries of the Mule Mountains LTVA: Wiley's Well and Coon Hollow Campgrounds. Both are year-round facilities with campsites, picnic tables, grills, shade ramadas and handicapped-accessible vault toilets. (BLM 2010d). See Table 3-13-2 for use information.

TABLE 3.13-2
AVERAGE RECREATION USE AT DEVELOPED SITES 2007-2009

Recreation Fee Site	Average Annual # of Camping Permits	Average Annual Recreation Visits
Corn Springs Campground	186	1,184
Midland LTVA	41	2,826
Mule Mountain LTVA	135	5,545
Total	***362***	***9,555***

NOTE: Use Data from BLM Recreation Management Information System-RMIS

Areas of Critical Environmental Concern (ACECs)

ACECs are shown in Figure 6 and described in FEIS Section 3.16. As indicated in Recreation Table 1, four ACECs are located near the site: the Mule Mountains ACEC, Chuckwalla Valley Dune Thicket ACEC, Ford Dry Lake ACEC and Big Marias ACEC. Recreation activities allowed in ACECs are determined by the resources and values for which the ACECs were established, and by the associated ACEC Management Plan. Most ACECs allow low-intensity recreation use that is compatible with protection of the relevant values.

The Mule Mountains, Alligator Rock, and Corn Springs ACECs primarily protect cultural resources. The Chuckwalla DWMA and Desert Lily ACECs protect sensitive wildlife and plant species, while Chuckwalla Valley Dune Thicket and Palen Dry Lake ACECs protect both natural and cultural resources. Other than Corn Springs, these ACECs do not have recreation use facilities, but are signed to inform visitors of the special values of the areas and associated protection measures. BLM has no visitor counts for these sites, but observations and patrols indicate very low use, in the hundreds per year.

Other Recreational Areas and Opportunities

The Bradshaw Trail

The Bradshaw Trail is a 65-mile BLM back country byway which begins about 35 miles southeast of Indio, California. The trail's eastern end is about 15 miles southwest of Blythe. It was the first road through Riverside County, blazed by William Bradshaw in 1862 as an overland stage route beginning in San Bernardino, California, and ending at Ehrenberg, Arizona. The trail was used extensively between 1862 and 1877 to transport miners and passengers. The trail is a graded dirt road that traverses mostly public land between the Chuckwalla Mountains and the Chocolate Mountain Aerial Gunnery Range. Recreational opportunities include four-wheel driving, wildlife viewing, plant viewing, birdwatching, scenic drives, rockhounding, and hiking. (BLM 2010e).

3.14 Social and Economic Setting

3.14.1 Social

This section describes the social and demographic background and existing conditions in the proposed action area, which includes the City of Blythe and the broader Palo Verde Valley. Additionally, this section discusses applicable plans, policies, and regulations that represent the social aspirations, community characteristics, and desired lifestyle, values, and goals of the stakeholders. These plans, policies, and regulations are necessary to understanding social group concerns in the context of renewable energy development. Information in this section is based on regional and national sources as well as input received from members of the public during the scoping process. The primary comments and concerns related to socioeconomic conditions were raised during scoping where the economic effects associated with construction, implementation, and operation of the BSPP (BLM, 2010).

Applicable Plans, Policies and Regulations

The main local plans, policies, and goals for the City of Blythe's future community development are described within the City's General Plan and the City's Redevelopment 2005-2009 Implementation Plan. The following General Plan goals are relevant for representing local residents' social attitudes and evaluating how their social resources may be affected by the Proposed Action:

1. *Land Use Policy 1*: Preserve the scale and character of established neighborhoods.
2. *Land Use Policy 2*: Encourage new residential growth in the form of neighborhoods.
3. *Land Use Policy 6*: Provide for appropriate relationships between higher density and lower density residential areas, and require buffers of varying size between residential uses and non-residential uses without restricting foot and bicycle access.
4. *Land Use Policy 19*: Ensure that industrial development is compatible with and does not adversely affect the natural environment.
5. *Housing Element Goal 1* (Overall Housing Production): Provide housing to meet the present and future needs of residents in the City of Blythe and to aim at providing a fair share of the area housing needs, within identified governmental, market, economic and natural constraints.
6. *Housing Element Goal 2* (Housing Affordability): Facilitate the development of programs that will provide quality housing for those who otherwise would have difficulty affording such housing at market rates. Specifically, such programs will be directed at low and particularly very low income groups.
7. *Redevelopment Agency Goal 1*: Preserve and enhance the economic prosperity of the community and aid business development and retention.

Social Conditions

The proposed action includes the construction and operation, and ultimately the closure and decommissioning, of a solar energy generating facility located in the Southern California inland desert, approximately eight miles west of the City of Blythe, in eastern Riverside County, California.

The expected catchment area for the BSPP's construction workers' daily work commuting is a primary determinant for the affected social and economic environment associated with the BSPP. As discussed in more detail in Section 4.13, *Social and Economic Impacts*, the origin of the BSPP workers likely would be a central factor determining the magnitude and extent of the proposed action's potential socioeconomic impacts to the local and regional economy and communities. The direct benefits of employment and higher personal incomes will primarily benefit the communities were workers and their families reside since that would likely be where they spend the majority of their earnings. Workers' spending for goods and services also would have an indirect impact on the communities and economies where that spending occurs.

If there is an insufficient number of suitable workers to staff the proposed action locally or in the region, then the BSPP could attract individuals to relocate to the area (either temporarily or permanently), which consequently could result in increased demand for housing and local services.

There is little available research and analysis providing guidance for determining the socioeconomic impact area boundaries for power facilities. The widely referenced EPRI analysis (EPRI 1982) is generally cited as research showing that workers may commute as much as two hours each direction from their communities rather than relocate. In addition, testimony by a representative of the Riverside/San Bernardino Building Trades Council also stated the opinion that construction workers associated with the proposed action could commute two to three hours each way daily (CEC 2010).

However, the representation of the EPRI study findings may overestimate the likelihood of construction workers commuting *daily* for BSPP-related employment and appears to misrepresent the cited EPRI report findings. The EPRI importantly distinguishes between "daily commuting," "weekly commuting" and relocation (or in-migration). The EPRI study also acknowledges a prevalence of weekly commuting for power projects and reported 1.42 hours as the average "construction workers maximum daily commuting time" observed amongst its 12 case studies. The study also estimated that the average maximum daily commute distance was 73 miles.[1] The report also identifies other factors (e.g., quality life) determining the amount of commuting (daily and weekly) versus relocation likely to occur.

In addition, from its case studies, the EPRI also determined that "(o)verall, the proportion of in-migrants ranges from 5 to 50 percent for construction workers and 5 to 84 percent for operating staff." Furthermore the study also observed that: "(1) More in-migration is required in rural,

1 This estimate was strongly influenced by one project (Laramie River) that reported a maximum daily commute distance of 115 miles.

remote areas; (2) The existence of a regional work force experienced in power plant construction reduces in-migration; (3) weekly commuting is more widely practiced in the West, or in rural areas."

For the purposes of the socioeconomic affected environment and analysis, and as a conservative assumption recognizing the rural nature of eastern Riverside County, a two-hour daily commute radius is used to define the regional study area. Figure 11 depicts contours from the site up to a two-hour commute shed to show the potential estimated travel time for project workers' commute to the site. For purposes of this analysis, the socioeconomics regional study area consists of predominantly eastern Riverside County, California. Although relatively low-populated, La Paz County in Arizona is also located within the regional study.

As can be seen in Figure 11, as estimated by EDAW, the two-hour commute shed is shown to extend into parts of Maricopa County in Arizona and also San Diego, Imperial and San Bernardino Counties in California. However, given that there are no major populated urban centers located within the Counties of San Diego, Imperial and Maricopa Counties, these areas are not included in the regional study area for the proposed action. Although the relatively small communities of Joshua Tree and Twenty Nine Palms are shown to be within the outermost limits of the two-hour radius, given both the relatively poor roadway connection along Route 62 (suggesting that actual commute time would be higher) and the prevalence of other solar projects closer to these communities, it is expected that few if any San Bernardino residents would commute daily to work at the BSPP site. Consequently, for the purposes of the social and economic analysis the regional study area is determine to consists of eastern Riverside County in California and La Paz in Arizona.

As required by the BLM Land Use Planning Handbook, Appendix D requirements, the analysis of a proposed action of this type needs to consider existing socioeconomic conditions and impacts on several geographic scales. An analysis at a local level presents a challenge because the proposed action is in a sparsely populated area, with the largest urban center being the City of Riverside located approximately 160 miles west of the site.

Based on BLM guidelines, a reasonable study area for localized socioeconomic impacts would, at a minimum, include the three nearest communities: the City of Blythe, California (approximately eight miles east of the site); the City of Ehrenburg, Arizona (approximately 12 miles east of the site); and the City of Quartzsite, Arizona (approximately 25 miles east of the site). These cities represent all the major communities located within an hour commute of the site and therefore together represent the local study area for the proposed action.

Population

The current population estimates and recent growth trends for both the regional and local study areas are summarized in Table 3.14-1. All the cities determined to be located within a two-hour commute of the site are shown. In addition, data for both Riverside and La Paz Counties are presented.

TABLE 3.14-1
POPULATION PROFILE OF THE REGIONAL STUDY AREA

Population			
	Year		
Area	2000 Population	2010 Population	Average Annual Growth Rate (2000 – 10)
Riverside County, CA	1,545,387	2,139,535	3.3%
Blythe	20,465	21,812	0.6%
Coachella	22,724	42,591	6.5%
Indio	49,116	83,675	5.5%
Indian Wells	3,816	5,144	3.0%
La Quinta	23,694	44,421	6.5%
Palm Desert	41,155	52,067	2.4%
Rancho Mirage	13,249	17,006	2.5%
Cathedral City	42,647	52,067	2.0%
Palm Springs	42,805	48,040	1.2%
Unincorporated Area	67,166	99,599	3.6%
Eastern Riverside County, CA	326,837	466,422	3.6%
La Paz County, AZ	19,715	21,616 [a]	0.9%
Ehrenburg	1,357	1,488 [b] (est)	0.9%
Quartzite	3,354	3,731 [a]	1.1%
Cibola	172	189 [b] (est)	0.9%
Unincorporated Area[c]	4,226	4,621	0.9%
Western La Paz County, AZ	9,109	10,029	1.0%
Local Study Area[d]	25,176	26,781	0.7%
Regional Study Area	335,946	476,451	3.6%

NOTES: Cities are show (by County) in order of their relative distance from the project site.

[a] 2009 Data
[b] 2000 Data
[c] Consists of entire remainder of La Paz County except for the population of the City of Parker (3,401) and the estimated Colorado River Reservation population (8,186).
[d] Blythe, CA; Ehrenburg, AZ and Quartzite, AZ.

SOURCE: California Department of Finance, 2010; Arizona Department of Commerce, 2010.

Zip code population estimates were used to estimate the approximate size and location of the residential populations within the unincorporated areas of eastern Riverside County located within the two-hour commute distance of the site. Figure 12 shows both the five digit zip code areas and the 2010 estimated population living within each zip code. The unincorporated communities of Desert Center, Mecca, Thermal and Thousand Palms are represented within the unincorporated area population estimates. While the population estimates for the unincorporated areas are only approximate, Figure 12 shows that the areas east of Coachella are very sparsely populated and that the most of the population within the regional study area live more than a 90-minute drive from the site. The total population of eastern Riverside County within the regional study is estimated to be 466,422, which represents approximately 21.8 percent of the Riverside County's total population.

Housing

Current housing conditions for the regional and local study areas are summarized in Table 3.14-2. All the cities determined to be located within a two-hour commute of the site are shown. In addition, data for both Riverside and La Paz Counties are presented.

In 2008, Riverside County had 773,402 total housing units, with a vacancy rate of 13.2 percent. Also shown in Table 3.14-2, the regional study area contains a high number of housing units, with La Paz County having the highest vacancy rate.

TABLE 3.14-2
HOUSING PROFILE OF THE REGIONAL STUDY AREA (2010)

Housing		
	Year	
Area	2010 Total Housing Units	2010 Vacancy Rate
Riverside County, CA	784,357	13.0%
Blythe	5,472	16.1%
Coachella	9,145	4.4%
Indio	28,167	18.0%
Indian Wells	5,025	48.4%
La Quinta	21,491	28.5%
Palm Desert	34,425	30.9%
Rancho Mirage	13,542	38.6%
Cathedral City	21,527	21.5%
Palm Springs	33,603	33.4%
Unincorporated Area	37,094 (est)	15.3%
Eastern Riverside County, CA	209,491	25.0%
La Paz County, AZ	16,765 [1]	45.0% [1]
Ehrenburg	824 [2]	34.9% [2]
Quartzite	3,541 [1]	41.9% [2]
Cibola	161 [2]	60.0% [2]
Unincorporated Area[3]	4,262 [1] (est)	49.5% [1]
Western La Paz County, AZ	8,788 [1]	45.3% [1]
Local Study Area[4]	9,837	25.2%
Regional Study Area	219,328	25.0%

NOTES: Cities are show (by County) in order of their relative distance from the project site.

1 2009 Data
2 2000 Data
3 Consists of entire remainder of La Paz County except for the population of the City of Parker (3,401) and the estimated Colorado River Reservation population (8,186).
4 Blythe, CA; Ehrenburg, AZ and Quartzite, AZ.

SOURCE: California Department of Finance, 2010; Arizona Department of Commerce, 2010.

Among the cities in Riverside County relevant to the proposed action, Palm Springs had the highest vacancy rate (33.4 percent), and is behind only Palm Desert in number of housing units, with 33,479. Among the cities in La Paz County relevant to the Project, Cibola had the highest vacancy rate (60.0 percent), but Quartzsite had the highest number of vacant units at 1,336.

Population Projections

The forecasted population trends for Riverside and La Paz Counties are shown in Table 3.14-3. The projected population growth for eastern Riverside County is estimated based on the county-wide growth projections. Population growth in Riverside County is expected to slow over the next few decades. The growth rate is projected to be 3 percent per year between 2010 and 2020, and then to fall to 2.1 percent per year between 2020 and 2030. The population projections discussed above were made prior to the economic recession that began in 2008, likely explaining the decrease in the 2010 actual population estimate for Riverside County and that previously estimated for the future population growth projections.

TABLE 3.14-3
POPULATION PROJECTIONS FOR RIVERSIDE COUNTY AND THE REGIONAL STUDY AREA

Population				
	Year			
Area	2010 Actual Population	2010 Projected Population	2020 Projected Population	2030 Projected Population
Riverside County, CA	2,139,535	2,239,053	2,904,848	3,507,498
Eastern Riverside County, CA[1]	466,422	488,117	633,261	764,640
La Paz County, AZ	21,544	22,632	25,487	28,074
Regional Study Area	476,451	498,612	647,769	781,081

NOTES:
1 Estimates based on Countywide growth projections.

SOURCE: CEC RSA June 2010; ESA 2010.

Temporary Housing Resources

Rental Homes

As shown above in Table 3.14-2, vacancy rates are high in the study area. Based on reported current vacancy rates for the City of Blythe, approximately 881 vacant housing units are unoccupied in 2010 and may be available for rental (or purchase) by future BSPP workers. Similarly, the data also suggests that up to 1,594 local housing units may be available within the cities of Ehrenburg and Quartzsite, Arizona.

However, the condition, suitability and availability of the existing housing resources for use as temporary housing for BSPP-related construction workers are unknown. In addition, as shown by the high vacancy rates elsewhere in the region study area, “vacant” homes may be second homes and therefore less likely to be available for use as temporary housing.

Hotel and Motel Accommodations

In addition to the existing residential units, BSPP construction workers and operational workers could use other local lodging facilities as temporary housing. Temporary housing in the form of hotel/motel rooms are typically concentrated in urban areas or near major transportation nodes. For the purposes of this analysis, only those hotels in the communities closest to the proposed action were tabulated under the assumption that construction and operations workers would congregate to this area for commuting ease.

Data compiled by Smith Travel Research for hotels and motels with 15 or more rooms identified 19 hotels with a total of 878 rooms within the local study area in 2008, which presents the most current available data (GSEP 2009, p. 5.8-5). These hotels were all located in Blythe, which is the only community in California with hotels or motels with 15 or more rooms within one hour's driving distance.

In addition, 120 hotel/motel rooms are located in Ehrenberg and another 22 rooms are located within the City of Quartzite, Arizona (Arizona Department of Commerce, 2010). The extent that the local motel and hotels within the local study area could provide temporary housing for BSPP construction workers would depend both on the then-current room rates and occupancy rates. Typical room rates for most of the hotel/motels are currently relatively inexpensive during the off-season with quoted rates of $60 to $70 per night (not including tax). Provided operators would maintain comparable rates, these local hotel/motel rooms would likely be a possible temporary housing option particularly for workers that might be willing to share accommodations.

The average annual occupancy rate for hotels in Riverside and San Bernardino Counties in 2007 was 70.8 percent (GSEP 2009, p. 5.8-6). Applying this ratio (70.8 percent) to the total number of hotel rooms identified within the local study are would suggests that, on average, in 2008 a total of 298 unoccupied rooms were available for rent in the local study area. However, given the seasonality of local tourism to the area, it is considered likely that higher occupancy and room rates would apply during the winter season (December to March), while higher vacancy rates lower room rates would apply during the off-season (summer and early fall) when very hot local conditions persist during the summer months.

Considerable additional hotel and motel facilities are available in the other communities within two hours of the BSPP site. Another 57 hotels with a total of 8,285 rooms were identified in communities located from one to 1.5 hours drive from the GSEP site (GSEP 2009, p. 5.8-6) which would be expected to be within a 1.25 to 1.75 hour drive from the BSPP site. These communities include Indio, Palm Desert, Indian Wells, and Rancho Mirage. Applying the 2008 average occupancy ratio (70.8 percent) suggests that, on average, 2,419 unoccupied rooms are available for rent within 1.25 to 1.75 hours drive of the BSPP site. Another 129 hotels with 7,541 rooms were identified in communities within 1.75 to 2.25 hours drive from the GSEP site (GSEP 2009, p. 5.8-6). These communities include Palm Springs and Desert Hot Springs (which is located more than two hours drive from the site.

However the attractiveness of these temporary housing resources for BSPP construction workers generally would decrease the further they are located from the site. Furthermore, given the size of these hotels and their location within more affluent communities, it is likely that many of these hotels would likely have higher room rates and, therefore, would not be suitable temporary housing for BSPP workers.

Campground/RV Parks

In addition, other housing opportunities are available in the form of recreational vehicle (RV) facilities, mobile home sites, and campgrounds. Under some circumstances, these types of facilities could be usable by BSPP construction workers as temporary housing. Generally their lower cost for overnight use could make them more attractive as a potential temporary housing resource. Particularly for construction workers who may own their own RV or trailers, RV parks with utility hook-ups and other amenities would be more suitable for use during the summer and could serve as a longer-term rental for workers who prefer a weekly commute.

There are at least 10 RV parks located in the vicinity of Blythe, with a combined total of about 800 spaces (GSEP 2009, p. 5.8-5). RV parks in Blythe tend to be located along the Colorado River and receive higher levels of use during the summer. Research performed on small sample of these RV parks suggests that, while they have a large number of spaces, many are occupied by year-round residents or are privately-owned and, therefore, would not be available for use by construction workers (GSEP 2009, p. 5.8-6). Additional RV parks are located in Ehrenberg and Quartzsite, Arizona, approximately four miles and 20 miles east of Blythe, respectively. The town of Quartzsite’s web site states there are more than 70 campgrounds in the vicinity of the community that are typically occupied between October and March, with visitors attracted to the gem, mineral, and swap meet shows which are popular tourist attractions in the area (GSEP 2009, p. 5.8-6). Twenty local RV parks are identified by the Quartzite Chamber of Commerce as operating within Quartzite.

BLM operates two primitive campgrounds in the general vicinity of the local study area: Wiley’s Well Campground and Coon Hollow Campground, both located south of I-10 on Wiley’s Well Road (GSEP 2009, p. 5.8-6). Except for "special areas" with specific camping regulations, vehicle camping is allowed anywhere on BLM-administered land within 300 feet of any posted Open Route. There are, however, no facilities in these locations and there is a 14-day limit for camping in any one location. After 14 days, campers wishing to stay in the area longer are required to move 25 miles from their original camp site (GSEP 2009, p. 5.8-6). Long-term camping is available by permit in Long-Term Visitor Areas (LTVAs) on BLM lands. There are two LTVAs located in the vicinity of Blythe and the Project site: Mule Mountain, which includes the Wiley’s Well and Coon Hollow campgrounds, and Midland, located north of the City of Blythe. BLM also operates another LTVA within the local study area at La Posa, south of Interstate 10 near Quartzsite, Arizona. However, although LTVAs are generally intended for recreation use only, BLM may allow temporary LTVAs to be established at the site for project employees for the duration of project construction (Childers, 2010).

Affected Groups and Attitudes

This section discusses some of the groups who could be affected by the proposed action. Social effects to these groups and other stakeholders are discussed under Section 4.13, *Social and Economic Impacts*.

Classifying stakeholders into groups by no means implies that other stakeholders who do not fit into a group are being ignored or are outside of the social and environmental review process. Discussion of the affected groups is simply a means to highlight and facilitate issue framing related to the social concerns of some stakeholders who may have a particular local or regional relationship to the host landscape that may potentially be developed to exploit solar energy.

Blythe Area Chamber of Commerce

The Blythe Area Chamber of Commerce provides a forum for local businesses and residents on important community issues. The Chamber of Commerce maintains a directory of all the businesses in Blythe and promotes the city's business economy. The purpose of the Blythe Area Chamber of Commerce is to encourage and facilitate activities that improve the economic viability of this community, provide a forum for guidance and support, provide opportunities to inform, and seek funds necessary for implementing compatible activities that would improve this agricultural community. The Chamber of Commerce strongly supports the proposed project and believes that the project will bring business to the community, including motels and hotels in the City of Blythe.

Blythe/Palo Verde Valley Economic Development Partnership

The Blyth/Palo Verde Valley Economic Development Partnership is a consortium comprised of the community college workforce and economic development leadership within the Blythe/Palo Verde Valley region. The consortium received funding from the California Community Colleges to enhance the consortium's capacity to support economic and workforce development efforts within its rural and remote sub-regions. This partnership consists of representatives from the City of Blythe, Palo Verde Valley College, Blythe Chamber of Commerce, Riverside County, Palo Verde Unified School District, Palo Verde Irrigation District, and other community and regional representatives. Members of the partnership generally have supportive attitudes towards renewable energy projects, and believe that these types of projects will help the local area's economy. (Blythe/Palo Verde Economic Development Partnership, 2010).

Environmental Groups

Several national groups have concerns about the siting criteria used for renewable energy projects proposed for development in sensitive biological resource areas. Environmental groups also have concerns regarding impacts on wildlife movement corridors, impacts on special status species associate with the implementation of solar panels (e.g., shading effects on species), and greenhouse gas emission impacts on plants and wildlife (BLM 2010).

Recreational Users

Recreational users include OHV users, hikers, campers and wildlife viewing enthusiasts. The recreational user group has a deep appreciation for the natural high desert landscape, and their social attitudes are participatory and protective of this resource. This group is concerned with the indirect impacts associated with the displacement of recreational lands with solar energy facilities, including the cumulative loss of land available for OHV recreational uses (BLM 2010).

Local Private Land Owners and Residents

In general, local private land owners with properties that are in the vicinity of the proposed action have mostly positive attitudes towards renewable energy development. However, while some area land owners and residents are opposed to major change to the desert environment and concerned about permanent changes to the natural high desert environment and wildlife, others are largely indifferent to the proposed action. Nonetheless, since the area is in the midst of a recession, many residents and landowner are generally supportive of new local employment opportunities and revenues that the new renewable energy development project would bring to the local area.

Project Workers and Suppliers to the Renewable Energy Industry

The proposed action has the potential to affect both local and non-local labor force from surrounding areas and the nation. Construction and operation of the proposed action would require both temporary and permanent workers. Since the area is in the midst of a recession, social attitudes towards future employment opportunities are generally supportive of new local employment opportunities.

3.14.2 Economic

Regional employment statistics by industry sector and county for 2008 are summarized in Table 3.14-4. The government is Riverside County’s largest employer. Governmental employment accounts for over 17 percent of the total jobs in the County. Additional important industries in the area include natural resources, mining, and construction; manufacturing; transportation; trade (wholesale and retail); information; financial activities; and services (e.g., professional, business, educational, health). In Riverside County, natural resources, mining and construction, government, and retail trade services are the leading industry groups in terms of employment.

Labor Force

The labor force of the study area counties and communities is presented in Table 3.14-5. As of May 2010, Riverside County had a labor force of 909,400 workers, of which 782,400 were employed. Consequently, Riverside County’s unemployment rate was 14 percent - considerably higher than the State-wide unemployment rate of 11.9 percent. Within Blythe, there is a labor force of 7,100 workers. In addition, the labor force and employment estimates for the unincorporated area within the BSPP’s regional study area were based on the County-wide average.

TABLE 3.14-4
EMPLOYMENT BY INDUSTRY GROUP – 2008

Industry Group	Riverside County Employment		La Paz County Employment	
	Total	Percent of Total	Total	Percent of Total
Agriculture	13,800	2.3%	323	5.7%
Natural Resources, Mining, and Construction	55,100	9.3%	289	5.1%
Manufacturing	48,600	8.2%	218	3.8%
Transportation, Warehousing, and Utilities	21,400	3.6%	146	2.6%
Wholesale Trade	20,400	3.4%	n/a	n/a
Retail Trade	84,200	14.2%	1,340	23.4%
Information	7,700	1.3%	n/a	n/a
Financial Activities	22,300	3.8%	515	9.0%
Professional and Business Services	57,700	9.7%	161	2.8%
Educational and Health Services	58,800	9.9%	n/a	n/a
All Other Services	94,300	15.9%	261	4.6%
Government	110,200	18.5%	2,465	43.1%
Total	594,500	100%	5,718	100%

SOURCE: California EDD, 2010a; Bureau of Economic Analysis, 2010.

In Arizona, La Paz County had an estimated labor force of on average 7,875 workers over the first four months of 2010. No 2010 sub-County area labor force is available. Therefore, labor force estimates for the sub-County areas were based on 2008 data and adjusted for subsequent population growth.

The total labor force for the local study area is estimated to be 8,480 workers. The total labor force for the regional study area is estimated to be 191,645 workers.

Unemployment Rates

The unemployment rate for Riverside County in May 2010 was 14 percent. In Riverside County, the community with the highest unemployment rate is the City of Coachella (21.7 percent). Reported unemployment data for the two communities located within the regional study area differed greatly. Mecca’s labor force reported a 27.1 percent rate of unemployment for May 2010 while the more affluent community of Thousand Palm’s 2,500 labor force had a 9.8 percent rate of unemployment. However, in the absence of more specific information, the Riverside County unemployment rate was used to estimate the current unemployment for the unincorporated areas within Eastern Riverside County.

TABLE 3.14-5
LABOR FORCE AND UNEMPLOYMENT DATA FOR THE REGIONAL STUDY AREA

Jurisdiction	Civilian Labor Force	Total Employment	Number Unemployed	Unemployment Rate	Median Household Income[a]
Riverside County	909,400	782,400	127,100	14.0%	$60,085
Blythe	7,100	5,900	1,200	16.7%	$39,187
Coachella	12,300	9,600	2,700	21.7%	$41,797
Indio	27,200	23,100	4,100	15.1%	$55,598
Indian Wells	1,700	1,600	100	5.0%	$122,983[b]
La Quinta	14,600	13,500	1,100	7.4%	$81,498
Palm Desert	24,700	22,700	2,100	8.4%	$57,038
Rancho Mirage	6,400	5,600	800	12.5%	$78,284[b]
Cathedral City	26,100	22,500	3,600	13.7%	$43,411
Palm Springs	26,100	23,200	2,800	10.9%	$46,632
Unincorporated Area	42,300 (est)	36,400 (est)	5,900 (est)	14.0%	na
Eastern Riverside County, CA	188,500	164,100	24,100	12.7%	na
La Paz County	7,875	7,150	725	7.6%	$31,812
Ehrenberg	645 (est)	595 (est)	50 (est)	7.6%	$35,330[b]
Quartzsite	735 (est)	680 (est)	55 (est)	7.6%	$30,165[b]
Cibola	80 (est)	75 (est)	5 (est)	7.6%	$28,420[b]
Unincorporated Area	1,685 (est)	1,555 (est)	130 (est)	7.6%	na
Western La Paz County, AZ	3,145	2,905	240	7.6%	na
Local Study Area	8,480	7,175	1,305	15.4%	na
Regional Study Area	191,645	167,005	24,340	12.7%	na

NOTES:
[a] 2005-2007 Census average converted in 2010 dollar values.
[b] 2000 Census data converted in 2010 dollar values.

SOURCE: California EDD, 2010; U.S. Census, 2010; U.S. Census 2010; Arizona Department of Commerce, 2008 and 2010.

In Arizona, the unemployment rate for La Paz County was 7.6 percent over the first four months of 2010. No 2010 sub-county area unemployment data is available. Generally, past unemployment rates for most of the communities within the regional study area have been lower than the County-wide average. However, in the absence of more current information, the La Paz County unemployment rate was used to estimate the current unemployment for the sub-county areas within the County.

The unemployment rate for the local study area is estimated to be 15.4 percent. Given the estimated local study area labor force estimate of 8,480, it is estimated that there are approximately 1,305 unemployed local study area residents. The unemployment rate for the regional study area is estimated to be 12.7 percent. Given the estimated local study area labor force estimate of 191,645, it is estimated that there are approximately 24,340 unemployed regional study area residents.

Labor Force Growth Projections

Table 3.14-6 presents County labor force estimates and projections for those skilled workers (by craft) required for construction and operation of the Project as estimated by the Project proponent. Employment figures for 2006 are provided, as well as employment projections for the selected occupations for 2016. The California Employment Development Department (EDD) groups Riverside and San Bernardino into one statistical area for data presentation purposes. As of 2006, there were relatively high numbers of skilled workers in Riverside and San Bernardino County, including metal workers (19,460), carpenters (28,850), and construction laborers (27,930).

Relevant specialized positions were generally fewer in number, including paving, surfacing, and tamping equipment operators, power plant operators, and construction trade helpers. Employment figures for all occupations presented are anticipated to either remain constant or grow by 2016. The two occupations with the largest anticipated growth are plant and system operators (26.5 percent) and architects, surveyors, and cartographers (25.0 percent). The largest growth by occupation in Riverside and San Bernardino Counties by architects, surveyors, and cartographers (17.6 percent).

No County-level employment projections for La Paz County are available. Given the small size of available the Arizona labor force within the regional study area, any future growth to the La Paz labor force would have a very minor change in future employment for construction occupations.

3.14.3 Fiscal Resources

A summary of Riverside County's expenses and revenues for the 2007-2008 fiscal year is provided in Table 3.14-7. As the proposed action would be constructed in Riverside County, the County would be the local agency with taxing power and could be expected to receive the majority of the direct impacts from the BSPP in the form of additional expenses or revenues (from taxes, permits, and other sources). The economic benefits of increased income and employment would result in indirect and induced revenue, and potential expenditures in the surrounding three counties; however, these impacts cannot be quantified by County as the distribution of the labor force among these Counties is not known.

For the fiscal year 2007-2008, tax revenue for Riverside County totaled approximately $3.0 billion, and expenditures totaled $2.7 billion. Riverside's key expenditures were on public assistance, public safety, and health. The County acknowledges that the economic slowdown may result in revenues lower than past projections which may lead to cutbacks in services.

TABLE 3.14-6
LOCAL LABOR POOL BY CRAFT – RIVERSIDE AND SAN BERNARDINO COUNTIES

	Annual Average Employment		Employment Change		Average Annual Job Openings		
Occupational Title	**2006**	**2016**	**Number**	**Percent**	**New Jobs**	**Net Replacements**	**Total**
Construction Managers	4,380	5,110	730	16.7%	135	160	295
Carpenters	28,850	32,390	3,540	12.3%	198	380	578
Cement Masons and Concrete Finishers	4,110	4,690	580	14.1%	38	120	158
Construction Laborers	27,930	32,080	4,150	14.9%	348	236	584
Paving, Surfacing, and Tamping Equipment Operators	630	720	90	14.3%	8	16	24
Operating Engineers and Other Construction Equipment Operators	4,790	5,460	670	14.0%	37	85	122
Electricians	6,740	7,600	860	12.8%	66	336	402
Plumbers, Pipefitters, and Steamfitters	4,630	5,330	700	15.1%	81	249	330
Metal Workers and Plastic Workers	19,460	20,800	1,340	6.9%	0	1024	1024
Helpers – Construction Trades	120	130	10	8.3%	35	169	204
Welders, Cutters, Solderers, and Brazers	3,960	4,640	680	17.2%	48	178	226
Architects, Surveyors, and Cartographers	1,420	1,670	250	17.6%	56	135	191
Engineering Managers	1,370	1,600	230	16.8%	43	170	213
Supervisors, Construction and Extraction Workers	10,990	12,380	1,390	12.6%	95	216	311
Machinists	2,630	2,960	330	12.5%	0	161	161
Total	**122,010**	**137,560**	**15,550**	**12.9%**	**1,188**	**3,635**	**4,823**

SOURCE: Solar Millennium AFC August 2009 Table 5.11-8

TABLE 3.14-7
RIVERSIDE COUNTY EXPENSES AND REVENUES FOR FY 2007-2008

	Amount (Dollars)	Percent
Expenses	$2,717,107,833	100%
General Government	$299,748,199	11.0%
Public Safety	$1,059,121,385	39.0%
Public Ways and Facilities	$146,363,144	5.4%
Health	$340,957,271	12.5%
Public Assistance	$760,500,349	28.0%
Education	$17,907,992	0.7%
Recreation & Cultural	$199,776	0.0%
Debt Services	$77,863,426	2.9%
Transfers Out	$14,446,291	0.5%
Revenue Sources	$2,999,779,907	100%
Special Benefit Assessment	--	--
Property Taxes	$541,147,001	18.0%
Other Taxes	$69,873,595	2.3%
Licenses, Permits, Franchises	$40,960,870	1.4%
Fines, Forfeitures and Penalties	$90,299,415	3.0%
From Use of Money and Property	$106,339,835	3.5%
From Other Governmental Agencies	$1,719,722,101	57.3%
Charges for Current Services	$400,693,092	13.4%
Miscellaneous Revenue	$23,922,463	0.8%
Other Financing Sources	$2,848,266	0.1%
Transfers In	$3,973,269	0.1%

SOURCE: State of California County Controller, 2009

3.15 Soils Resources

The soil surface in the region of the BSPP Area generally slopes gently downward to the east-southeast at a gradient of less than 1% over most of the site. Steeper grades of 10 to 15 percent are present along the western side of the unnamed mound in Sections 5, 6, and 7, Township 6S Range 22E. A steeper grade of 50 percent was measured along the southwestern side of an unnamed knob on the northeast side of the McCoy Wash in Section 4, Township 6S Range 22E.

Where topography is flat, soils are very sandy and there are no adjacent uplands to introduce surface runoff. In these areas, discrete channels have not formed, indicating that most precipitation infiltrates into the ground or moves as sheet flow. General observations indicated that the overall soil gradation trends from coarser- to finer-grained alluvial deposits as distance from the McCoy Mountains increases. The ground surface in the western portion of the BSPP site is dominated by areas of desert pavement with layers of flat-lying gravel overlying finer-grained sandy materials. East toward Black Rock Road, the surface becomes less dominated by desert pavement and becomes sandier.

The National Resource Conservation Service (NRCS) is the leading source for soil surveys that detail soil characteristics of an area. Soil units described by the NRCS are classified via a 2nd order survey at a scale of 1:20,000 with delineations of 1.5 to 10 acres. Soil survey maps were obtained from the NRCS website (2009); however, approximately 80 percent of the site has not been mapped. The areas of the site that have been mapped include Sections 7 and 18 of Township 6S, Range 22E and Sections 23 and 24 of Township 6S, Range 21E. The majority of the mapped areas are classified as Chuckawalla very gravelly silt loam but also include Aco gravelly loamy sand, Aco sandy loam, Carrizo gravelly sand, Orita fine sand, Orita gravelly loamy sand, Orita gravelly fine sandy loam, Rositas fine sand, and Rositas gravelly loamy sand.

Because the majority of soils at the site have not been mapped, a general survey to characterize the soil conditions was commissioned by the Applicant. It was conducted in summer 2009 in conjunction with the Preliminary Geotechnical Investigation. General soils data was derived from the United States General Soil Map, which is a 4th order survey (5th order being the least detailed – scale of 1:250,000 to 1:1,000,000). This data was used in conjunction with observations and laboratory testing to characterize the soils on the BSPP site.

Based on the General Soil Map, Figures 13a, b, and c, there are three map units on the BSPP site: 1) the Rillito-Gunsight map unit, 2) the Vaiva-Quilotosa-Hyder-Cipriano-Cherioni map unit, and 3) the Rositas-Orita-Carrizo-Aco map unit. The Rillito-Gunsight map unit is the predominant map unit, comprising 43 percent of the BSPP site. It is characterized by sandy loam soils with moderate susceptibility to wind erosion. The Vaiva-Quilotosa-Hyder-Cipriano-Cherioni map unit comprises 32 percent of the BSPP site and is characterized by soils with high percentage (>65 percent) of sand with moderate susceptibility to wind erosion. The Rositas-Orita-Carrizo-Aco map unit comprises 25 percent of the BSPP site and is characterized by soils with high sand percentages and moderate susceptibility to wind erosion. The predominant soils series mapped are: 1) Gunsight in the western one third of the BSPP site; 2) Hyder, Cherioni, and Ciprioni in the central one third of the site; 3) and Carrizo and Aco in the eastern one third of the BSPP site.

There are three mapped soil units beneath the proposed gen-tie route: 1) the Rillito-Gunsight map unit, 2) the Vaiva-Quilotosa-Hyder-Cipriano-Cherioni map unit, and 3) the Rositas-Dune land-Carsitas map unit. Approximately 2.2 miles (11,400 feet) of the northern portion of the gen-tie-line is on the Rillito-Gunsight map unit, 3.4 miles (18,000 feet) of the central portion of the gen-tie-line is on the Vaiva-Quilotosa-Hyder-Cipriano-Cherioni map unit, and 1.4 miles (7,500 feet) of the southwestern portion of the gen-tie-line is on the Rositas-Dune land-Carsitas map unit. The gen-tie-line route was not included as part of the soil survey conducted for the BSPP site as part of the Preliminary Geotechnical Investigation.

Detailed soil descriptions were developed from the Natural Resource Conservation Service Official Series Descriptions. Soil characteristics including depth, texture, drainage, permeability, and erosion hazard of individual soil mapping units are included in Table 3.15-1. Land capability classification is an indicator of the soils' primary limitations for revegetation. Soil types on the BSPP site include VIIe, VIIs, VIIIc, and VIIIs Capability Subclasses, which means the soils have very severe limitations that make them unsuitable for cultivation.

The reconnaissance described typical soil types near the western limits of the BSPP site as being expected to range from silty gravel with sand and cobbles to silty sand with gravel and cobbles, depending on the percentage of gravel present in the soils. Typical fines content in these soils would be expected to range from 15-35 percent and would likely consist of silt or silty clay.

Farther east, the gravel content typically decreases, with the exception of some of the larger washes. Typical soil types in the central portion of the BSPP site would be expected to include silty clayey sand, silty sand, and clayey sand depending on the nature of the fines present in the soils. Typical fines content in these soils would be expected to be in the range of 30-50 percent and would likely consist of silt, silty clay, or clay.

Soil profiles observed in the test pits were typically sands, and laboratory analysis measured sand content from 52-85 percent. Fines content measured in the soils ranged from 6-30 percent. All observed profiles exhibited a strong to violent effervescence indicating the presences of carbonates. These observations and laboratory analysis results are consistent with the published descriptions for the map units mapped across the BSPP site in the General Soil Map of California.

TABLE 3.15-1
SOIL MAPPING UNITS AND DESCRIPTIONS

Map Unit	Description
Ac	Aco Gravelly Loamy Sand 1. Formed in alluvial fan from mixed alluvium 2. Well drained 3. Slopes range from 0 -1 percent 4. Mostly low runoff, sloping areas may have moderate runoff 5. Moderately rapid permeability 6. High hazard of wind erosion 7. Capability Subclass VIIe 8. Taxonomic Class: Coarse-loamy, mixed, superactive, hyperthermic Typic Haplocalcids
Af	Aco Sandy Loam 1. Formed in alluvial fan from mixed alluvium 2. Well drained 3. Slopes range from 0 -1 percent 4. Mostly low runoff, sloping areas may have moderate runoff 5. Moderately rapid permeability 6. High hazard of wind erosion 7. Capability Subclass VIIe 8. Taxonomic Class: Coarse-loamy, mixed, superactive, hyperthermic Typic Haplocalcids
Ce	Carrizo Gravelly Sand 1. Formed in arroyos from mixed sandy and gravelly alluvium 2. Excessively drained 3. Slopes range from 0 – 2 percent 4. Negligible or very low runoff 5. Rapid or very rapid permeability 6. Very low hazard of wind erosion 7. Capability Subclass VIIIs 8. Taxonomic Class: Sandy-skeletal, mixed, hyperthermic Typic Torriorthents
Ch	Chuckawalla Very Gravelly Silt Loam 1. Forms fan remnants derived from mixed alluvium 2. Well drained 3. Slopes range from 0 – 1 percent 4. Moderate runoff 5. Moderate permeability 6. Very low hazard of wind erosion 7. Capability Subclass VIIs 8. Taxonomic Class: Loamy-skeletal, mixed, hyperthermic Typic Calciargids
Oc	Orita Fine Sand 1. Forms fan remnants derived from mixed alluvium 2. Well drained 3. Slopes range from 0 – 1 percent 4. Low to moderate runoff 5. Moderate permeability 6. Very high hazard of wind erosion 7. Capability Subclass VIIs 8. Taxonomic Class: Fine-loamy, mixed, superactive, hyperthermic Typic Haplocalcids
Og	Orita Gravelly Loamy Sand 1. Forms fan remnants derived from mixed alluvium 2. Well drained 3. Slopes range from 0 – 1 percent 4. Low to moderate runoff 5. Moderate permeability 6. High hazard of wind erosion 7. Capability Subclass VIIs 8. Taxonomic Class: Fine-loamy, mixed, superactive, hyperthermic Typic Haplocalcids
Or	Orita Gravelly Fine Sandy Loam 1. Forms fan remnants derived from mixed alluvium 2. Well drained

TABLE 3.15-1 (Continued)
SOIL MAPPING UNITS AND DESCRIPTIONS

Map Unit	Description
Or (cont.)	3. Slopes range from 0 – 1percent 4. Low to moderate runoff 5. Moderate permeability 6. Moderate hazard of wind erosion 7. Capability Subclass VIIs 8. Taxonomic Class: Fine-loamy, mixed, superactive, hyperthermic Typic Haplocalcids
RoA	Rositas Fine Sand, 0 to 2percent Slopes 1. Forms sand sheets derived from Aeolian sands 2. Well drained 3. Slopes range from 0 – 2 percent 4. Negligible to low runoff 5. Rapid permeability 6. High to very high hazard of wind erosion 7. Capability Subclass VIIs 8. Taxonomic Class: Mixed, hyperthermic Typic Torripsamments
RsA	Rositas Gravelly Loamy Sand, 0 to 2 percent Slopes 1. Forms sand sheets on stream terraces, derived from eolian sands over mixed alluvium 2. Somewhat excessively drained 3. Slopes range from 0 – 2 percent 4. Negligible to low runoff 5. Rapid permeability 6. High to very high hazard of wind erosion 7. Capability Subclass VIIs 8. Taxonomic Class: Mixed, hyperthermic Typic Torripsamments
Carrizo	Carrizo Extremely Gravelly Sand 1. Formed in mixed alluvium 2. Excessively drained 3. Slopes range from 0 to 15 percent 4. Negligible or very low runoff 5. Rapid to very rapid permeability 6. Moderate hazard of wind erosion 7. Capability Subclass VIIs 8. Taxonomic Class: Sandy-skeletal, mixed, hyperthermic Typic Torriorthents
Vaiva	Vaiva Series - Gravelly Loam 1. Formed in slope alluvium from granite and gneiss 2. Well drained 3. Slopes range from one to 65 percent 4. Medium to rapid runoff 5. Moderate permeability 6. Taxonomic Class: Loamy-skeletal, mixed, superactive, hyperthermic Lithic Haplargids
Quilotosa	Quilotosa Series – Extremely Gravelly Coarse Sandy Loam 1. Formed in slope alluvium from granitic and metamorphic rock 2. Somewhat excessively drained 3. Slopes range from three to 65 percent 4. Medium to rapid runoff 5. Moderately rapid permeability 6. Low susceptibility to wind erosion 7. Capability Subclass VIIIc nonirrigated 8. Taxonomic Class: Loamy-skeletal, mixed, superactive, calcareous, hyperthermic Lithic Torriorthents
Hyder	Hyder Series – Extremely Gravelly Sandy Loam 1. Formed in alluvium from rhyolite and related volcanic rock 2. Somewhat excessively drained 3. Slopes range from one to 70 percent 4. High runoff 5. Moderate or moderately rapid permeability 6. Low susceptibility to wind erosion

TABLE 3.15-1 (Continued)
SOIL MAPPING UNITS AND DESCRIPTIONS

Map Unit	Description
Hyder (cont.)	7. Capability Subclass VIIIc nonirrigated 8. Taxonomic Class: Loamy-skeletal, mixed, superactive, calcareous, hyperthermic Lithic Torriorthents
Cipriano	Cipriano Series – Very Gravelly Loam 1. Formed in fan alluvium from volcanic rock 2. Somewhat excessively drained 3. Slopes range from zero to 55 percent 4. Low to very high runoff 5. Moderate permeability 6. Low susceptibility to wind erosion 7. Capability Subclass VIIIc nonirrigated 8. Taxonomic Class: Loamy-skeletal, mixed, superactive, hyperthermic, shallow Typic Haplodurids
Cherioni	Cherioni Series – Very Gravelly Fine Sandy Loam 1. Formed in slope alluvium on volcanic bedrock 2. Somewhat excessively drained 3. Slopes range from zero to 70 percent 4. Medium to rapid runoff 5. Moderate permeability 6. Low susceptibility to wind erosion 7. Capability Subclass VIIIc nonirrigated 8. Taxonomic Class: Loamy-skeletal, mixed, superactive, hyperthermic, shallow Typic Haplodurids
Gunsight	Gunsight Series – Very Gravelly Loam 1. Formed in alluvium from mixed sources 2. Somewhat excessively drained 3. Slopes range from zero to 60 percent 4. Very low to high runoff 5. Moderate or moderately rapid permeability 6. Low susceptibility to wind erosion 7. Capability Subclass VIIs nonirrigated 8. Taxonomic Class: Loamy-skeletal, mixed, superactive, hyperthermic Typic Haplocalcids
Rillito	Rillitoi Series – Very Gravelly Fine Sandy Loam 1. Formed in mixed alluvium 2. Somewhat excessively drained 3. Slopes range from zero to 40 percent 4. Slow to medium runoff 5. Moderate permeability 6. Low susceptibility to wind erosion 7. Capability Subclass VIIs nonirrigated 8. Taxonomic Class: Coarse-loamy, mixed, superactive, hyperthermic, Typic Haplocalcids
Carsitas	Carsitas Series – Gravelly Sand 1. Formed in alluvial fans, moderately steep valley fills and dissected remnants of alluvial fans 2. Excessively drained 3. Slopes range from nearly level to strongly sloping 4. Slow runoff except during rare torrential showers 5. Rapid permeability 6. High susceptibility of wind erosion 7. Capability Subclass VIIe nonirrigated 8. Taxonomic Class: Mixed, hyperthermic Typic Torripsamments
Dune land	Dune land – Sand 1. Dunes can be as much as 25 feet high but are generally 10 feet high 2. Very slow runoff 3. High hazard of wind erosion 4. None or slight hazard of water erosion

3.16 Special Designations

In California, the National Landscape Conservation System (NLCS) designations include: National Monuments, National Conservation Areas, Wilderness Areas, Wilderness Study Areas (WSA), National Scenic and Historic Trails, Wild and Scenic Rivers, Outstanding Natural Areas, Forest Reserves or any other special designations lands described in the Omnibus Public Lands Management Act of 2009 P.L. Law 111-11 Sec. 2002(b). There are five designated wilderness areas in the vicinity of the proposed site. There are no National Monuments, National Conservation Areas, National Scenic and Historic Trails, Wild and Scenic Rivers, Outstanding Natural Areas, Forest Reserves or other special designated lands in the vicinity of the proposed site, so these designations will not be discussed further. Furthermore, Agriculture (Farmland) is not considered further in this PA/FEIS as it does not exist within the proposed site or alternative sites.

Other special designations Cooperative Management and Protection Areas and National Recreation Areas include Areas of Critical Environmental Concern (ACEC), Special Recreation Management Area, Scenic or Back Country Byways, watchable wildlife viewing sites and wild horse and burro ranges, and other special designations identified in BLM Handbook H-1601 – Land Use Planning Handbook, Chapter III. Specifically, the land use plan and management direction for such a designation must comply with the purposes and objectives of the proclamation or act of Congress regardless of any conflicts with the FLPMA's multiple-use mandate. (BLM, 2009).

3.16.1 Wilderness Characteristics Inventory Update

All Public Lands within the CDD were analyzed and summarized in 1979 wilderness inventory decisions performed pursuant to the FLPMA. See *"California Desert Conservation Area - Wilderness Inventory –Final Descriptive– March 31, 1979"*. Public Land within the Project site for CACA 048811 is contained within CDCA Wilderness Inventory Units [WIU] #CDCA 325 and 325B. No part of the Project site would be on Public lands identified as having wilderness characteristics in that 1979 decision.

The Wilderness Inventory Unit (WIU) #CDCA 325 encompassed a large area. The boundary is tied on the west to Highway 177; on the north to Highway 62 and an aqueduct; on the east to Midland Road, a railroad, Arlington Mine Road, and a road also forming the boundary with WIU # CDCA325B, and; on the south by I-10. The unit contains most or all of the Granite, Palen, Little Maria, and McCoy Mountains. These are separated by large bajadas or wash systems. The 1979 decision established the Palen/McCoy WSA for the Public Lands determined to have wilderness characteristics. Public Lands not included in the WSA were those where the imprints of man were substantially noticeable. These included impacts from mining (e.g., spoil piles and associated constructed, but not maintained, access trails], extensive network of vehicle ways on some bajadas, as well as sites extensively used by the U.S. Army for desert tank training during WWII). The California Desert Protection Act (CDPA) of 1994 designated the Palen/McCoy Wilderness. The boundary for the wilderness was similar to the boundary of the WSA.

WIU #CDCA 325B is immediately east of the southeast portion of WIU #CDCA 325. The boundary is tied on the west to a road; on the north to the Arlington Mine Road; on the east to a power line right of way road and a rail road and; on the south to I-10. This WIU is dominated by an eastward trending wash system emanating from the McCoy Mountains. The WIU did not contain outstanding opportunities for solitude due to flat terrain, small size and minimal vegetation nor did it contain outstanding opportunities for primitive types of recreation. As such, the 1979 decision was that no portion of this unit had wilderness characteristics and no Public Lands were identified as a WSA.

Relevant portions of the Wilderness Inventories for the two WIUs were maintained pursuant to section 201(a) of the FLPMA. The current conditions existing in 2010 are essentially the same as in 1979. In summary, no changes have occurred since 1979 that would result in findings that differ from the 1979 decision that wilderness characteristics were not present in the project area. Therefore, wilderness characteristics will not be analyzed further in this PA/FEIS.

3.16.2 Designated Wilderness Areas

Designated Wilderness Areas in the vicinity of the site are shown on Figure 6, Wilderness areas are congressionally designated and are managed pursuant to the Wilderness Act of 1964 (16 USC 1131–1136). BLM is authorized to manage wilderness areas for the public's use and enjoyment in a manner that will leave such areas unimpaired for future use and enjoyment as "wilderness" by providing for their protection and the preservation of their wilderness character, and by gathering and disseminating information about their use and enjoyment. The Wilderness Act of 1964 (P.L. 88-577) defines "wilderness" as an "area where the earth and its community of life are untrammeled by man." A designated wilderness area is defined as having four primary characteristics, including the following:

1. Generally appears to have been affected primarily by the forces of nature, with the imprint of man's work substantially unnoticeable;

2. Has outstanding opportunities for solitude or a primitive and unconfined type of recreation;

3. Has at least 5,000 acres of land or is of sufficient size to make practicable its preservation and use in an unimpaired condition; and

4. May also contain ecological, geological or other features of scientific, educational, scenic, or historical value.

Five wilderness areas are located in the vicinity of the site and were established by the California Desert Protection Act of 1994 (CDPA) (16 USC Sections 410aaa et seq.). The Palen/McCoy Wilderness is approximately 4 miles northwest of the site, the Big Maria Mountains Wilderness is approximately 7 miles northeast, the Rice Valley Wilderness is approximately 13 miles north, the Little Chuckwalla Mountains Wilderness is approximately 14 miles southwest, and the Riverside Mountains Wilderness is approximately 20 miles northeast. These five wilderness areas were designated by Congress through enactment of the CDPA and formally incorporated in the CDCA plan through NECO. (NECO plan, ROD D-4)

According to the CDPA Section 103(d) “The Congress does not intend for the designation of wilderness areas in Section 102 of this title to lead to the creation of protective perimeters or buffer zones around any such wilderness area. The fact that nonwilderness activities or uses can be seen or heard from areas within a wilderness area shall not, of itself, preclude such activities or uses up to the boundary of the wilderness area.”

The Palen/McCoy Wilderness Area encompasses approximately 236,488 acres. Within it are the Granite, McCoy, Palen, Little Maria and Arica Mountains, which are five distinct mountain ranges separated by broad sloping bajadas. Because this large area incorporates so many major geological features, the diversity of vegetation and landforms is exceptional. The desert wash woodland found here provides food and cover for burro deer, coyote, bobcat, gray fox and mountain lion. Desert pavement, bajadas, interior valleys, canyons, dense ironwood forests, canyons and rugged peaks form a constantly changing landscape pattern. State Highway 62, near the Riverside County line provides access from the north, and Interstate 10 via the Midland Road near Blythe provides access from the south. The area is accessible by four-wheel drive vehicles only. Mechanized or motorized vehicles are not permitted in a wilderness (USDOI 2010d as cited in the CEC RSA June 2010). Wilderness users on the southern and western slopes are within the viewshed of the proposed action. (BLM 2010a)

The Big Maria Mountains Wilderness is 45,384 acres. The terrain varies from gently sloping bajadas to numerous rough, craggy peaks disjointed by steep canyons. The northern boundary lies south of a major drainage known as Big Wash, and the eastern edge parallels State Highway 95 and the Colorado River. The west and south boundaries follow power lines and contours along the base of the mountains. Foxtail cactus and California barrel cactus dot the landscape, and a burro deer herd relies on the river's habitat for survival. State Highway 95 provides access from the east and north via Big Wash, and by Interstate 10 from the southwest via Midland Road and power line roads. A four wheel drive vehicle is recommended. (BLM 2010b)

The Rice Valley Wilderness is 41,777 acres and is approximately 26 miles northwest of Blythe. The broad, flat plains of Rice Valley and the northwestern tip of the steep and rugged Big Maria Mountains lie within the borders of this wilderness. A system of small dunes rising 30 to 40 feet above the surface form a long, narrow band running through the middle of the valley floor. The valley is part of a massive sand sheet which extends from Cadiz Valley through Ward Valley, representing a part of one of the largest dune systems in the California Desert. The Big Maria Mountains rise above the valley to an elevation of 2,000 feet. State Highway 62 provides access to the wilderness from the north and Interstate 10 via the Midland Road, from the south. The wilderness boundaries are accessible by four-wheel drive vehicles only. (BLM 2010d)

The Little Chuckwalla Mountains Wilderness is 28,034 acres and also lies south of Interstate 10. It includes rugged mountains surrounded by a large, gently sloping bajada laced with a network of washes. To the north, a bajada gently rises to 400 feet, while the rugged mountains crest at 2,100 feet. Habitat for bighorn sheep and desert tortoise can be found in portions of this region, and the southern bajada has been identified as crucial desert tortoise habitat. Several sensitive plant species grow here, including the California snakeweed, Alverson's foxtail cactus, and the barrel cactus. Interstate 10 provides northern access to the Little Chuckwalla's via the Ford Dry Lake exit; Graham Pass Road from the west; and Teague Well four-wheel drive route from the east. Both routes access the Bradshaw Trail to the south, which connects to Wileys Well Road. Wilderness users on the northern and eastern slopes are within the viewshed of the proposed action. (BLM 2010c)

The Riverside Mountains Wilderness is 24,004 acres and is approximately 10 miles north of Blythe. The Colorado River parallels this wilderness on its eastern edge. The landscape varies from gently sloping bajadas to steep, rugged interiors. Washes emerging from canyons divide the bajadas below. Numerous peaks in the Riverside Mountains give this small range a rough, craggy appearance. The foxtail cactus and California barrel cactus, two sensitive plant species, decorate this wilderness. A small herd of burro deer live among the Riverside range. State Highway 95 provides access to the wilderness from the east, which is only accessible by four-wheel drive vehicles. (BLM 2010d)

Users of these wilderness areas are seeking opportunities to experience naturalness, solitude and unconfined recreation. The areas have no developments other than sparse trails and any routes that have not been reclaimed since the wilderness designation. Little data exist on the amounts, types, and trends of visitor use experiences such as camping, hiking, or site seeing. Recreation uses are discussed in Section 3.13, *Recreation*, and include hunting, fishing, and non-commercial trapping. Pets are allowed. Horses are permitted. Camping is permitted, but is limited to 14 days. After 14 days, campers must relocate at least 25 miles from previous site.

Motorized-vehicle access is prohibited in wilderness except as specifically provided for in the Wilderness Act and by reference in subsequent wilderness legislation (i.e., where access is required to private property, and where necessary to meet minimum requirements for the administration of the area for the purpose of the Act (including measures required in emergencies involving the health and safety of persons within the area))) While motorized vehicles are not allowed in wilderness, the following activities are permitted in lands designated wilderness:.

1. Scientific research and nature study
2. Hiking, backpacking and camping
3. Horseback riding and guiding for horse and pack trips
4. Wheelchairs (including certain motorized wheelchairs)
5. Control of fire, and insect and disease and outbreaks
6. Mining on pre-existing valid claims
7. Continued use of tracts of private and state lands within the boundaries of some wilderness areas with reasonable access

3.16.3 Wilderness Study Areas (WSAs)

The BLM, through Section 603(a) of FLPMA, manages 69 WSAs in California, totaling approximately 1.1 million acres. Such areas are roadless, are at least 5,000 acres, and consist of islands of public lands that have the wilderness characteristics described above. BLM maintains the wilderness characteristics of each WSA until Congress acts to designate the areas as wilderness or release the area for other purposes. Since the closest WSA are approximately 100 miles from the Proposed site, WSA's will not be discussed further in this PA/FEIS.

3.16.4 Areas of Critical Environmental Concern (ACECs)

ACECs in the vicinity of the site are shown on Figure 6. ACECs are BLM-specific, administratively-designated areas within the public lands where special management attention is required to protect and prevent irreparable damage to important historic, cultural, or scenic values; fish and wildlife resources; or other natural systems or processes; or to protect life and safety from natural hazards. (FLPMA, 43 USC 1702(a); 43 CFR 1601.0-5(a)). By itself, the designation does not automatically prohibit or restrict uses in the area; instead, it provides a record of significant values that must be accommodated when BLM considers future management actions and land use proposals.

There are four ACECs located in the vicinity of the site. The 4,092 acre Mule Mountains ACEC is located approximately 7 miles south of the site. This ACEC bears dual Multiple Use Class designations, M and L, and was established to manage prehistoric resources. The 2,273 acre Chuckwalla Valley Dune Thicket ACEC is located approximately 9 miles southwest of the site. This ACEC is managed as Multiple Use Class M, for wildlife habitat, specifically that of the desert tortoise. Similarly, the Palen Dry Lake ACEC is located approximately 18 miles west of the site and was established to protect cultural resources. The Big Marias ACEC, located in Arizona, is approximately 11 miles east of the site and was established to protect prehistoric archaeological features, including a high concentration of nationally significant intaglio features, and sensitive plant species (BLM, 2010d). Recreation uses allowed in ACECs are discussed in PA/FEIS Section 3.13, *Recreation*.

3.17 Transportation and Public Access – Off Highway Vehicle Resources

3.17.1 Public Access

Introduction

Recreation and motorized travel opportunities are determined, in part, by the California Desert Conservation Area Plan (CDCA) Multiple Use Class and by OHV area designations. The multiple-use class is based on the sensitivity of resources and kinds of uses for each geographic area. Each of the four multiple-use classes describes a different type and level or degree of use which is permitted within that particular geographic area. The BLM is also required to designate all public lands as either open, limited, or closed to off-road vehicles under Executive Orders (E.O. 11644 and E.O. 11989: Use of Off-Road Vehicles on the Public Lands), other authorities, such as the Federal Land Policy and Management Act of 1976 (43 U.S.C. 1701 *et seq.),* BLM planning regulations in 43 CFR 1600 and the BLM Land Use Planning Handbook H-1600-1. For the purpose of this section, the terms *Off-Road Vehicles* and *Off Highway Vehicles* (OHV), are used interchangeably (OHV is the term most used in BLM and other federal land use planning).

Multiple Use Class

The proposed site is located in CDCA Multiple Use Class (MUC) Class L – Limited Use. This class is intended to protect sensitive natural, scenic, ecological, and cultural resource values. Class L lands are managed to provide for generally lower-intensity, carefully controlled multiple use of resources, while ensuring that sensitive values are not significantly diminished. For purposes of OHV management, vehicle access in MUC L is directed toward use of approved ("open" or "limited") routes of travel. Routes of travel include roads, ways, trails, and washes. Routes of travel, including washes, were evaluated and designated through the NECO Plan for the project area.

OHV Routes

The CDCA Plan and the NECO Plan Amendment state that vehicle access is among the most important recreation issues in the desert. A primary consideration of the recreation program is to ensure that access routes necessary for recreation enjoyment are provided. (BLM, 2002 [NECO Section 3.8.2]).

During the CDCA and NECO planning process, a detailed inventory and designation of routes was developed. This route designation system, along with other land management actions such as setting aside areas of critical environmental concern (ACECs) and the congressional designation of wilderness areas, has resulted in a significant loss of OHV recreation opportunities in the eastern Riverside County. Currently, there are no BLM-designated "open" OHV areas in Riverside County.

Under the CDCA Plan, travel routes are classified as *Open, Limited* or *Closed* with the following definitions:

1. *Open Route:* Access by motorized vehicles is allowed.
2. *Limited Route:* Access by motorized vehicles is limited to use by number of vehicles, type of vehicle, time or season, permitted or licensed, or speed limits.
3. *Closed Route:* Access by motorized vehicles is prohibited except for authorized use.

As required by the CDCA Plan, the NECO Plan amendment created a detailed inventory of existing routes within the NECO Plan area that were officially designated as *Open, Limited* or *Closed* as part of the NECO routes of travel system. The BLM's Palm Springs South Coast Field Office (PSSCFO) is currently completing the GPS documentation of route specific designations and implementing route signing on the ground. A route has high significance if it provides access to other routes, historical sites, or recreational areas. Recreation uses in the eastern part of Riverside County include back county driving, photography, camping, rock hounding and hiking.

The BSPP site has approximately seven miles of "designated open routes" which designation limits OHV recreational opportunities to driving or riding on these designated open routes. Routes of travel, other than washes, are shown in Figure 10 and 10a.

The BLM has no traffic counters or other means to determine accurate use of routes in the vicinity of the BSPP site. Observations by BLM staff and Law Enforcement Rangers indicate that use is relatively low on routes through or adjacent to the BSPP site, not exceeding 200-300 visits per year. Recreation and vehicle use is generally limited to the cooler months of September through May. Use is nearly non-existent during the summer months. Recreational vehicle use consists of touring in passenger cars, SUVs, motorcycles, and ATVs. Some camping may occur in the vicinity of the site, but most use is of short duration and by local residents. More attractive recreation opportunities occur in areas where BLM has provided facilities such as the Midland Long Term Visitor Area (LTVA), ACECs, or other scenic, natural, or cultural attractions.

Washes Open Zones

Motorized vehicle access in washes was also addressed by the CDCA Plan and further addressed or redefined in the 1982 Amendment to the CDCA Plan and the NECO Plan. As part of the land use planning process, Multiple Use Class (MUC) designations were assigned to regions throughout the CDCA Plan area. Areas designated MUC L (limited) and MUC M (moderate) were designated as "washes open zones" unless specifically designated as limited or closed to vehicle use. As stated in the NECO Plan, "all navigable washes not individually inventoried and mapped on public lands would be designated as open as a class except where such washes occur within a washes closed zone" (p. 2-77). Since there are no OHV *Open Area* designations within the PSSCFO, motorized travel available to the public in the NECO Plan area is restricted to authorized routes of travel with the exception of washes open zones.

The BSPP site is also in a “washes open zone.” Under the NECO Plan, all MUC L areas are considered “washes open zones” unless specifically designated “limited” or “closed.” The use of washes within “washes open zones” is restricted to those considered “navigable,” unless it is determined that vehicle use must be further limited. Navigable washes in “washes open zones” are designated “open” *as a class*, that is, washes are not individually designated unless they are identified as specific routes in the NECO route inventory. In this context, the term “wash” is defined as a watercourse, either dry of with running or standing water, which by its physical nature, width, soil, slope, topography, vegetative cover, etc. permits the passage of motorized vehicles, thereby establishing its “navigability” (Appendix VI, CDCA Plan 1980; NECO Plan Section 3.9.5 2002). The BLM has not inventoried or analyzed specific washes in the BSPP area as to their navigability, but by the above definition, all or portions of McCoy Wash may be considered navigable through a portion of the BSPP site.

3.17.2 Transportation

Introduction

The BSPP site is located approximately eight miles west of the City of Blythe and approximately two miles north of Interstate 10 (I-10) in Riverside County. In the project area, I-10 is a primary east/west regional arterial extending easterly from the Los Angeles area to Phoenix, Arizona, before it turns south and continues to Tucson, Arizona, and the states of New Mexico, Texas, Louisiana, Mississippi, and Alabama, before ending in Jacksonville, Florida.

In the BSPP area, I-10 is classified as a freeway with two lanes in each direction. Access to the site from I-10 is through Exit 232, the Airport/Mesa Drive interchange at Mesa Drive.

Major Traffic Routes within the Vicinity of the BSPP

Interstate 10

I-10, the southernmost, east-to-west, coast-to-coast interstate highway in the United States, begins in Santa Monica and ends in Jacksonville, Florida. Access from I-10 to the site is provided through Mesa Drive. At this location, I-10 consists of two lanes in each direction. According to the California Department of Transportation (Caltrans), the average annual daily traffic count for the highway within the vicinity of this interchange in 2008 was 22,500 vehicles (Caltrans 2008a as cited in the CEC RSA June 2010).

Existing Traffic Volumes

The level of service (LOS) is defined as a quality measure describing operational conditions within a traffic stream, generally in terms of such service measures as speed and travel time, freedom to maneuver, traffic interruptions, and comfort and convenience. LOS indicators for the highway and roadway system are based on specific characteristics of traffic flow on designated sections of roadway during a typical day. For mainline freeway and roadway segments, these include overall traffic volume, speed, and density.

Several physical and operational characteristics of the roadway, such as lane configuration, flow speed (typical speed between intersections), and number of intersections per mile, are used to determine the vehicular capacity of the roadway segment. When these two sets of data are compared, a volume-to-capacity ratio is calculated. These factors are then converted to a letter grade identifying operating conditions and expressed as LOS A through F. The *Highway Capacity Manual 2000*[1], published by the Transportation Research Board, Committee on Highway Capacity and Quality of Service, includes six levels of service for roadways or intersections ranging from LOS A (best operating conditions characterized by free-flow traffic, low volumes, and little or no restrictions on maneuverability) —the best operating conditions—to LOS F (forced traffic flow with high traffic densities, slow travel speeds, and often stop-and-go conditions) —the worst.

Table 3.17-1 provides existing traffic volumes and LOS for I-10 that likely would be used for indirect access to the BSPP site. As indicated below, I-10 is classified as LOS A in the BSPP area.

TABLE 3.17-1
EXISTING TRAFFIC VOLUMES AND LEVEL OF SERVICE

	Existing Conditions			
Roadway/Segment	**Travel Lanes**	**Volume**	**Capacity**	**LOS**
I-10 West of Project Site	4	3,278	8,000	A
I-10 East of Project Site	4	3,278	8,000	A

NOTES: Baseline information from Caltrans 2009 data. Capacity represents approximate two-way capacity in vehicles per hour.

Black Rock Road

Black Rock Road, a two lane, two-way roadway, extends westerly from Mesa Drive parallel to and on the north side of I-10. Its paved width is approximately 24 feet; the road has graded shoulders on both sides.

Black Rock Road intersects Mesa Drive opposite Hobsonway approximately 300 feet north of the intersection of the westbound I-10 ramps with Mesa Drive. The intersection of Black Rock Road, Hobsonway, and Mesa Drive is controlled with stop signs on the Hobsonway and Black Rock Road approaches.

1 This manual is a common guide used for computing the capacity and quality of service of various highway facilities, including highways, arterial roads, signalized and unsignalized intersections and the effects of mass transit, pedestrians, and bicycles on the performance of these systems.

Access Road

Access to the site would be from Black Rock Road via a driveway leading to the site. Currently, the driveway is unpaved. An all-weather access road would be constructed to meet all Riverside County and local requirements, including those for access of emergency vehicles such as fire trucks and ambulances.

Mesa Drive

Mesa Drive is a two-lane, two-way roadway extending north and south from I-10 at the easterly edge of the Blythe Airport. The paved section of Mesa Drive north of I-10 currently ends at the intersection of Black Rock Road and Hobsonway. Between I-10 and Hobsonway, Mesa Drive is a paved road approximately 30-feet wide. From Hobsonway, Mesa Drive is a paved road approximately 70-feet wide, and extends approximately 1,000 feet north before ending in a cul-de-sac adjacent to the Blythe Airport.

Hobsonway

Black Rock Road continues as Hobsonway east of Mesa Drive. Hobsonway continues east for approximately 11 miles then turns southwest as Riviera Drive. Riviera Drive continues for approximately two miles before terminating at US Route 95. According to the *City of Blythe General Plan*, Chapter 4, Circulation Element, Hobsonway is considered the city of Blythe's "Main Street."

Access to the BSPP would be off I-10 to Mesa Drive either by Exit 232 (West) or Mesa Drive (East) interchange. Travelers would drive northerly about 300 feet to Black Rock Road, then westerly on Black Rock Road to a new driveway extending northerly into the site.

The proposed action also would include a seven-mile transmission line running south from the site; crossing I-10; and turning west to tie into Southern California Edison's proposed Colorado River substation as well as a four-inch diameter natural gas pipeline heading two miles south from the proposed site and connecting to an existing Southern California Gas Company main pipeline south of I-10.

Public Transportation within the Vicinity of the BSPP

Public transportation within the vicinity of the proposed action consists of an airport, rail services, bicycle and pedestrian facilities. Information about those forms of public transportation follows.

Blythe Airport

The nearest airport facility to the BSPP site is the Blythe Airport. Blythe Airport is a public facility located approximately six miles west of the City of Blythe and approximately one mile south and east of the site. The airfield has been open since 1940, when it was known as Bishop Army Airfield. The airport later became a part of Muroc Army Air Field, now known as Edwards Air Force Base.

Blythe Airport has two operating runways, Runway 8-26 (oriented east-west), the primary runway, is 6,562 feet long, 150 feet wide. Runway 17-35 (oriented north-south) is 5,820 feet long, 100 feet wide. Today, Blythe Airport is primarily used for general aviation (i.e., flights other than military and regularly-scheduled airline service and regular cargo flights).

Current Operations

Current operations at Blythe Airport are limited. For the 12-month period ending in 2006, aircraft operations averaged 69 takeoffs or landings per day or more than 25,000 operations per year. Of these, approximately 50 percent were characterized as transient general aviation; approximately 50 percent local general aviation and less than 1 percent military.

According to the *Palo Verde Valley Area Plan*, which is an extension of the Riverside County General Plan, the Blythe Airport is also used as a base for crop spraying operations, airplane rentals, and flight instruction.

Future Operations

To carry out its responsibilities, in 2004 the ALUC published an airport compatibility plan. This compatibility plan is based on the Airport Master Plan adopted by the Riverside County Board of Supervisors in 2001. The plan is based on an assumption of long-range future activity of 58,100 annual aircraft operations, including up to 2,200 airline aircraft operations.

The theoretical ultimate airport activity as envisioned in the plan includes a large number of large jet transport aircraft operations. Accordingly, the Airport Master Plan includes a proposal for extending Runway 8-16 to 3,450 feet westward for a total length of 10,012 feet.

Rail Service

The Arizona & California Railroad Company, which has provided rail service to Blythe, filed a petition to abandon service with the Surface Transportation Board[2] on March 12, 2009. If granted, the petition would allow the railroad to abandon rail service in San Bernardino County and Riverside County. An Offer of Financial Assistance (OFA) stayed the decision until January 13, 2010. On that date, the Surface Transportation Board ruled that the Arizona & California Railroad Company could abandon service in San Bernardino County and Riverside County. Consequently, no rail service is available in Blythe at this time.

In addition, no regional passenger railroad transportation exists in the immediate area. The nearest rail passenger service is an Amtrak Station in Palm Springs (approximately 115 miles to the west) or in Yuma, Arizona (approximately 90 miles to the east). Local bus transportation is provided by the Palo Verde Valley Transit Agency (PVVTA).

2 The Surface Transportation Board is a federal economic regulatory agency charged with resolving railroad rate and service disputes and reviewing proposed rail mergers, rail line purchases, constructions and abandonments.

Bus Routes

Palo Verde Valley Transit Agency operates three fixed bus routes as well as a dial-a-ride service. National bus service is provided by Greyhound Lines, which has a station in Blythe.

Bicycle and Pedestrian Facilities

Generally, neither bicycle nor pedestrian facilities are located in the vicinity of the BSPP site; such activities are limited to shoulders of rural highways and Country roads. However, bicycles are allowed on I-10 from Dillon Road in Coachella to Mesa Drive in Blythe.

In addition, Hobsonway from Mesa Drive east toward the City of Blythe is designated as a Class II Bikeway in the Circulation Element of the Blythe General Plan. Mesa Drive and Black Rock Road are not designated bikeways.

3.18 Vegetation Resources

3.18.1 Introduction

The Sonoran Desert region of southeastern California, a region bounded by the Mojave Desert to the north and by the higher elevations of the Peninsular Ranges to the west, has a uniquely 'tropical' warm desert climate influenced by the addition of monsoonal summer rains; a contrast to the dry summer Mediterranean climate that characterizes much of California. This under-surveyed southeastern corner of California has a bi-modal rainfall pattern, with cooler late fall and winter rains that originate in the North Pacific Ocean, and tropical summer storms from southern Mexico (Conservation Biology Institute 2009).

The unique position of the region at the junction with the Neotropic ecozone to the south contributes to the presence of a number of rare and endemic plants and vegetation communities specially adapted to this bi-modal rainfall pattern, and not found elsewhere in California. These include microphyll woodlands, palm oases, and a number of summer annuals that only germinate after a significant warm summer rain.

This distinctive bi-modal climate of the Sonoran Desert distinguishes it, floristically, from other deserts, including the Mojave Desert, and from the rest of California, which is characterized by warm dry summers and a single rainy season in winter. In addition to being hotter and drier, the Sonoran Desert region also rarely experiences frost. Although the region supports numerous perennial species, including a wide variety of cacti, more than half of the region's plant species are herbaceous annuals, which reveal themselves only during years of suitable precipitation and temperature conditions.

This region also occupies an important biogeographic location and zone of ecological transition on the Pacific coast of North America, and so its floristic diversity includes many widespread taxa on the edge of their range. This includes all of the California Native Plant Society (CNPS) List 2 plants occurring in the region—species that are more common outside of California but here they represent geographically marginal, peripheral populations on the frontiers of their range. The evolutionary significance—and therefore the conservation value—of peripheral populations are well documented, as is their greater risk of extirpation (Leppig & White 2006).

3.18.2 Natural Communities

Five natural vegetation communities occur within the Biological Resources Study Area (Study Area), a 23,359.4-acre area that encompasses the Project Disturbance Area and its one-mile buffer. On the proposed solar facility, located approximately one-half to one mile north of I-10 on the Palo Verde Mesa (Figure 14), the communities present include Sonoran creosote bush scrub, desert dry wash woodland (Figure 15), vegetated ephemeral swales (supporting a desert wash scrub of creosote bush and big galleta grass), unvegetated ephemeral dry wash. Within the Sonoran creosote bush scrub community lie broad expanses of desert pavement, a distinctive but largely unvegetated habitat. Three other non-natural cover types occur in the Study Area in the eastern portion, including agriculture, disturbed, and developed. The gen-tie line crosses I-10 and terminates at the southeast end of Chuckwalla Valley at the proposed Colorado River Substation. This area includes stabilized and partially stabilized desert dunes associated with the Chuckwalla-Palen dune system. No dunes or sand fields occur on the proposed solar plant site (Figure 16).

Several desert washes of varying hydrologic capacity and size drain out of the McCoy Mountains from the west to east in the BSPP site (Figure 17 and 18). The majority of these washes support woody, riparian vegetation while drier, flashy washes located in the center of the site support a desert wash scrub of creosote bush and big galleta grass, with only widely scattered riparian trees. Active and fallow agriculture, developed, and disturbed areas also occur within a one-mile survey buffer area of the site in addition to the communities already mentioned (Solar Millennium 2009a). Two of the five communities, desert dry wash woodland and creosote bush-big galleta, are considered sensitive as indicated by the California Natural Diversity Database (CNDDB) (Solar Millennium 2009a, AECOM 2010a). These communities are discussed in more detail below. Vegetation communities were first classified by Holland and then cross-referenced with A Manual of California Vegetation (Sawyer and Keeler-Wolfe 1995), where appropriate.
Table 3.18-1 summarizes the acreage of natural communities that occurs within the Study Area (Solar Millennium 2009a, AECOM 2010a, AECOM 2010w).

TABLE 3.18-1
NATURAL COMMUNITIES/COVER TYPES

Vegetation Communities/Cover Type within Biological Resources Study Area[a]	Study Area
Ephemeral "Riparian" Drainages	
Desert dry wash woodland	870.7
Unvegetated ephemeral dry wash	11.4
Vegetated ephemeral swales (creosote bush-big galleta association)	473.6
Subtotal Ephemeral "Riparian"	*1,355.7*
Upland	
Sonoran creosote bush scrub	19,390.6
Stabilized and partially stabilized desert dunes	2,662.6
Subtotal Upland	*22,053.2*
Other Cover Types	
Agricultural Land	1,066.3
Developed	90.5
Disturbed	26.5
Subtotal Other Cover Types	*1,183.3*
Total Acres	**24,592.2**

NOTES:
[a] The Study Area encompasses the Project Disturbance Area (area inside and outside the facility fence that would be disturbed by the project), the solar facility footprint area inside the facility fence including solar fields and other support structures and facilities, a 1-mile buffer area, and entire transmission line route and substation site footprint and 1-mile buffer area.

SOURCE: AECOM 2010q, AECOM 2010w

Upland

Sonoran Creosote Bush Scrub

Sonoran creosote bush scrub occurs on well-drained, secondary soils of slopes, fans, and valleys and is the basic creosote scrub species of the Colorado Desert (Holland 1986). Within the Study Area, this community dominates and is characterized by sandy soils with a shallow clay pan and is the dominant vegetation community throughout the entire Study Area. The indicator plant species within this community are creosote bush (*Larrea tridentata*), white bursage (*Ambrosia dumosa*), brittlebush (*Encelia farinosa*), ocotillo (*Fouqueria splendens*), and cheesebush (*Hymenoclea salsola*) (Solar Millennium 2009a).

Stabilized and Partially Stabilized Desert Dunes

These dune systems are described as accumulations in the desert which are stabilized or partially stabilized by evergreen and/or deciduous shrubs and scattered, low grasses. Sand Dune communities were recognized as sensitive in the NECO Plan (Figure 19). These dunes typically occur lower than active dune systems and retain water just below the sand surface which allows deep-rooted, perennial vegetation to survive during longer drought periods. The dominant plant species associated with this community include four-wing saltbush (*Atriplex canescens*), desert croton (*Croton californicus*), and Colorado Desert buckwheat (*Eriogonum deserticola*) (Holland 1986).

The Colorado River Substation site and the western section of the gen-tie line alignment are exclusively within this habitat. The dunes within the Study Area are an important habitat type for the Mojave fringe-toed lizard, Harwood's phlox, western burrowing owl, American badger, and desert kit fox, as well as a variety of common plant and wildlife species.

Ephemeral "Riparian" Drainages

Virtually all surface hydrology within the Study Area is from stormwater runoff originating in unnamed ephemeral washes west of the BSPP site from the McCoy Mountains and flowing eastward to the Palo Verde Mesa. These washes are a component of a large alluvial fan that generally comprises the Palo Verde Mesa (Galati & Blek 2009a). The closest major watercourse to the Study Area is the McCoy Wash, a large ephemeral wash that drains to the Colorado River. The McCoy Wash is located outside the Project Disturbance Area and the ephemeral washes that flow eastward from the McCoy Mountains abate into the landscape prior to any surface hydrological connection with the McCoy Wash.

The ephemeral drainages within the Study Area are generally microfloodplains with compound channels, is a common arid stream system (USACE 2008). With any compound/anastomosing ephemeral stream system in arid regions, the riparian corridor can be populated and lined with xeric riparian vegetation and unvegetated areas such as recently created swales and terraces (interfluves), or a mosaic of these types (Bendix and Hupp 2000). While the bed and bank topography in arid region stream systems are subtle, evidence of channelized flow fundamentally defines the presence of a stream. Swales are depressions or hollows, oftentimes vegetated but not necessarily so, where runoff from the surrounding uplands accumulates. Three communities have been identified in the Study Area that occupy ephemeral drainages. These are Desert Dry Wash Woodland, Vegetated Swales supporting Creosote Bush-Big Galleta Grass Association, and Unvegetated Ephemeral Dry Washes.

Desert Dry Wash Woodland

Desert dry wash woodland is a sensitive vegetation community by the BLM (NECO Plan), California Natural Diversity Data Base (CNDDB), and is also designated as state waters by the California Department of Fish and game (CDFG) (Figure 15). This vegetation community corresponds to CDFG's Blue Palo Verde-Ironwood-Smoke Tree Woodland habitat type (AECOM 2010a). This community is described by Holland as an open to densely covered, drought-deciduous, microphyll riparian scrub woodland. These habitat types often support braided wash channels that change patterns and flow directions following every surface flow event (Holland 1986). Typical indicator plant species of this community include but are not limited to blue palo verde (*Parkinsonia florida*), cheesebush, smoke tree (*Psorothamnus spinosus*), sweetbush (*Bebbia juncea* var. *aspera*), tamarisk (*Tamarisk* spp.), and catclaw acacia (*Acacia gregii*).

This community is dominated by an open tree layer of blue palo verde, honey mesquite, ironwood, and smoke tree with an understory of big galleta grass (*Pleuraphis rigida*), desert starvine (*Brandegea bigelovii*), and intermixed creosote scrub (*Larrea tridentata*) and Russian thistle (*Salsola tragus*) (Solar Millennium 2009a, AECOM 2010a). Desert dry wash woodland habitat was surveyed for wildlife use during December 2009 and various signs of coyote (*Canis latrans*), fox (either kit fox or gray fox) and bobcat (*Lynx rufus*) were observed. This habitat provides value to various species of wildlife in the form as food, cover, dispersal, and refuge habitat (AECOM 2010a).

Vegetated Swales Supporting Creosote Bush-Big Galleta Grass Association

This vegetation community is relatively uncommon in California deserts (AECOM 2010a, Preliminary Habitat Mitigation and Monitoring Plan); it is not defined by Holland but is a subcomponent of Sonoran creosote bush scrub, part of the big galleta alliance as defined by CDFG, and is a special community according to CNDDB. It was mapped and documented under the recent detailed mapping of the Mojave Desert region (Thomas et al. 2004; Sawyer, Keeler-Wolf & Evans 2009) and is defined by CDFG as a rare natural community, with a CNDDB State (NatureServe) Rank of G3 S2.2 (CDFG considers natural communities with a State Rank 3 or less to be rare). Communities with a State Rank of 3 have less than 100 documented occurrences or are represented by fewer than 50,000 acres statewide. Within the Study Area, the creosote bush – big galleta grass community occurs as an understory component in the washes within the desert dry wash woodland and continues along the drier reaches of ephemeral desert washes where sandy fluvium collects. Dominant and indicator plants of this community include creosote bush, big galleta grass, and cheesebush, another characteristic perennial of ephemeral desert washes. Occasional associates found within this community include brownplume wirelettuce (*Stephanomeria pauciflora* var. *pauciflora*), Utah cynanchum (*Cynanchum utahense*), Hartweg's twinevine (*Sarcostemma cynanchoides* ssp. *hartwegii*), and trailing townula (*Sarcostemma hirtellum*) (AECOM 2010 a, Preliminary Habitat Mitigation and Monitoring Plan). This desert wash community often occurs as the only vegetated habitat in broad expanses of desert pavement, which increases its value to wildlife.

Unvegetated Ephemeral Dry Washes

This habitat community occurs within the transition zone between desert dry wash woodland in higher elevation areas and creosote bush-big galleta grass communities in flatter areas. Unvegetated dry washes provide movement corridors for small and large mammals and provide a seasonal water source not available in the surrounding dry uplands. Even the smaller washes have been shown to support a higher density of spring and summer annuals than the surrounding uplands and thus provide important habitat value.

Unvegetated ephemeral dry washes are defined by shelving and/or scour resulting in an established bed, bank, and channel. In areas where evidence of distinct shelving and/or scour were absent, but some indication of past surface water flow could be observed, it was ascertained that these features were either swales (that support low volume and duration surface flow and/or were low lying undefined relatively linear features in the landscape that are unvegetated or primarily populated exclusively by Sonoran creosote bush scrub) or eroded relictual washes (that support sheet flow) during rain events.

The ephemeral washes in the Project Disturbance Area are generally linear features collectively composed of multiple, sinuous subchannels of varying sizes, resulting in anastomosed morphology. By virtue of the anastomosed morphology occurring within the washes, there are interfluves that have been formed by these multiple subchannels. Within the unvegetated ephemeral dry wash, there are interfluves of Sonoran creosote bush scrub habitat between the channels of the dry washes. These interfluves are upland features, encompassed by unvegetated ephemeral dry wash, and are not considered jurisdictional waters of the United States.

Functions and Values of Ephemeral Drainages

The ephemeral washes within the Study Area provide significant hydrologic, biogeochemical, plant and wildlife functions.

Hydrologic Function

The established washes and ancillary drainage features are the primary fluvial systems within the Study Area, and these provided a significant potential for aquifer recharge during storm events. The vegetated swales are the secondary fluvial system which does not present a significant potential for aquifer recharge. However, the vegetated swales present high functions and values for surface water quality (USACE 1979). The ephemeral washes are not sufficiently developed to abate flooding in severe storms. However, the unvegetated portions of the ephemeral washes, and swale features and networks can intercept runoff and slow down the velocity of surface water and potentially remove or transform pollutants through physical, chemical, and biological processes improving water quality.

Biogeochemical Function

The xeric riparian areas potentially provide a sink for nutrients, organic compounds, metals, and components of organic matter. The desert dry wash woodland may also act as filters of sediments and organic matter. The xeric riparian areas may be a permanent sink for these substances. The inputs of detritus within the wash presents basic energy inputs at an ecosystem level for biochemical processes, nutrient cycling, and elemental import/export processes, which for desert dry wash woodland, are also functioning at a relatively high value level in comparison with the surrounding upland areas. Lacking established wash obligate vegetation for additional organic and inorganic inputs and uptake the unvegetated ephemeral dry washes are likely functioning at a relatively moderate to low level. The vegetated swale features and networks supporting low volume and short duration flow presents a moderate to low function and value for biogeochemical function and a high function and value for the retention of particulates during storm events (USACE 1979).

Plant Habitat Function

The ephemeral washes and vegetated swale networks provide habitat for establishment of more developed plant diversity and developed spatial structure because of access to water relative to upland areas. The diversity of plants also provides habitat to special-status species, discussed below. Desert dry wash woodland and vegetated swales offer high functions and value for plant habitat function and unvegetated ephemeral dry wash would present a moderate to low functions and values for plant habitat function.

Animal Habitat Function

The xeric riparian areas and unvegetated ephemeral dry washes are integral to the ecological function of the watershed. The ephemeral washes, both vegetated and unvegetated, and vegetated swale networks provide unique wildlife habitat with a diversity of vegetative and topography. Ephemeral washes provide foraging habitat, opportunities for burrowing and nesting, and corridor for wildlife movement.

Other Cover Types

Agriculture

In fallow agricultural areas, ruderal vegetation is recolonizing previously farmed areas including Russian thistle (*Salsola tragus*), Sahara mustard (*Brassica tourneforteii*), and other exotic plant species interspersed with native vegetation from past agricultural disturbance and activities (Solar Millennium 2009a). Fallow and active agriculture fields provide habitat value to local and migratory wildlife in the form of food, cover, and shelter habitat, especially if fields are actively irrigated.

Developed

Developed areas consist of paved and unpaved areas associated with I-10, dirt access roads, a large concrete military runway and cleared land within the Study Area (Solar Millennium 2009a). Paved roadways are often times used by mammals and cold-blooded species as movement corridors and/or as heat sources during cooler months or periods of the day in order to increase body temperatures.

Disturbed

Disturbed cover type consists of roads within the buffer area of the Colorado River Substation site (Solar Millennium 2009b).

Invasive & Noxious Weeds

Noxious weeds are species of non-native plants included on the weed lists of the California Department of Food and Agriculture (CDFA) (CDFA 2007), the California Invasive Plant Council (Cal-IPC), or those weeds of special concern identified by the Bureau of Land Management (BLM). They are of particular concern in wild lands because of their potential to degrade habitat and disrupt the ecological functions of an area (Cal-IPC 2006). Specifically, noxious weeds can alter habitat structure, increase fire frequency and intensity, decrease forage (including for special-status species, such as desert tortoise), exclude native plants, and decrease water availability for both plants and wildlife. Soil disturbance and gathering and channeling water create conditions favorable to the introduction of new noxious weeds or the spread of existing populations. Construction equipment, fill, and mulch can act as vectors introducing noxious weeds into an area.

Non-native plant species were recorded as a part of surveys conducted in support of the proposed action (AECOM 2010w). Twelve non-native species were observed within the Study Area: Sahara mustard, Russian thistle, salt cedar, Mediterranean grass, red brome, Bermuda grass, barley, sour clover, London rocket, nettleleaf goosefoot, sour clover, and brome fescue. Of these, five are noxious weeds and are identified on a list of the region’s worst weeds compiled by the Low Desert Management Area (NRCS 2005). Noxious weeds found in the Study Area are discussed further below.

Sahara mustard (*Brassica tournefortii*) was found in disturbed areas throughout the Study Area (AECOM 2010a). This species is of high concern; it is a BLM weed of special concern and Cal-IPC has declared this plant highly invasive (Cal-IPC 2006) and recommends that it should be eradicated whenever encountered. This species is associated with impacts to habitat for native wildlife as well as for native plants. It promotes the spread of fire by increasing fuel load and competes with native plants for moisture and nutrients. In addition, it increases cover and works to stabilize sand, thereby affecting wildlife species dependent on open sandy habitat (Brossard et al. 2000; Barrows and Allen 2007).

Russian thistle (*Salsola* sp.) was found in disturbed areas throughout the Study Area (AECOM 2010a). Although all invasive plants share the trait of being adapted to disturbed habitat, Russian thistle or tumbleweed particularly tends to be restricted to roadway shoulders and other sites where the soil has been recently disturbed. However, once an area is disturbed this species competes readily and can affect native plant ecosystems and increase fire hazard (Orloff et al. 2008; Lovich 1999).Dune habitat is particularly vulnerable to non-native species, which can stabilize sand or block sand movement, and Russian thistle is considered an invasive species of primary concern in this habitat (CDFG 2007). There is a high potential that Russian thistle could become established in the construction area and this species should be eradicated if observed.

Cal-IPC has determined that this plant has a limited invasiveness rating in California (Cal-IPC 2006) and the California Department of Food and Agriculture (CDFA) has given it a “C” rating. A C rating means that the pest is of known economic or environmental detriment and, if present in California, it is usually widespread. If found in the state, they are subject to regulations designed to retard spread or to suppress at the discretion of the individual county agricultural commissioner. There is no state enforced action other than providing for pest cleanliness.

Mediterranean tamarisk or salt cedar (*Tamarix ramosissima*) is a riparian plant and is therefore restricted to habitats where there is perennial saturation such as springs and seeps, or runoff from poorly maintained water pipelines or well pumps. It was observed interspersed throughout desert dry wash woodland within the Study Area. Cal-IPC has declared this plant highly invasive (Cal-IPC 2006) and it is a CDFA “B” rated species. A “B”-rated pest is of known economic or environmental detriment and, if present in California, it is of limited distribution. If found in the state, they are subject to state endorsed holding action and eradication only to provide for containment, as when found in a nursery. At the discretion of the individual county agricultural commissioner they are subject to eradication, containment, suppression, control, or other holding action. Salt cedar is associated with many ecological impacts including impacts to channel geomorphology, groundwater availability, plant species diversity, and fire frequency (Lovich 1999). Salt cedar can also affect sand dunes by blocking sand movement, a vital part of the natural function of these habitats (CDFG 2007).

Mediterranean grass (*Schismus arabicus, S. barbatus*) is prevalent throughout Sonoran creosote bush scrub within the Study Area. Mediterranean grass is an annual that reproduces by seed, and is widespread in arid and semi-arid California landscapes. This species competes effectively with native plants for nutrients and water and can provide cover that prevents native annuals from sprouting (VanDevender et al. 1997; Brossard et al. 2000) and contributes to dune stabilization (CDFG 2007). Fire, historically, was rare in the Colorado Desert. However, the presence of Mediterranean grass on other annual non-native grasses has provided a continuous and increased fuel load, influencing the extent, frequency, and intensity of fire in these ecosystems (Brooks and Pyke 2001; Brooks et al. 2004). BLM and other agencies recognize that because of the widespread distribution of Mediterranean grass, this species is not considered feasible to eradicate.

Red brome (*Bromus madritensis* ssp. *rubens*) is an introduced Eurasian grass adapted to microhabitats that can be frequently found at the base of desert shrubs. It can also form carpet cover in pockets of fine grained soils in rough terrain off the bajada. It is found throughout California, especially in southern California, and is spreading rapidly in many vegetation communities including desert scrub. Seeds from this species can disperse readily and across large distances. Cal-IPC has declared this plant highly invasive (Cal-IPC 2006). Because of its widespread distribution, red brome is not considered feasible for general control.

3.18.3 Special Status Plants

Special-status plants are those species that have been afforded special recognition by federal, state, or local resource agencies or organizations. Listed and special-status species are of relatively limited distribution and typically require unique habitat conditions. Special-status species are defined as meeting one or more of the following criteria:

1. Listed as threatened or endangered or candidates for future listing as threatened or endangered under the federal Endangered Species Act (FESA) or California Endangered Species Act (CESA);

2. Listed as species of concern by CDFG;

3. A plant species considered by the CNPS to be “rare, threatened, or endangered in California” (CNPS List 1A, 1B, and 2) as well as CNPS List 3 and 4[1] plant species;

4. A plant listed as rare under the California Native Plant Protection Act[2];

5. Considered a locally significant species, that is, a species that is not rare from a statewide perspective but is rare or uncommon in a local context such as within a county or region or is so designated in local or regional plans, policies, or ordinances; or

BLM designates “Sensitive” species as those requiring special management considerations to promote their conservation and reduce the likelihood and need for future listing under FESA. BLM Sensitive species include all Federal Candidate and Federally Delisted species which were so designated within the last five years, and CNPS List 1B species that occur on BLM lands. For the purposes of this document all BLM Sensitive species included as special-status species.

Table 3.18-2 lists all special-status species evaluated during the analysis that are known to occur or could potentially occur in the vicinity of the proposed action. Special-status species detected within the vicinity are discussed in more detail below. Special-status species observed during the 2009 field surveys are indicated by **bold-face type** (AECOM 2009). Additional surveys were conducted in 2010 by AECOM and were available on June 16, 2010 (AECOM 2010w).

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1 List 3 plants may be analyzed under CEQA §15380 if sufficient information is available to assess potential impacts to such plants. Factors such as regional rarity vs. statewide rarity should be considered in determining whether cumulative impacts to a List 4 plant are significant even if individual project impacts are not. CNPS List 3 and 4 may be considered regionally significant if, e.g., the occurrence is located at the periphery of the species' range, or exhibits unusual morphology, or occurs in an unusual habitat/substrate. For these reasons, CNPS List 3 and 4 plants should be included in the field surveys. List 3 and 4 plants are also included in the California Natural Diversity Database’s (CNDDB) Special Plants, Bryophytes, and Lichens List. [Refer to the current online published list available at: http://www.dfg.ca.gov/biogeodata.] Data on Lists 3 and 4 plants should be submitted to CNDDB. Such data aids in determining or revising priority ranking (CDFG 2009).

2 As defined by the California Native Plant Protection Act, a plant is rare when, although not presently threatened with extinction, the species, subspecies, or variety is found in such small numbers throughout its range that it may be endangered if its environment worsens (Fish and Game Code §1901) (CDFG 2009).

TABLE 3.18-2
SPECIAL-STATUS PLANTS KNOWN TO OR WITH POTENTIAL TO OCCUR IN THE BLYTHE SOLAR POWER PROJECT BIOLOGICAL RESOURCES STUDY AREA

Common Name	Scientific Name	Status State/Fed/CNPS/BLM/ Global Rank/State Rank
PLANTS		
Chaparral sand verbena	*Abronia villosa var. aurita*	__/__/1B.1/S/G5T3T4/S2.1
Angel trumpets	*Acleisanthes longiflora*	__/__/2.3/__/G5/S1.3
Desert sand parsley	*Ammoselinum giganteum*	__/__/2.3/__/G2G3/SH
Small-flowered androstephium	*Androstephium breviflorum*	__/__/2.2/__/G5/S2[a]
Harwood's milk-vetch	***Astragalus insularis var. harwoodii***	**__/__/2.2/__/G5T3/S2.2?**
Coachella Valley milk-vetch	*Astragalus lentiginosus var. coachellae*	__/FE/1B.2./S/G5T2/S2.1
California ayenia	*Ayenia compacta*	E/__/2.3/__/G4/S3.3
Pink fairy duster	*Calliandra eriophylla*	__/__/2.3/__/G5/S2.3
Sand evening-primrose	*Camissonia arenaria*	__/__/2.2/__/G4?/S2
Crucifixion thorn	*Castela emoryi*	__/__/2.3/__/G3/S2.2
Abram's spurge	*Chamaesyce abramsiana*	__/__/2.2/__/G4/S1.2
Arizona spurge	*Chamaesyce arizonica*	R/__/2.3/__/G5/S1.3
Flat-seeded spurge	*Chamaesyce platysperma*	__/__/1B.2/S/G3/S1.2?
Las Animas colubrina	***Colubrina californica***	**__/__/2.3/__/G4/S2S3.3**
Spiny abrojo/Bitter snakeweed	*Condalia globosa var. pubescens*	__/__/4.2/__/G5T3T4/S3.2
Foxtail cactus	*Coryphantha alversonii*	__/__/4.3/__/G3/S3.2
Ribbed cryptantha	***Cryptantha costata***	**__/__/4.3/__/G4G5/S3.3**
Winged cryptantha	*Cryptantha holoptera*	__/__/4.3/__/G3G4/S3?
Wiggins' cholla	*Cylindropuntia wigginsii (syn=Opuntia wigginsii)*	__/__/3.3/__/G3?Q/S1.2?
Utah milkvine	***Cynanchum utahense***	**__/__/4.2/__/G4/S3.2**
Glandular ditaxis	*Ditaxis claryana*	__/__/2.2/__/G4G5/S1S2
California ditaxis	*Ditaxis serrata var. californica*	__/__/3.2/__/G5T2T3/S2.2
Harwood's eriastrum	***Eriastrum harwoodii***	**__/__/1B.2/S/G2/S2**
California satintail	*Imperata brevifolia*	__/__/2.1__/G2/S2.1
Cottontop cactus	***Echinocactus polycephalus* var. *polycephalus***	**__/__/__/__/__/__**
Pink velvet mallow	*Horsfordia alata*	__/__/4.3/__/G4/S3.3
Bitter hymenoxys	*Hymenoxys odorata*	__/__/2/__/G5/S2
Spearleaf	*Matelea parvifolia*	__/__/2.3/__/G5?/S2.2
Argus blazing star[b]	*Mentzelia puberula*	__/__/__/__/__/__
Slender woolly-heads	*Nemacaulis denudata var. gracilis*	__/__/2.2/__/G3G4T3?/S2S3
White-margined penstemon	*Penstemon albomarginatus*	__/_ /1B.1/S/G2/S1
Lobed cherry	*Physalis lobata*	__/__/2.3/__/G5/S1.3
Desert portulaca	*Portulaca halimoides*	__/__/4.2/__/G5/S3
Desert unicorn plant	***Proboscidea althaeifolia***	**__/__/4.3/__/G5/S3.3**
Orocopia sage	*Salvia greatae*	__/__/1B.3./S/G2/S2.2
Desert spikemoss	*Selaginella eremophila*	__/__/2.2./__/G4/S2.2?
Cove's cassia	*Senna covesii*	__/__/2.2/__/G5?/S2.2

**TABLE 3.18-2 (Continued)
SPECIAL-STATUS PLANTS KNOWN TO OR WITH POTENTIAL TO OCCUR
IN THE BLYTHE SOLAR POWER PROJECT BIOLOGICAL RESOURCES STUDY AREA**

Common Name	Scientific Name	Status State/Fed/CNPS/BLM/ Global Rank/State Rank
PLANTS (cont.)		
Mesquite nest straw	*Stylocline sonorensis*	__/__/1A/__/G3G5/SX
Dwarf germander	*Teucrium cubense ssp. depressum*	__/__/2.2/__/G4G5T3T4/S2
Jackass clover	*Wislizenia refracta ssp. refracta*	__/__/2.2/__/G5T5?/S1.2?
Palmer's jackass clover[c]	*Wislizenia refracta ssp. palmeri*	__/__/?/__/__/__

NOTES:

a As defined by the California Native Plant Protection Act, a plant is rare when, although not presently threatened with extinction, the species, subspecies, or variety is found in such small numbers throughout its range that it may be endangered if its environment worsens (Fish and Game Code §1901) (CDFG 2009).

b Proposed new addition to the CNPS Inventory (Andre, pers comm)

c Proposed new addition to the CNPS Inventory (Silverman, pers comm)

Status Codes:

Federal

FE = Federally listed endangered: species in danger of extinction throughout a significant portion of its range
FT = Federally listed, threatened: species likely to become endangered within the foreseeable future
BCC: Fish and Wildlife Service: Birds of Conservation Concern: Identifies migratory and non-migratory bird species (beyond those already designated as federally threatened or endangered) that represent highest conservation priorities <www.fws.gov/migratorybirds/reports/BCC2002.pdf>

State

CSC = California Species of Special Concern Species of concern to CDFG because of declining population levels, limited ranges, and/or continuing threats have made them vulnerable to extinction.
SE = State listed as endangered
ST = State listed as threatened
WL = State watch list

California Native Plant Society

List 1A = Includes plants that are both presumed extinct in California, as well as those plants which are presumed extirpated in California
List 1B = Rare, threatened, or endangered in California and elsewhere
List 2 = Rare, threatened, or endangered in California but more common elsewhere
List 3 = Plants which need more information
List 4 = Limited distribution – a watch list
0.1 = Seriously threatened in California (high degree/immediacy of threat)
0.2 = Fairly threatened in California (moderate degree/immediacy of threat)
0.3 = Not very threatened in California (low degree/immediacy of threats or no current threats known)

Bureau of Land Management

BLM Sensitive = Species that require special management consideration to avoid potential future listing under the ESA and that have been identified in accordance with procedures set forth in BLM Manual section 6840.http://www.blm.gov/pgdata/etc/medialib/blm/wo/Information_Resources_Management/policy/blm_manual.Par.43545.File.dat/6840.pdf.

Global Rank/State Rank

Global rank (G-rank) is a reflection of the overall condition of an element throughout its global range. Subspecies are denoted by a T-Rank; multiple rankings indicate a range of values

G1 or S1 = Less than 6 viable element occurrences (EOs) OR less than 1,000 individuals
G2 or S2 = 6-20 EOs OR 1,000-3,000 individuals
G3 or S3 = 21-100 EOs OR 3,000-10,000 individuals
G4 or S4 = Apparently secure; this rank is clearly lower than G3 but factors exist to cause some concern; i.e., there is some threat, or somewhat narrow habitat.
G5 or S5 = Population or stand demonstrably secure to ineradicable due to being commonly found in the world.
State rank (S-rank) is assigned much the same way as the global rank, except state ranks in California often also contain a threat designation attached to the S-rank. An H-rank indicates that all sites are historical

.1 = very threatened
.2 = threatened
.3 = no current threats known

SOURCES: CNDDB 2010

The results of the spring 2010 surveys of the entire Study Area and the proposed expansion of the Colorado Substation and gen-tie line corridor were submitted on May 10, 2010 (AECOM 2010u); the results of these new surveys are incorporated into the discussion of existing conditions below. The full botanical report was submitted on June 16, 2010(AECOM 2010w).

Desert Unicorn Plant

Desert unicorn plant is a CNPS List 4.3 species meaning it is not currently threatened or vulnerable but considered to have limited distribution in California. Desert unicorn plant is also a plant species covered under the Northern and Eastern Colorado Desert Coordinated Management Plan (NECO) (BLM CDD 2002) and it has a CNDDB (NatureServe) Global and State Rank of G5 S3.3. This plant occurs in Sonoran desert scrub habitats in San Bernardino, Imperial, and Riverside counties of California, and extends south into Baja and east into New Mexico. This is a low-growing, perennial species that occurs in sandy soils along washes. There are 13 records known from the NECO planning area in Milipitas Wash, Chuckwalla Valley, and Chemehuevi Valley (BLM CDD 2002). There are no records in the CNDDB for the entire state of California, but there are 36 records in the Consortium of California Herbaria from Riverside, Imperial, San Bernardino, and San Diego counties, several of which are from the Chuckwalla Mountains and Desert Center area and the Ford Dry Lake area (CCH 2010). The blooming period for this species is from May to August. Desert unicorn plant was identified within the BSPP area during spring 2009 field surveys from a single collection of fruits from an unvegetated wash in the center of the facility footprint area. In spring 2010, a wetter year, 26 additional plants were found, mostly in the in the southern portion of the BSPP Study Area.

Harwood's Milk-vetch

Harwood's milk-vetch is a CNPS List 2.2 plant species, which means that it is classified as fairly endangered in California, but more common elsewhere (CNPS 2009); it is also a plant species covered under NECO (BLM CDD 2002) (Figure 20). This is an annual herb species that mainly occurs in Sonoran desert scrub habitat and occurs throughout the Colorado Desert (BLM CDD 2002). This species is found in desert dunes and sandy or gravelly areas throughout the Mojavean and Sonoran deserts covering portions of Riverside, and San Diego counties (CNPS 2009). It is documented with 21 occurrences in CNDDB and 42 records in the California Consortium of California Herbaria (roughly half of which are duplications of the CNDDB occurrences). Occurrences in the vicinity of the proposed action include: Wiley's Well Road between McCoy and Mule Mountains, Ogilby Road in Imperial County, and three locales west of Blythe, the Pinto Basin, and Chuckwalla Basin in Riverside County. Several additional large occurrences have been documented in Chuckwalla Valley on other renewable energy projects between Ford Dry Lake and Palen Lake, and the spring 2010 surveys of the BSPP revealed an additional 2,748 plants; 677 of these were documented in the eastern portion of the solar plant site and gen-tie alignment; most were found in the one-mile buffer. Harwood's milk-vetch has also been reported from Baja California, Sonora Mexico, and portions of Yuma County, Arizona (Reiser 1994).

Las Animas Colubrina

Las Animas colubrina is a CNPS List 2.3 species indicating it is rare but not very endangered in California and more common elsewhere (CNPS 2009); it is also a plant species covered under NECO (BLM CDD 2002) (Figure 21). This species is an evergreen shrub, long recognized for its anti tumor properties, and occurs in Mojavean and Sonoran desert scrub (creosote bush series) and occurs at elevations from approximately 30 to 3,000 feet. Dry canyonlands in Mojavean desert scrub is the preferred habitat of this species (Reiser 1994). This species has also been reported from Joshua tree woodland habitats but primarily occurs in dry canyons with gravelly, sandy soils. The distribution of this species includes San Diego, Imperial, and Riverside counties; portions of Arizona; Baja California; and Sonora, Mexico. This species has been reported from isolated desert locales in Joshua Tree National Monument, the Eagle Mountains, and Chuckwalla Mountains (Reiser 1994). There are expected to be approximately 27 occurrences primarily from the Chocolate Mountains area (BLM CCD 2002, CNDDB 2010). Las Animas colubrina was observed within the BSPPStudy Area during spring 2009 field surveys; approximately 57 plants were observed within incised washes in the western portion of the Project Disturbance Area and 117 plants were within the survey buffer area. This species was observed flowering in April, the earliest that this species typically blooms (AECOM 2010a). No additional plants were found during the spring 2010 surveys.

Ribbed Cryptantha

Ribbed cryptantha is a CNPS List 4.3 species meaning it has a limited distribution but is not very endangered in California. This species typically occurs in loose friable soils in the eastern Mojave and Sonoran deserts in Imperial, Riverside, San Diego, and San Bernardino counties (CNPS 2009). Ribbed cryptantha occurs in the eastern Mojave Desert and the Sonoran Desert from California to Arizona and south to Baja California, Mexico. It commonly occurs in stabilized and partially stabilized desert dunes and sandy areas of Sonoran and Mojavean desert creosote bush scrub, which is the primary vegetation community that characterizes the Study Area (AECOM 2010a). There are 116 records of this species in the Consortium of California Herbaria database from several locations throughout Riverside, San Diego, and Imperial counties (CCH 2010).

This species was observed within the Study Area during spring 2009 field surveys but not mapped. In the spring 2010 surveys, over 71,000 of these annuals were documented in the entire Study Area and buffer; roughly half of these occur within the Project Disturbance Area. Similarly large populations have been found in Chuckwalla Valley between Ford Dry Lake and Palen Lake, and it is assumed that it occurs throughout the Chuckwalla Valley. All habitats within the Study Area are suitable for this species.

Winged cryptantha

Winged cryptantha is a CNPS List 4.3; it has a limited distribution but is not immediately threatened. It blooms March and April in Mojave and Sonora desert scrub from 300 to 5000 feet elevation. It is documented from Inyo County south through the Mojave and Sonora deserts to Sonora-Mexico and Baja California. As a CNPS List 4, it is not tracked in CNDDB but there are

79 records of this species in the Consortium of California Herbaria database (CCH 2010), including occurrences in the McCoy Mountains and on the Blythe area desert pavement habitats. This spring annual was not detected during the 2009 surveys but 15 plants were documented within the one-mile buffer; no plants were found within the Project Disturbance Area. An occurrence in the Project Disturbance Area, if detected, would occur near the center of the species range in California.

Cottontop Cactus

Cottontop cactus has no legally protected status. This species has been documented in Mojave and Sonoran deserts of Arizona, California, and Nevada, and also down into Mexico. Usually the species is found in rocky flats and washes, bajadas, rock ledges, Mojave and Sonoran desert scrub, igneous and calcareous substrates, at low elevations up to 1,700m (CalFlora, 2008). Occurrences in California range across San Bernardino, Riverside, Kern, Imperial, San Diego, and Inyo counties. Surveys performed in 2010 detected a small population of 16 plants; 10 of these were in the one-mile buffer.

California Barrel Cactus

California barrel cactus has no legally protected status. This species has been documented at many locations in the California desert. The species occurs uncommonly in gravelly or rocky areas at elevations below 1,500 m in the eastern Mojave Desert and western Sonoran (Colorado) Desert. Dozens of California barrel cactus were mapped in the Study Area in 2009 and 2010.

Harwood's Woollystar (=Harwood's Eriastrum)

Harwood's phlox, also known as Harwood's phlox, is a BLM Sensitive spring annual known from fewer than 20 occurrences worldwide. It is a CNPS List 1B.2 species, which indicates it is rare, threatened, or endangered throughout its range. This species is associated with sandy plains or dunes, but typically semi-stabilized soils (CNPS 2009). Its global range is restricted to 14 known occurrences in San Diego, Riverside, and San Bernardino counties, typically in dunes associated with the margins around dry lakes such as Dale, Cadiz, and Soda lakes. Surveys conducted in spring of 2010 located this plant primarily in the sandy areas around the substation site and along the transmission alignment south of I-10, where 2,134 plants were located and mapped within the Project Disturbance Area. Another approximate 1,300 plants were found in the one-mile buffer (AECOM 2010u, AECOM 2010w).

Utah Milkvine

Utah milkvine is on CNPS List 4.2 which indicates it is not rare or endangered from a statewide perspective but there are known or documented threats. This species occurs in Mojavean and Sonoran desert scrub habitats, typically sandy or gravelly soils, from approximately 500 feet to 4,300 feet in elevation (CNPS 2009). The range in California includes San Diego, Imperial, Riverside, and San Bernardino counties, and it extends into portions of Arizona, Nevada, and Utah. As a CNPS List 4, it is not tracked by CNDDB but there are 58 records of this species from the Consortium of California Herbaria database, primarily from San Bernardino and San Diego counties. There is one local record from the nearby Big Maria Mountains from wash and stabilized dune habitat at approximately 1,200 feet elevation (CCH 2010).

This species was identified within the Study Area during spring 2009 and 2010 field surveys; approximately 398 individual plants were identified within the washes draining from the McCoy Mountains on the western as well as the eastern portion of the Study Area. Suitable habitat for this species is present within the buffer area in the deeply incised washes (AECOM 2010a, DR-BIO-84, Figure DR-BIO-86). Suitable habitat also occurs within the gen-tie and proposed Colorado substation areas.

Other special status plants that were not detected and not expected in the Study Area are found in Table 3.18-3.

TABLE 3.18-3
SPECIAL-STATUS PLANTS WITH LOW TO MODERATE POTENTIAL TO OCCUR AT THE BSPP STUDY AREA

Species	Habitat Requirements and Geographic Range	Potential to Occur or Presence On Site
PLANTS		
Angel trumpets *Acleisanthes longiflora*	This species occurs in Sonoran desert scrub habitats on carbonate soils from approximately 200 to 300 feet above MSL. There are two records from the Consortium of California Herbaria from the Colorado Desert, Palo Verde area (CCH 2010).	This species is not expected to occur within the Study Area primarily since carbonate/limestone derived soils in mountainous areas do not occur within the Study Area (Solar Millennium 2009a). Also, the site is located at a higher elevation than the typical elevation where this species has been reported. The closest record of this species is in Big Maria Mountain approximately 15 miles northeast of the Study Area (AECOM 2010a).
Argus blazing star *Mentzelia puberula*	This plant species occurs in desert scrub and desert woodlands with limestone and granitic slopes above 2,000 feet in elevation. Based on 13 Consortium of California Herbaria database records for this species, this species has been collected from Riverside, San Bernardino, and Imperial counties from the Little and Big Maria Mountains in Riverside County.	This species is not expected to occur in the Study Area due to lack of limestone and granitic slopes which are soil types preferred by this species that are absent from the Study Area (AECOM 2010a). The BSPP site is located at approximately 800 feet above MSL which is well below the typical elevation where this species typically occurs.
Arizona spurge *Chamaesyce arizonica*	This species occupies sandy, Sonoran desert scrub habitat areas and has been reported from Imperial, Riverside, San Diego counties and portions of Arizona and Baja, California (CNPS 2009) from approximately 150 feet to 1,200 feet above MSL. There are 7 database records from the Consortium of California Herbaria primarily from San Diego County but also Riverside and Imperial counties often from sandy areas and transition areas between chaparral and desert habitats. The record from Riverside County is near Palm Springs from Andreas Canyon (CCH 2010).	Arizona spurge has a low potential to occur within the Study Area due to the presence of suitable habitat and appropriate elevation range of the BSPP site.
Bitter hymenoxys *Hymenoxys odorata*	Bitter hymenoxys grows riparian scrub and Sonoran desert scrub habitats from 150 feet to 500 feet above MSL. This plant species blooms from February through November (CNPS 2009). There are five CNDDB records for this species for the entire state of California, two of which occur in Riverside County; the nearest CNDDB occurrence is a historical record approximately 5 miles southeast of the site from sandy slope, low bottom lands and overflow flats (CNDDB 2010).	This species was not found during spring 2009 or 2010 field surveys.
Bitter snakeweed *Condalia globosa* var. *pubescens*	Also referred to by the common name, spiny abrojo. Bitter snakeweed occurs in Sonoran desert scrub from approximately 400 feet to 3,000 feet above MSL. Bitter snakeweed blooms from March through May (CNPS 2009). Based on 35 records Consortium of California Herbaria database, all records are from Imperial County except one from Riverside County, a record from 1,900 feet elevation from a relatively flat alluvial fan from Chuckwalla Bench (CCH 2010). There are no CNDDB records for this species for the State of California. The nearest record for this species is located approximately 22 miles south of the Study Area (AECOM 2010a).	This species was not observed during spring 2009 or 2010 field surveys.
California ayenia *Ayenia compacta*	This species occurs in Mojavean and Sonoran desert scrub habitats from approximately 500 to 3,300 feet above MSL. This species blooms from March through April. There are 29 records from the Consortium of California Herbaria database from the	This species was not observed during spring 2009 or 2010 field surveys.

TABLE 3.18-3 (Continued)
SPECIAL-STATUS PLANTS WITH LOW TO MODERATE POTENTIAL TO OCCUR AT THE BSPP STUDY AREA

Species	Habitat Requirements and Geographic Range	Potential to Occur or Presence On Site
PLANTS (cont.)		
California ayenia *Ayenia compacta* (cont.)	Anza Borrego area alone, one from Riverside County from a sandy wash in the Santa Rosa Mountains off Martinez Canyon (CCH 2010). The nearest CNDDB occurrence is a historical record from 1776 approximately 30 miles southwest of the site in the Chuckwalla Mountains (CNDDB 2010). There is also a known extant population in the vicinity of the BSPP (AECOM 2010a).	
California ditaxis *Ditaxis serrata* var. *californica*	This species occupies Sonoran desert scrub habitat and has been reported as occurring from San Bernardino, Riverside, Imperial, San Diego, and Sonora, Mexico (CNPS 2009) from approximately 100 to 3,000 feet above MSL. There are 23 records from the Consortium of California Herbaria database primarily from Riverside County from sandy, open alluvial fans.	California ditaxis has a low potential to occur within the Study Area due to the presence of suitable habitat and records from the Chuckwalla Valley and Desert Center areas.
California satintail *Imperata brevifolia*	This species occurs in grassy areas found near chaparral, desert scrub, riparian scrubs, coastal scrub, wet springs, meadows, stream sides and floodplains (Solar Millennium 2009a) from sea level to approximately 1,500 feet above MSL. There are 64 records from the Consortium of California gHerbaria database from many northern and southern California counties. Records from Riverside County are from the Palm Springs and San Jacinto Mountains area along irrigation ditches or streams.	California satintail is not expected to occur within the Study Area due to lack of suitable habitat.
Chaparral sand verbena *Abronia villosa* var. *aurita*	This species occupies sandy soil areas of chaparral, coastal sage scrub, and sandy desert dune habitats (CNPS 2009) from approximately 240 feet to approximately 4,800 feet above MSL. There are 147 records in the Consortium of California Herbaria database many from Riverside County in the San Jacinto Mountains area.	Chaparral sand verbena has a low potential to occur within the Study Area due to the presence of suitable habitat.
Coachella Valley milk-vetch *Astragalus lentiginosus* var. *coachellae*	The Coachella Valley Multiple Species Habitat Conservation Plan states that this species occurs on “dunes and sandy flats, along the disturbed margins of sandy washes, and in sandy soils along roadsides and in areas formerly occupied by undisturbed sand dunes. Within the sand dunes and sand fields, this milk-vetch tends to occur in the coarser sands at the margins of dunes, not in the most active blowsand areas. As this species is strongly affiliated with sandy substrates, it may occur in localized pockets where sand has been deposited by wind or by active washes. It may also occur in sandy substrates in creosote bush scrub, not directly associated with sand dune habitat (CVAG 2007). This plant species blooms from February to May, producing pink to deep magenta-colored flowers. This species occurs on aeolian deposits with fewer than 25 occurrences in the Coachella Valley. Coachella Valley milk-vetch depends on natural disturbances from fluvial and aeolian processes for seedling establishment (BLM CDD 2002).	This species is not expected to occur in the BSPP area. The distribution of Coachella Valley milk-vetch is restricted to the Coachella Valley in Riverside County, between Cabazon and Indio. CVAG (2007) identifies six outlying occurrences within a 5-mile area along Rice Road in the Chuckwalla Valley north of Desert Center, California (CVAG 2007); however, USFWS staff has indicated that these occurrences are not of the listed taxon (Engelhard, personal communication).
Cove’s cassia *Senna covesii*	This species occurs on dry, sandy desert washes and slopes of the Sonoran Desert between 1,600 to 2,000 feet above MSL. This species occurs in sandy washes, roadsides, alkaline flats in the Mojave Desert and northern Sonoran Desert between 1,600 to 2,000 feet above MSL (Solar Millennium 2009a).	Cove’s cassia has a low potential to occur within the Study Area due to the presence of suitable habitat and the site being located below the typical elevation range where this species is known from.

TABLE 3.18-3 (Continued)
SPECIAL-STATUS PLANTS WITH LOW TO MODERATE POTENTIAL TO OCCUR AT THE BSPP STUDY AREA

Species	Habitat Requirements and Geographic Range	Potential to Occur or Presence On Site
PLANTS (cont.)		
Crucifixion thorn *Castela emoryi*	This species occurs in Sonoran Desert and Mojavean Desert in scrub habitats and playas with dry, gravelly washes, slopes, and plains from approximately 300 to 2,100 feet above MSL. There are 64 records in the Consortium of California Herbaria database from Riverside, San Bernardino, Imperial counties among others and often times prefers grassy or hayfield habitats. There is a record from a hayfield in Chuckwalla Valley.	This species has a low potential to occur within the Study Area due to the presence of suitable habitat and appropriate elevation range of the site.
Desert portulaca *Portulaca hamiloides*	This species occurs in Joshua tree woodlands and has been reported from Riverside, San Bernardino, and portions of Arizona and Baja, California from 3,000 feet to 3,600 feet above MSL (CNPS 2009).	This species is not expected to occur within the Study Area due to lack of typical habitat associations and the site being located outside of the elevation range.
Desert sand parsley *Ammoselinum giganteum*	This species occupies Sonoran desert scrub habitat and has been reported from Riverside County, California and portions of Arizona (CNPS 2009) at approximately 1,200 feet elevation. There are 2 records from the Consortium of California Herbaria database from Riverside County from the Chuckwalla Valley where this species was observed growing in dry basins at 500 feet above MSL (CCH 2010).	Desert sand parsley has a low potential to occur within the Study Area due to presence of suitable habitat and appropriate elevation range of the site and reported occurrences from the Chuckwalla Valley.
Desert spike moss *Selaginella eremophila*	This is a dense, mat-forming, non-flowering plant. This species occurs in Sonoran creosote bush scrub habitats in gravelly or rocky soils from approximately 600 to 2,700 feet. There are 56 records in the Consortium of California Herbaria database from Riverside and San Diego counties with several records from Anza Borrego State Park, Palm Springs, Palm Canyon, and San Jacinto Mountain Range. One collection from Riverside County is from the vicinity of the Chocolate-Chuckwalla Mountain region near the north side of the Orocopia Mountains from sloped rocky, shady surfaces in gravelly soils (CCH 2010).	This species was not observed during spring 2009 or 2010 field surveys and there are no CNDDB occurrences within 10 miles of the site.
Dwarf germander *Teucrium cubense* ssp. *depressum*	This species occurs in desert dune, playa margins, and Sonoran desert scrub habitats from approximately 100 feet to 1,200 feet above MSL. This species typically blooms from March to May but may also bloom from September through November. This species typically occurs in sandy soils and wash habitats and is known from fewer than 10 occurrences in California (CNPS 2009). There are 15 records from Consortium of California Herbaria database from Riverside and Imperial counties; there are records from the Chuckwalla Valley in the Hayfield area and Palo Verde Valley. There is a CNDDB record from Wiley's Well Road (400 feet elevation) during 1979 (CNDDB 2010). Another CNDDB occurrence is a historical record from 1912 located approximately 7 miles southeast of the site from the Palo Verde Valley (CNDDB 2010).	This species has a low potential to occur due to the presence of suitable habitat and appropriate elevation range of the site. This species was not observed during spring 2009 field surveys.
Foxtail cactus *Coryphantha alversonii*	This species occurs on rocky, granitic soils in Sonoran and Mojavean desert scrub habitats from 200 feet to 4,600 feet above MSL. Prior to conducting spring 2009 field surveys, a reference population was observed on April 9, 2009 at a gravel pit northwest of Blythe along State Route 95 and several individuals were observed in relatively undisturbed Sonoran creosote bush scrub on granitic rock, a preferred habitat type of this species (CNPS 2009). This species was not found during	Foxtail cactus has a low potential to occur within the Study Area due to the presence of suitable desert scrub habitat and appropriate elevation of the site.

TABLE 3.18-3 (Continued)
SPECIAL-STATUS PLANTS WITH LOW TO MODERATE POTENTIAL TO OCCUR AT THE BSPP STUDY AREA

Species	Habitat Requirements and Geographic Range	Potential to Occur or Presence On Site
PLANTS (cont.)		
Foxtail cactus *Coryphantha alversonii* (cont.)	surveys performed in the Study Area (AECOM 2010a). There are 25 records of this species from the Consortium of California Herbaria database from Riverside, Imperial, and San Bernardino counties. There are records from the Chuckwalla Valley from rocky, granitic slopes (CCH 2010).	
Mesquite nest straw *Stylocline sonorensis*	This species occupies Sonoran desert scrub habitats around 1,300 feet elevation and has been reported from Riverside County and portions of Arizona and Sonora, Mexico (CNPS 2009). There are 2 records from the Consortium of California Herbaria database from Riverside County both from the Chuckwalla Mountains, Hayfields region from 1930 (CCH 2010).	Mesquite nest straw has a low potential to occur within the Study Area due to suitable habitat present within the site.
Orocopia sage *Salvia greatae*	This species occurs in the southeastern Sonoran Desert and is associated with the Orocopia and Chocolate Mountains on alluvial slopes between 100 and 800 feet above MSL. This species has been recorded in the mountainous areas 30 miles west of the Study Area (Solar Millennium 2009a). There are 49 records from the Consortium of California Herbaria database several from the Chocolate, Chuckwalla, and Orocopia mountain areas (CCH 2010).	This species has a low potential to occur within the Study Area due to the presence of suitable habitat and appropriate elevation range of the site.
Pink fairyduster *Calliandra eriophylla*	This species occurs in the Sonoran Desert in sandy washes, slopes and mesas from 350 to 5,000 feet above MSL. There are 62 records from the Consortium of California Herbaria database several from the Chocolate-Chuckwalla Mountains area in Imperial and San Diego counties (CCH 2010).	Pink fairy duster has a low potential to occur within the Study Area due to suitable habitats and appropriate elevation range of the site.
Pink velvet mallow *Horsfordia alata*	This species occurs in the Sonoran Desert in California, Arizona, and Mexico. It occurs in Sonoran desert scrub habitats from approximately 300 to 1,500 feet above MSL.	There are no CNDDB records for this species for the entire state of California; the most recent collections have been from the Chocolate, Chuckwalla, and Cargo Muchacho Mountains approximately 50 miles south of the Study Area and is believed to be extant (AECOM 2010a, page BIO-118).
Sand evening-primrose *Camissonia arenaria*	This species occupies sandy and gravelly areas of Sonoran desert scrub habitat and has been reported from Imperial and Riverside counties and areas of Arizona and Mexico from 200 feet to 2,700 feet above MSL (CNPS 2009). There are 13 records of this species in the Consortium of California Herbaria database several from the Chocolate-Chuckwalla Mountains, Palo Verde Valley, and Ogilby Pass area (CCH 2010).	This species has a low potential to occur within the Study Area due to the presence of suitable habitat and appropriate elevation of the site.
Slender woolly-heads *Nemacaulis denudata* var. *gracilis*	This species occupies desert sand dunes, coastal dunes, and Sonoran desert scrub (CNPS 2009) from 150 to 1,200 feet above MSL. There are 45 records in the Consortium of California Herbaria database from the Palm Springs, Indian Wells area in Riverside County (CCH 2010).	Slender woolly-heads has a low potential to occur within the Study Area due to suitable habitat and appropriate elevation range of the site.
Small-flowered androstephium *Androstephium breviflorum*	This species occurs in desert dune and Mojavean desert scrub habitats from approximately 700 feet to 2,000 feet above MSL (CNPS 2009). This species blooms from March through April and often occurs on desert bajadas.	This species has a potential to occur within the site due to suitable habitat and appropriate elevation range of the site. The nearest CNDDB record for this species is from Cadiz Valley from Riverside and San Bernardino counties approximately one mile north of Highway 62 during 1995 from a sandy, Mojavean Desert shrub-land bajada (CNDDB 2010).

TABLE 3.18-3 (Continued)
SPECIAL-STATUS PLANTS WITH LOW TO MODERATE POTENTIAL TO OCCUR AT THE BSPP STUDY AREA

Species	Habitat Requirements and Geographic Range	Potential to Occur or Presence On Site
PLANTS (cont.)		
Spearleaf *Matelea parvifolia*	This species occurs in Mojavean and Sonoran desert scrub habitats from 1,320 feet to approximately 3,300 feet above MSL. This species blooms from March through May (CNPS 2009). The nearest CNDDB record for this species is from the Chuckwalla Bench area during 1986 from desert dry wash woodland and creosote scrub habitats (CNDDB 2010).	This species has a potential to occur within the site due to the presence of suitable habitat although the site is located below the typical elevation range of this species. This species was not observed during spring 2009 field surveys. This species is a target plant species to be surveyed for during spring 2010 botanical surveys within the transmission line, substation, and associated road spurs.
Wiggins' cholla *Cylindropuntia wigginsii*	Wiggins' cholla is not recognized as a species, but is considered a hybrid of silver cholla (C. echinocarpa) and pencil cholla (C. remosissima). Wiggins' cholla is not found as a separate species in The Jepson Manual nor in Munz's et al A California Flora and Supplement; however, the BLM's Proposed Northern and Eastern Colorado Desert Coordinated Management Plan identifies Wiggins' cholla as a special-status species (BLM CDD 2002). The CNPS recognizes Wiggins' cholla as a CNPS List 3.3 species meaning more information is needed about this species and is not considered very endangered in California and also considers this species a sporadic hybrid of the two Cylindropuntia species mentioned above (CNPS 2009).	Since this species is not a recognized subspecies, Wiggins' cholla is not expected to occur in the vicinity of the proposed action.
White-margined penstemon *Penstemon albomarginatus*	This species is a perennial herb restricted to sandy substrates in desert dunes and Mojavean desert scrub habitats, from 2,000 to 3,000 feet elevation. It appears to be restricted to the southeastern Mojave Desert ecoregion (BLM 2006, TNC 2007) and has no known occurrences as far south as Riverside County. It blooms March through May and flowering does not always appear to be dependent on the amount of rainfall (CNPS 2009, BLM 2006). It is believed that established plants may bloom even in very dry years by utilizing water and food resources that are stored in the large taproot (1 to 4 feet long); however rain probably affects germination rates of this species (BLM 2006, TNC 2007). In California, this plant often occurs in fine alluvial sand and in wide canyons within a creosote bush scrub community; sandy environments help establish and hold the deep taproot of this species. This species also occurs in deep, loose to stabilized sand, sometimes on sand dunes or in sandy to gravelly washes. Common associate plant species are white bursage, galleta grass, rice-grass, creosote bush, range rattany, goldenhead, and winterfat (TNC 2007). In Nevada, this species commonly grows along the base of hills and mountains in wind-blown sand dune-like areas, but is also found in deep loose sand in wash bottoms.	White-margined penstemon occurs in southern Nevada, western Arizona, and in the western Mojave Desert in San Bernardino County (BLM 2006). Its distribution in the western Mojave Desert is restricted, occurring in a large four-mile long wash near Pisgah Crater and Lavic Lake, extending southwest from Sleeping Beauty Peak, crossing Interstate 40, and terminating in a flat spreading basin south of Interstate 40 (BLM 2006). There are 19 recent CNDDB records for the entire state of California all of which are from San Bernardino County near the vicinity of Highway 40 and Pisgah Crater (CNDDB 2010). There are 40 records of this species from the Consortium of California Herbaria database from the same general Ludlow and Lavic areas in San Bernardino County; most of these records are from sandy substrates associated with dry desert washes and desert scrub habitats (CCH 2010). It has low potential to occur in the BSPP area but is included here because it has been found outside its previously documented range (Andre pers comm) and is a species of particular concern to BLM due to threats across its restricted range. Applicants were directed to include this species in the target list for the spring 2010 surveys.

3.19 Visual Resources

This chapter introduces the BSPP study area in terms of its existing value as a visual resource, and describes the applicable regulatory framework that seeks to manage and preserve scenic landscapes. Following a brief description of the characteristics and extent of the study area, this section focuses on determining the extent and quality of visual resources in the study area by referencing existing inventories that use the methodology outlined in BLM's Visual Resource Management (VRM) Program.

3.19.1 Project Study Area

The BSPP site is located in the Mojave Desert geomorphic province of California, also referred to as the Sonoran Desert section of the Basin and Range physiographic region of the United States[1]. The BSPP site is within a broad interior region of isolated mountain ranges separated by expanses of internally-drained desert plains. Located on the Palo Verde Mesa, the BSPP is bounded on all sides by a number of mountain ranges, except for the mesa's southeastern edge, which is elevated relative to Palo Verde Valley. Numerous desert arroyos emanating out of the surrounding mountains dissect the gently-sloped, coalescing alluvial fans, eventually meeting to form the southeast-draining McCoy Wash. While most of the plains in the region are internally drained, McCoy Wash drains the surrounding mountains southwest towards the Palo Verde Valley, forming a break in the mesa as viewed from the valley. The vicinity of the BSPP site is visually dominated on the west by the steeply rising, barren-sloped McCoy Mountains, and on the north to northeast by the Little Maria and Big Maria Mountains. The Palo Verde Mesa is mantled by desert scrub and desert dry wash woodland, comprised largely of Sonoran creosote bush and species typical of the riparian shrub woodland community. Figure 22 provides a number of context photographs illustrating characteristic landscape on the BSPP site, from an elevated viewpoint, and from the valley floor.

The study area (Study Area) is defined as all land areas from which any element of the BSPP would be visible, i.e., the project's viewshed. The project viewshed is shown in Figure 23, and was generated via computer-generated viewshed tools, based on nine points that model the location and height of the proposed power block units, cooling tower, wind fence, solar trough arrays, and transmission lines, and a ten-meter resolution (horizontal) United States Geological Survey digital elevation model. Bolder colors in Figure 23 represent area where a greater portion of the BSPP site would be visible (as opposed to a corner of the power plant, or just the transmission line). Distance zones in the figure model the prominence of the BSPP in views.

1 California's geomorphic provinces and the physiographic regions of the U.S. are naturally defined geologic regions that display a distinct landscape or landform. These divisions are based on unique, defining features such as geology, topographic relief, climate, and vegetation. The distinction between California's geomorphic provinces and the physiographic regions of the U.S. is in the scale at which they are defined.

3.19.2 BLM Visual Resource Management (VRM) Policy

BLM's Visual Resource Management Policy is the agency's implementation of requirements from FLPMA and other sources for managing scenic resources,. Pursuant to FLPMA, BLM has developed and applied a standard visual assessment methodology to inventory and manage scenic values on lands under its jurisdiction. BLM Manual M-8400-Visual Resource Management, Handbook H-8410-Visual Resource Inventory, and Handbook H-8431-Visual Resource Contrast Rating set forth the policies and procedures for determining visual resource values, establishing management objectives, and evaluating proposed actions for conformance to the established objectives for BLM administered public lands. The following describes the three primary elements of the BLM's VRM Policy.

Determining Visual Resource Values

The primary means to establish visual resource values are to conduct a Visual Resource Inventory (VRI), as described in BLM handbook H-8410. There are four VRI Classes (I to IV) assigned as a representation of the relative visual value. Visual Resource Inventory Class I has the highest value and VRI Class IV has the lowest. VRI Class I is reserved for special congressional designations or administrative decisions such as Wilderness Areas, visually sensitive ACECs, or Wild and Scenic Rivers, etc. Visual resource values are determined through a systematic process that documents the landscape's scenic quality, public sensitivity and visibility. Rating units for each of the three factors are mapped individually, evaluated, and then combined through an over-layering analysis. The three considerations are briefly described below.

> *Scenic Quality*: Scenic Quality Rating Units (SQRUs) are delineated based on common characteristics of the landscape. There are seven criteria used for inventorying the landscape's scenic quality within each SQRU: landform, vegetation, water, color, influence of adjacent scenery, scarcity, and degree of cultural modification. Each factor is scored for its respective contribution to the scenic quality, the scores are summed, and the unit is given a rating of A (highest), B, or C (lowest) based on the final score.
>
> *Sensitivity Level*: Sensitivity Level Rating Units (SLRU) are delineated and evaluated for public sensitivity to landscape change. Criteria used for determining level of sensitivity within each unit includes types of use, amount of use, public interest, adjacent land uses, special areas, and other factors. Each criterion is rank high, medium, or low and an overall sensitivity level rating then is assigned to the unit.
>
> *Distance Zones (visibility)*: The third factor is visibility of the landscape evaluated from where people commonly view the landscape. The distance zones are divided into foreground/middleground (three to five miles); background (five to 15 miles); and seldom seen (beyond 15 miles or topographically concealed areas within the closer range distance zones).

The relationships between the rated values of scenic quality, sensitivity level, and visibility are cross-referenced with the Visual Resource Inventory Matrix to determine the Visual Resource Inventory (VRI) Class, as shown in Table 3.19-1. Visual resource inventory classes are informational in nature and provide the basis for considering visual values in the Resource

TABLE 3.19-1
DETERMINING VISUAL RESOURCE INVENTORY CLASSES

<table>
<tr><th colspan="2" rowspan="2"></th><th colspan="9">Sensitivity Level</th></tr>
<tr><th colspan="3">High</th><th colspan="3">Medium</th><th colspan="3">Low</th></tr>
<tr><td colspan="2">Special Areas</td><td>I</td><td>I</td><td>I</td><td>I</td><td>I</td><td>I</td><td>I</td><td>I</td><td>I</td></tr>
<tr><td rowspan="3">Scenic Quality</td><td>A</td><td>II</td><td>II</td><td>II</td><td>II</td><td>II</td><td>II</td><td>II</td><td>II</td><td>II</td></tr>
<tr><td>B</td><td>II</td><td>III</td><td>III/IV[a]</td><td>III</td><td>IV</td><td>IV</td><td>IV</td><td>IV</td><td>IV</td></tr>
<tr><td>C</td><td>III</td><td>IV</td><td>IV</td><td>IV</td><td>IV</td><td>IV</td><td>IV</td><td>IV</td><td>IV</td></tr>
<tr><td colspan="2" rowspan="2"></td><td>Fg/mg</td><td>Bg</td><td>Ss</td><td>Fg/mg</td><td>Bg</td><td>Ss</td><td>Fg/mg</td><td>Bg</td><td>Ss</td></tr>
<tr><td colspan="9">Distance Zones</td></tr>
</table>

NOTES:
[a] If adjacent area is Class III or lower assign Class III, if higher assign Class IV
Fg/mg=Foreground/Middleground
Bg=Background
Ss=Seldom seen

SOURCE: BLM Manual H-8410-1

Management Planning (RMP) process. They do not establish management direction and should not be used as a basis for constraining or encouraging surface disturbing activities. They are considered the baseline data for existing conditions.

Establishing Management Objectives

VRM Classes (defined in Table 3.19-2) are determined by considering both VRI Class designations (visual values) along with resource allocations or special management decisions made in the applicable RMP. Management objectives for each VRM Class set the level of visual change to the landscape that may be permitted for any surface-disturbing activity. The objective of VRM Class I is to preserve the character of the landscape, whereas VRM Class IV provides for activities that require major modification to the landscape. Thus, the allowable levels of visual change for VRM Classes I through IV are decreasingly restrictive.

VRI Classes are not intended to automatically become VRM class designations. Management classes are determined through careful analyses of other land uses and demands. The VRM classes are considered a land use plan decision that guides future land management actions and subsequent site-specific implementation decisions. The VRM class designations are to be assigned to all BLM public land. The VRM class designations may be different than the VRI classes assigned in the inventory and should reflect a balance between protection of visual values while meeting energy and other land use, or commodity needs. For example, an area with a VRI Class II designation may be assigned a VRM Class IV designation, based on its overriding value for mineral resource extraction, or its designation as a utility corridor.

TABLE 3.19-2
VISUAL RESOURCE MANAGEMENT CLASSES

VRM Class	Objective
Class I	The objective of this class is to preserve the existing character of the landscape. This class provides for natural ecological changes; however, it does not preclude very limited management activity. The level of change to the characteristic landscape should be very low and must not attract attention
Class II	The objective of this class is to retain the existing character of the landscape. The level of change to the characteristic landscape should be low. Management activities may be seen but should not attract the attention of the casual observer. Any changes must repeat the basic elements of form, line, color, and texture found in the predominant natural features of the characteristic landscape
Class III	The objective of this class is to partially retain the existing character of the landscape. The level of change to characteristic landscape should be moderate. Management activities may attract attention but should not dominate the view of the casual observer. Changes should repeat the basic elements found in the predominant natural features of the characteristic landscape
Class IV	The objective of this class is to provide for management activities which require major modifications of the existing character of the landscape. The level of change to the characteristic landscape can be high. These management activities may dominate the view and be the major focus of viewer attention. However, every attempt should be made to minimize the impact of these activities through careful location, minimal disturbance, and repeating the basic elements.

While the applicable RMP for the study area is the CDCA Plan it does not contain a visual resource element, and has not established VRM Classes. When a project is proposed and there are no RMP-approved VRM objectives, Interim Visual Resource Management (IVRM) Classes must be established in order to establish a baseline for analysis only. These classes are developed using the process just described, but may be restricted in geographic scope to areas affected by the proposed action. If the area is also without a VRI, then one must be conducted in order to provide a baseline of data by which to analyze impacts and to inform appropriate designation of interim VRM Classes.

Evaluating Proposed Actions

Proposed plans of development are evaluated for conformance to the VRM Class objectives through the use of the Visual Resource Contrast Rating process set forth within BLM Handbook H-8431-1. Because this concerns the environmental consequences of the proposed action, this process is further described and applied in Chapter 4.19.

3.19.3 Visual Resource Inventory of the Project Area

Sources of Visual Resource Inventory Data

Lands along the proposed BSPP transmission line have already been assigned Interim Visual Resource Management Classes in connection with Southern California Edison's Devers–Palo Verde 500 kV No. 2 Project (DPV No. 2 Project) EIR/EIS. The existing Devers-Palo Verde transmission line is approximately one mile south of and parallel to I-10. The designation and adoption of Interim VRM classes conducted in support of a specific project is a BLM Field Office Manager decision. In this case, the Interim VRM Classes mirror the VRI Classes established in the baseline inventory. The Interim VRM Classes in connection with the DPV No. 2 Project will be used to assess both the visual values, as well as the management objectives for land along the proposed BSPP transmission line.

However, the Interim VRM classes for the DPV No. 2 Project do not cover the majority of the areas affected by the BSPP, including the solar fields and power block. For these areas, a recently-conducted, large-scale visual resource inventory of BLM-managed lands extending east from Palm Springs to the Arizona border (herein referred to as the BLM Palm Springs Field Office Draft VRI) shall be used as a source of baseline data (OTAK, 2010). While this inventory is draft form, it represents the best available information on visual resources for land not covered by Interim VRM Classes developed for the DPV No. 2 Project. Hence, the BLM Palm Springs Field Office Draft VRI will be used to describe the visual values of the affected area.

Scenic Quality Ratings

Scenic quality ratings are summarized below, divided based on project component and associated source of VRI data.

Transmission Line

The baseline inventory for the DPV No. 2 Project included two scenic quality rating units that encompass the transmission line portion of the BSPP: SQRU No. 12 encompassing the Chuckwalla Valley, and SQRU No. 14 which included McCoy Mountains and the valley area at the base of its southern end. Documentation of the scenic quality rating, including photographs and evaluation of scenic quality factors is provided in Appendix F. A description of each is given below.

Scenic Quality Rating Unit No. 12 – Chuckwalla Valley

SQRU 12 encompasses the central-eastern portion of Chuckwalla Valley in the vicinity of the exiting transmission lines south of I-10. The landform of the valley floor is flat and non-descript with grass and low-growing shrubs of subdued color. Though distant mountain ranges (McCoy Mountains to the north and Chuckwalla Mountains to the south) provide limited backdrops of visual interest (not part of this unit), SQRU 12 is primarily influenced by the dominant presence of existing utility infrastructure and I-10.

This landscape unit was given a scenic quality rating of C, based on the combination of scores for landform, vegetation, water, color, adjacent scenery, scarcity and cultural modifications. The most influential factor in this unit’s low rating for scenic quality was the abundance of cultural modification along I-10 (roads, transmission lines, 4-wheel drive tracks, etc.) and the flatness and lack of visual variety in landform (though relatively high marks were given for adjacent scenery).

Scenic Quality Rating Unit No. 14: McCoy Mountains

SQRU No. 14 encompasses McCoy Peak and the southern end of the McCoy Mountains. The proposed BSPP transmission line north of I-10 and south of the solar fields and power block is within this landscape unit. The Chuckwalla Valley floor that abuts the McCoy Mountains is flat and relatively non-descript with low growing grasses and shrubs. Colors are dominated by the light tan-to pale yellow grasses and green shrubs. The McCoy Mountains provide some variety in color with hues ranging from blue to magenta to brown. Unlike the surrounding Units (10, 12, and 15), the Unit 14 landscape is dominated by rugged mountainous terrain with little influence from built structures (though 4WD access tracks are visible as linear features when viewed in-line).

This landscape unit was assigned as scenic quality rating of B, based on the combination of scores for landform, vegetation, water, color, adjacent scenery, scarcity and cultural modifications. The most influential factors in the B-quality rating were the unit's relatively undisturbed state and the dramatic and rugged peaks in the foreground.

Solar Fields and Power Block

The BLM Palm Springs Field Office Draft VRI encompassed the affected area for the majority of the proposed action including the solar fields and the power block. The scenic quality rating unit identified for the BSPP area is identified as SQRU No. 19 – Chuckwalla Valley. Documentation of the scenic quality rating, including photographs and evaluation of scenic quality factors is provided in **Appendix F**.

The SQRU is described in the inventory as a broad, enclosed landscape surrounded on most sides by dramatic mountain ranges. The landscape unit is described as vast and natural-appearing with vegetation that is somewhat visually dominant. The scores and description for this rating was consistent with the description for SQRU No. 14 in the DPV No. 2 Project. Accordingly, this landscape unit was given a scenic quality rating of B, based on the combination of scores for landform, vegetation, water, color, adjacent scenery, scarcity and cultural modifications. The most influential factor in the B-quality rating was the adjacent scenery created by the surrounding dramatic and rugged peaks.

Visual Sensitivity

Sensitivity level ratings are summarized below, divided based on project component and associated source of VRI data.

Transmission Line

In determining the sensitivity level of the affected area, the VRI for the DPV No. 2 Project assigned a high visual sensitivity-level, based on the rationale that the CDCA was designated by Congress in large part for its visual values and uniqueness in terms of being a fairly undisturbed portion of the California Desert close to large population centers.

Solar Fields and Power Block

The BLM Palm Springs Field Office Draft VRI assigned a sensitivity level of medium to the area affected by the solar fields and power block (the sensitivity level rating unit was identical to the SQRU). This rating was based on relatively low levels of recreation use, a history of low-level development of private lands in the area, and use as a transportation and utility corridor. The sensitivity level was determined as medium (and not low) in recognition of the area as belonging to the CDCA, and being surrounded by BLM wilderness areas. Documentation of the sensitivity level rating is provided in Appendix F.

Distance Zones

The distance zone for all portions of the BSPP is assigned to foreground/middleground (three to five miles) because I-10 and other local roads are within the foreground zone of the BSPP, as shown in Figure 23.

Visual Resource Inventory Classes

Based on the visual resource inventory classification matrix in Table 3.19-3, all areas of the BSPP are rated as VRI Class III except for the transmission line north of I-10 and south of the main power plant, which is assigned a VRI Class II. Scenic quality, visual sensitivity, distance zones, and VRI Classes for the BSPP are summarized in Table 3.19-3, and illustrated in Figure 24. This indicates the lands affected by the BSPP have a moderate visual value.

TABLE 3.19-3
SUMMARY OF VISUAL VALUES AND MANAGEMENT OBJECTIVES

Project Component/Source	Scenic Quality Rating	Sensitivity Level	Distance Zone	Visual Resource Inventory Class[a]
Transmission Line (North of I-10) * DPV No. 2 Inventory	B	High	Foreground/Middleground	Class II
Transmission Line (South of I-10) * DPV No. 2 Inventory	C	High	Foreground/Middleground	Class III
Solar Arrays and Power Block * BLM Palm Springs Field Office Draft VRI	B	Medium	Foreground/Middleground	Class III

NOTE:
[a] As determined using the VRI classification matrix presented in Table 3.19-1

SOURCE: OTAK, 2010; CPUC, 2006

3.19.4 Interim Visual Resource Management Class Recommendations

As discussed above, there are currently no VRM Classes established for lands under BLM jurisdiction within the CDCA Plan area, and VRM classes differ from VRI Classes in that they represent decisions about how the land will be managed in conjunction with resource allocations and management priorities outlined in the applicable RMP. The Interim VRM classes developed for the DPV No. 2 Project have been adopted by the BLM. Thus, areas adjacent to and south of I-10 along the transmission line would be managed in accordance with Interim VRM Class III objectives, and the transmission right-of-way between the main solar power plant and approximately 400 feet north of I-10 would be managed in accordance with Interim VRM Class II objectives.

For the areas affected by the solar arrays and power block, the process of developing Interim VRM classes has not been completed (only the baseline inventory has been developed). However, it is recommended that the area be managed according to an Interim VRM Class III designation based on (1) the proposed project area was assessed as VRI Class III, (2) the Multiple Use Class of the project area is "L" (limited), which allows for consideration of wind or solar electrical generation facilities after NEPA requirements are met. It is the field manager's determination upon approval of this recommendation that the area be designated as Interim VRM Class III. The Field Manager for the BLM Palm Springs/South Coast Field Office has agreed with this recommendation, as documented in Appendix F.

3.20 Water Resources

The BSPP site is located in the northwestern Colorado Desert, which is part of the greater Colorado Desert Geomorphic Province. The Colorado Desert Geomorphic Province is characterized by isolated mountain ranges separated by broad alluvium-filled basins of Cenozoic-age sedimentary and volcanic materials overlying older rocks. Much of the Colorado Desert lies at low elevations, with some areas below sea level.

Specifically, the project site is located in the alluvial-filled basin of the Palo Verde Mesa in eastern Riverside County, California, approximately eight miles west of the City of Blythe. Beneath the Palo Verde Mesa lies the Palo Verde Mesa Groundwater Basin (PVMGB), which is bounded by non-water-bearing rocks of the Big Maria and Little Maria mountains to the north, by the McCoy and Mule Mountains to the west, and by the Palo Verde Mountains to the south. See Figure 25.

To the east are the Palo Verde Valley and the Colorado River. The Big Maria Mountains and the McCoy Mountains are the contributing watersheds to the Palo Verde Mesa. McCoy Wash, a tributary of the Colorado River, flows southeast approximately 2,000 feet north of the northeastern corner of the site. Surface water drains from the surrounding mountains toward the Colorado River. There are no perennial streams on the Palo Verde Mesa. The PVMGB encompasses an area of about 353 square miles or 226,000 acres, is tributary to the lower Colorado River, and is part of the Colorado River aquifer.

The Palo Verde Mesa has a generally low relief until near the surrounding mountains. There are two distinct river-cut terraces that form a topographic break westward from the Colorado River. The BSPP site is located on the uppermost of the two terraces that comprise the mesa. Approximately three miles east of the eastern site boundary, a sharp break in the slope forms the boundary between the Palo Verde Mesa and the Palo Verde Valley, which is 80 to 130 feet below the mesa. In this region, the Palo Verde Valley is roughly equivalent to the recent historic floodplain of the Colorado River.

The ground surface slopes gently downward in a southeast direction away from the McCoy Mountains at a gradient of less than 1 percent. The existing topographic conditions of the BSPP site show an average slope of approximately one foot in 67 feet (1.5 percent) toward the east on the west side of the site and approximately one foot in 200 feet (0.5 percent) toward the southeast on the east side of the site. Steeper grades (10 to 15 percent) are present along the western side of the unnamed mound in Sections 5, 6, and 7 (T06S R22E). Ground surface elevations range from 830 feet in the west to 410 feet above mean sea level in the east (United State Geological Survey [USGS] 1975 as cited in the CEC RSA June 2010, 1983 and Towill 2009 as cited in the CEC RSA June 2010).

3.20.1 Climate and Precipitation

The climate on the Palo Verde Mesa, which is classified as a "low desert," is characterized by high aridity and low precipitation. The region experiences a wide variation in temperature, with very hot summer months with an average maximum temperature of 108 ºF in July and cold dry winters with an average minimum temperature of 66.7 ºF in December. The Blythe area receives approximately 3.5 inches of rainfall per year. The majority of the rainfall occurs during the winter months, but rainfall during the late summer is not uncommon. The summer rainfall events tend to be a result of tropical storms that have a short duration and a higher intensity than the winter rains. Annual precipitation ranges from 0.02 to 0.47 inches per month for a total annual precipitation of just under four inches per year. Table 3.20-1 and Table 3.20-2 display the average monthly and annual minimum and maximum temperatures and precipitation (rainfall) from 1913 to 2008 collected from the Blythe Airport, located approximately one mile southeast of the BSPP site.

Average annual precipitation in the BSPP area, based on the gauging station at Blythe Airport, is 3.59 inches, with August recording the highest monthly average of 0.64 inches and June recording the lowest monthly average of 0.02 inches.

Table 3.20-3 presents average monthly evapotranspiration rates for various stations located in the region.

3.20.2 Groundwater

Groundwater in the area of the BSPP is contained within the Colorado River Hydrologic Region, which covers about 20,000 square miles of southeastern California (CRBRWQCB 2006 as cited in the CEC RSA June 2010). The Colorado River Hydrologic Basin Region is bound to the west by the San Bernardino, San Jacinto and Launa Mountain ranges; to the north by the New York, Providence, Granite, Old Dad, Bristol, Rodman and Ord Mountain ranges and the State of Nevada; to the east by the Colorado River and the State of Arizona; and to the south by the border of the United States and Mexico. The Colorado River Hydrologic Basin Region includes the Salton Sea and the Coachella and Imperial Valleys.

The Colorado River Hydrologic Region is subdivided into 28 groundwater basins. The BSPP overlies the PVMGB, which lies directly west of the Palo Verde Valley Groundwater Basin (PVVGB). The PVVGB underlies the Colorado River and surrounding areas, and functions as the river's historic flood plain. The PVVGB is tributary to the lower Colorado River, and is part of the Colorado River aquifer. The PVMGB contains somewhat higher ground surface levels that are outside of the Colorado River's historic flood plain. The location of the boundary between the PVMGB and the PVVGB does not include a barrier to groundwater flow; groundwater readily flows across the PVMGB/PVVGB boundary. The discussion provided below acknowledges these groundwater flow characteristics,

There are no significant subsurface structural features that restrict horizontal groundwater flow within the PVMGB according to the California Department of Water Resources (DWR) (1979, 2004). The PVMGB is not listed on the DWR list of adjudicated groundwater basins (DWR 2009), but is likely subject to the Colorado River Compact, 1922, the Boulder Canyon Project Act, and the Consolidated Decree 547 U.S. 150 (2006)(U.S. Supreme Court).

TABLE 3.20-1
CLIMATE TEMPERATURE DATA FOR BLYTHE AIRPORT, CALIFORNIA

Month	Temperatures °F					Mean Number of Days			
	Monthly Averages			Record Extremes		Max. Temp.		Min. Temp.	
	Daily Max.	Daily Min.	Monthly	Record High	Record Low	90°F & Above	32°F & Below	32°F & Below	0°F & Below
Jan	66.7	41.5	54.1	89	20	0	0	2.7	0
Feb	72	45.4	58.7	93	22	0.2	0	0.8	0
Mar	78.4	50.2	64.3	100	30	3.1	0	0.1	0
Apr	86.4	56.5	71.5	107	38	11.6	0	0	0
May	95.2	64.4	79.8	114	43	23.8	0	0	0
Jun	104.5	72.7	88.6	123	46	29	0	0	0
Jul	108.4	81	94.7	123	62	30.9	0	0	0
Aug	106.6	80.2	93.4	120	62	30.6	0	0	0
Sep	101.3	73	87.2	121	51	28.4	0	0	0
Oct	89.8	60.9	75.3	111	27	17.6	0	0	0
Nov	75.8	48.6	62.2	95	27	0.8	0	0.1	0
Dec	66.7	41.2	53.9	87	24	0	0	1.8	0
Year	87.7	59.6	73.6	123	20	175.9	0	5.5	0

SOURCE: Western Regional Climate Center (WRCC) 2009 as cited in the CEC RSA June 2010.

TABLE 3.20-2
PRECIPITATION DATA FOR BLYTHE AIRPORT, CALIFORNIA

Month	Rainfall (inches) [1913-2008]			
	Mean	Highest Month	Lowest Month	Highest Daily
Jan	0.47	2.48	0	1.64
Feb	0.44	3.03	0	1.66
Mar	0.36	2.15	0	1.52
Apr	0.16	3.00	0	2.67
May	0.02	0.22	0	0.22
Jun	0.02	0.91	0	0.91
Jul	0.24	2.44	0	1.4
Aug	0.64	5.92	0	3
Sep	0.37	2.14	0	1.9
Oct	0.27	1.89	0	1.61
Nov	0.2	1.84	0	1.04
Dec	0.39	3.33	0	1.42
Year	3.59	---	---	3

NOTES: (a) Totals may not match the data in specific columns due to rounding errors.

SOURCE: WRCC, 2009 as cited in the CEC RSA June 2010.

TABLE 3.20-3
MONTHLY AVERAGE EVAPOTRANSPIRATION (ETO) RATES

Month	CIMIS Station #135	CIMIS Station #151	CIMIS Station #162	CIMIS Station #175	Regional
	Station: Blythe NE	Station: Ripley	Station: Indio	Station: Palo Verde II	
Jan (in/mo)	2.32	2.44	2.44	2.41	2.48
Feb (in/mo)	3.09	3.31	3.31	3.23	3.36
Mar (in/mo)	5.00	5.25	5.25	5.59	5.27
Apr (in/mo)	6.61	6.85	6.85	7.22	6.90
May (in/mo)	8.54	8.67	8.67	8.78	8.68
Jun (in/mo)	9.69	9.57	9.57	9.42	9.60
Jul (in/mo)	10.13	9.64	9.64	9.58	9.61
Aug (in/mo)	8.91	8.67	8.67	8.61	8.68
Sep (in/mo)	6.85	6.85	6.85	6.58	6.90
Oct (in/mo)	4.64	5.00	5.00	4.74	4.96
Nov (in/mo)	2.95	2.95	2.95	2.94	3.00
Dec (in/mo)	2.07	2.20	2.20	2.25	2.17
Year (in/yr)	70.8	71.4	71.4	71.35	71.6

NOTES: CIMIS monitoring station closest to BSPP site are listed.
Regional evapotranspiration values correspond to CIMS Reference ETo Zone 18, which includes Imperial Valley, Death Valley, and Palo Verde.

SOURCE: AECOM, 2010 and CIMIS, 2010.

In the PVMGB, groundwater provides a source of water for domestic, industrial, and agricultural water supply. Surface water from the Colorado River, through the Palo Verde Irrigation District (PVID), is the primary source of water for agriculture in the area. In 2007, the PVID supplied about 375,000 acre feet of water for use by agricultural entities (U.S. Department of the Interior, Bureau of Reclamation [USBR] 2008), which includes a portion of the PVMGB.

Natural groundwater recharge to the PVMGB includes recharge from precipitation and subsurface inflow from the Chuckwalla Valley Groundwater Basin (CVGB) to the west (DWR, 2004), as well as water derived from the Colorado River to the east (see also “Subsurface Inflow” section, below). Other sources of recharge to the basin include agricultural return flow. The estimated inflow and outflow rates discussed in the subsections below are summarized in Table 3.20-5.

Recharge from Precipitation

In this part of California, almost all moisture from rain is lost through evaporation or evapotranspiration and runoff occurs principally during intense thunderstorms (CRBRWQCB, 2006 as cited in the CEC RSA 2010). Most recharge from precipitation occurs when runoff from the surrounding mountains exits bedrock canyons and flows across the coarse sediments deposited along the western edge of the basin.

Methods to estimate runoff proposed by Hely and Peck (1964) were used by AECOM (2010) to estimate mean annual runoff in the PVMGB. Hely and Peck estimated runoff based on precipitation data, the rainfall-runoff relationship and observed characteristics of the terrain.

AECOM (2010) reviewed topographic and geological data to divide the PVMGB into localities that approximated those described by Hely and Peck (i.e. mountains, hills, alluvium-steep slope or alluvium-shallow slope). AECOM calculated the area for each locality. Information from Hely and Peck was used to select an average runoff curve number for each locality assuming an average of all soil types. For example, an average runoff number of 74 was selected for alluvium-steep slope.

Hely and Peck developed a relationship between the runoff curve number and the runoff as a percentage of the precipitation. The annual volume of runoff from each locality was calculated by multiplying the area times the mean annual precipitation times the percentage of runoff estimated for the runoff curve number.

From the estimated total runoff for the Chuckwalla/Palo Verde basin, simple percentages of 3-5 percent were applied to the estimated total volume of rainwater from mean annual precipitation to generate an estimate of total annual infiltration volume (acre-feet) for the basin. Table 3.20-4 presents the estimate of total annual infiltration for the PVMGB.

Subsurface Inflow

Subsurface inflow into the PVMGB occurs from the Colorado River via the PVVGB, and from the CVGB. Groundwater migrating from the Colorado River through the PVMGB represents most of the subsurface inflow to the basin, while the CVGB is a lesser source.

Subsurface inflow from the CVGB was estimated by Metzger (1973) to be 400 acre feet per year (ac-ft/yr). This calculation was based on a cross sectional profile of the boundary between the two basins derived using geophysical methods and regional data regarding groundwater gradients and hydraulic conductivity. Woodward Clyde (1986 as cited in the CEC RSA June 2010) revised this estimate based on the results of pump testing at Chuckwalla State Prison and calculated the basin inflow from CVGB to be 870 ac-ft/yr. Engineering Science (1990 as cited in the CEC RSA 2010) updated this estimate to 1,162 ac-ft/yr, presumably as a result of return flow from prison wastewater disposal; however, the rationale for this adjustment was not provided. Using more recent gravity data, Wilson and Owens-Joyce (1994) found that the area through which discharge occurs is significantly more limited than previously thought due to the presence of a buried bedrock ridge. As a result, the most recent available water budget for the basin has adopted an inflow rate from CVGB of 400 ac-ft/yr (Eagle Crest, 2009).

Geochemical and water level data supplied by AECOM (2009) suggests that groundwater from the Colorado River is flowing through the PVVGB to the PVMGB. The US Bureau of Reclamation, in their analysis of the accounting surface, has concluded that groundwater below the BSPP site is in communication with the Colorado River. Geochemical data show that there is a gradual mixing of water from the river to the west and under the BSPP site, as total dissolved solid (TDS) concentrations progressively increase away from the river (AECOM, 2010).

TABLE 3.20-4
ESTIMATES OF RUNOFF AND INFILTRATION IN PALO VERDE MESA GROUNDWATER BASIN

Layer[a]	Area (acres)	Mean Annual Precipitation (inches)[b]	Total Volume of Rainwater from Mean Annual Precipitation (acft)	Runoff Curve Classification [b]	Runoff Curve Number [b]	Runoff (percent of Precipitation)	Total Annual Volume of Infiltration – Hely & Peck (ac-ft)	Total Annual Volume of Infiltration (ac-ft) based on 3 percent[c]	Total Annual Volume of Infiltration (ac-ft) based on 5 percent[c]
unit1-pvm	23,695	4	7,898	Alluvium, Steep Slope	74	3.50%	276	237	395
bedrockpvm	5,624	4	1,875	Mountains	93	29.10%	546	56	94
bedrockpvm	16,819	6	8,409	Mountains	93	29.10%	2,447	252	420
bedrockpvm	13,571	4	4,524	Mountains	93	29.10%	1,316	136	226
bedrockpvm	18,298	4	6,099	Hills	83	10%	610	183	305
unit1-pvm	79,574	5	33,156	Alluvium, Steep Slope	74	3.50%	1,160	995	1,658
unit2-pvm	382	4	127	Hills	83	10%	13	4	6
unit2-pvm	122,370	4	40,790	Alluvium, Flat Slope	69	2%	816	1,224	2,040
Totals	***280,332***	***---***	***102,878***	***---***	***---***	***---***	***7,184***	***3,086***	***5,144***

NOTES:
[a] See Figure DR-S&W-179-1 in AECOM, 2010.
[b] From Hely & Peck, 1964.
[c] Based on a percent of Total Volume of Rainwater from Mean Annual Precipitation (Column 4).

SOURCE: Derived from AECOM, 2010.

AECOM (2010) developed an estimate of the groundwater flux from the Colorado River through the PVVGB and into the PVMGB using a simple underflow calculation and Darcian flow across a cross sectional area, located just east of the BSPP site (see Figure 26). The aquifer was assumed to extend a distance of 19,000 feet perpendicular to flow and at a depth of 600 feet below the water table at this location. Using the average transmissivity of 26,000 feet squared per day (ft^2/day) from Leake et al. (2008) and a groundwater gradient of 0.0003 feet per foot (ft/ft) from measurements taken in 2000, the groundwater flux across this area from the Colorado River was estimated at 1,200 ac-ft/yr.

AECOM indicated relatively stable groundwater levels over time, suggesting very little change of groundwater in storage. In addition, they suggested that groundwater withdrawal from the underlying aquifer has not significantly changed the water balance within the PVMGB due to recharge of water from the Colorado River. Correspondingly, the BSPP's groundwater withdrawal could induce additional flow from the Colorado River above the estimated existing influx of 1,200 ac-ft/yr. As shown in Table 3.20-5, an additional 1,244 ac-ft/yr of groundwater inflow also occurs from the PVVGB into the PVMGB.

TABLE 3.20-5
ESTIMATED GROUNDWATER BUDGET (ac-ft/yr)

Budget Components	Palo Verde Mesa Groundwater Basin
Recharge from Precipitation	3,086
Underflow from Chuckwalla Valley Groundwater Basin	400
Underflow from Colorado River	1,200
Underflow from Palo Verde Valley Groundwater Basin	1,244
Irrigation Return Flow	770
Total Inflow	***6,700***
Groundwater Extraction	6,700
Total Outflow	***6,700***
Budget Balance (Inflow-Outflow)	**0**

SOURCE: CEC, RSA (June 2010) Soil and Water Table 8

Groundwater Irrigation Demand/Surface Outflow

In 2003, PVID reported that 544 acres within its service area and an estimated 300 acres outside its service area irrigate with groundwater on the mesa (CEC 2005). Assuming water usage based on an average annual evapotranspiration (ET) rate of 71 inches and an irrigation efficiency of 75 percent yields a water use of 7.9 ac-ft/acre/yr, which equates to approximately 6,700 ac-ft/yr of groundwater demand in the PVID in 2003.

Irrigation Return Flow

As previously indicated, approximately 6,700 ac-ft/yr of groundwater is used for irrigation in the PVMGB. In addition, the PVID supplies water (surface water from its irrigation canal system in the Palo Verde Valley that is pumped uphill) to the Palo Verde Mesa area. However, based on reviews of aerial photographs, the area supplied is very small. Assuming 1,000 ac-ft/yr is supplied by PVID and the 6,700 ac-ft/yr is pumped, this equates to approximately 7,700 ac-ft/yr of irrigation water supplied in the Palo Verde Mesa area. Assuming 10 percent of the applied water infiltrates and recharges the groundwater basin, an estimated 770 ac-ft/yr recharges the area from irrigation return flow, using 2003 data.

Subsurface Outflow

As previously stated, the PVMGB is in direct connection with the PVVGB. It is possible that at the southern end of the PVMGB, outflow could occur to the adjacent PVVGB. However, at the northern end of the PVMGB, in the vicinity of the BSPP, subsurface outflow from the PVMGB is not expected to occur. Any outflow occurring along the southern end is expected to be minor in comparison to subsurface inflow at the northern end. Therefore, subsurface outflow from the PVMGB is considered insignificant.

Groundwater Budget

Table 3.20-5, *Estimated Groundwater Budget,* summarizes the groundwater budget for the Palo Verde Mesa. The Colorado River underflow is the primary mechanism for recharge to the basin along with infiltration of precipitation (mountain front recharge). The Chuckwalla Groundwater Basin and irrigation return water also provide inputs to overall basin recharge.

Water Bearing Units

The following water-bearing formations have been identified in the PVMGB. The extent and relationship of these formations is presented in hydrostratigraphic cross section A-A' included as Figure 27.

Quaternary Alluvium

The youngest major units in the Palo Verde region, the Older Alluvium and Younger Alluvium, were deposited by the Colorado River and are the primary water-bearing units of the local aquifer system (referred to as the groundwater system in this report). The Older and Younger Alluvium were deposited as a series of floodplain deposits. The Older Alluvium is composed of ancestral floodplain deposits and results from all but the most recent cycle of erosion and deposition by the Colorado River. The Older Alluvium comprises all of the known groundwater system deposits of the Palo Verde Mesa and extends beneath the Palo Verde Valley, underlying the Younger Alluvium. The Older Alluvium is much thicker than the Younger Alluvium, reaching thickness of 600 feet beneath the central portion of the valley and the mesa and pinching out along the bordering bedrock mountains. The Older Alluvium is composed of sand, silt, and clay with minor amounts of gravel. The U.S. Geological Survey (USGS) also described the composition and productivity of the Older Alluvium in the mesa. The Older Alluvium includes a narrow zone of highly productive gravel lenses, which occur within a mile of the boundary between the PVVGB and the PVMGB.

The most recent erosional episode carved the lowest terrace of the present-day Palo Verde Mesa, as well as a trench in the central portion of these older floodplain deposits. The Younger Alluvium fills this trench with about 100 feet of sediments and comprises the present-day floodplain deposits of the Colorado River within the Palo Verde Valley. The Younger Alluvium is predominately sand and gravel with minor amounts of silt and clay.

Pliocene Bouse Formation

The Pliocene Bouse Formation underlies the Quaternary sediments. The Bouse Formation includes a marine to brackish-water estuarine sequence deposited in an arm of the proto-Gulf of California (Metzger, 1968; Wilson and Owen-Joyce, 1994). This formation has alternatively been interpreted as, or may include, lacustrine sediments deposited in a closed, brackish basin (Stone, 2006). The Bouse Formation is widely reported in the Colorado River valley and tributary basins in southeastern California and descriptions of this formation come from occurrences outside of Chuckwalla Valley. It is reported to be composed of a basal limestone (marl) overlain by interbedded clay, silt, sand, and tufa. The top of the Bouse Formation is relatively flat lying with a reported dip of approximately two degrees, south of Cibola (Metzger and others, 1973). These unconsolidated to semi-consolidated sediments are reported to yield several hundred gallons per minute (gpm) in wells perforated within coarse grained units (Wilson and Owen-Joyce, 1994).

Miocene Fanglomerate

The following information is from Metzger and others (1973). The Bouse Formation is unconformably underlain by a fanglomerate composed chiefly of angular to subrounded and poorly sorted partially to fully cemented pebbles with a sandy matrix. The fanglomerate is likely of Miocene age; however, it may in part be of Pliocene age. The fanglomerate represents composite alluvial fans built from the mountains towards the valley, and the debris of the fanglomerate likely represents a stage in the wearing down of the mountains following the pronounced structural activity that produced the basin and range topography in the area. Bedding surfaces generally dip from the mountains towards the basin. The fanglomerate reportedly dips between 2 and 17 degrees near the mountains due to structural warping. The amount of tilting indicates a general decrease in structural movements since its deposition. The presence, depth and thickness of the fanglomerate beneath the BSPP site is unknown but has been reported in the Parker-Blythe-Cibola area by Metzger et al. (1973).

Bedrock

Bedrock beneath the site consists of metamorphic and igneous intrusive rocks of pre-Tertiary age that form the basement complex (Metzger et al. 1973). The bedrock topography in the study area has not been determined but appears to lie at depths exceeding 1,000 feet below ground surface in Parker Valley approximately three miles to the northeast, and is not indicated to be a significant source of water (Metzger et al. 1973).

Groundwater Occurrence and Movement

The depth to groundwater below the BSPP site was measured in October 2009 from newly installed well TW-1. It was 195.21 feet below ground surface (bgs) or at an elevation of approximately 253 feet above mean sea level. In their estimate of groundwater storage, the DWR (1979) used an assumed average saturated thickness of 300 feet and a specific yield of 10 percent for the PVMGB to derive a usable storage of about five million acre feet, with about half of the usable storage estimated to be in the McCoy Wash part of the basin. In subsequent reports, the DWR (2004a) listed the groundwater in storage for the basin as “unknown” although they listed the total storage capacity in the basin as approximately 6,840,000 acre feet.

No known barriers or faults inhibit the flow of groundwater in the PVMGB (DWR 1978, 2004a). A small unnamed fault occurs approximately 1.5 miles south of the BSPP site in the McCoy Mountains (CDMG 1967, DWR 1978). As shown on geologic maps of the area (DMG 1967, DWR 1978) this east-west-trending fault has been mapped in the bedrock of the McCoy Mountains and does not appear to extend beneath the sediments filling the valley south of the BSPP.

There are no faults that are considered by the State or County to be active within the site limits. According to Kleinfelder (2009), several inferred faults have been mapped by several authors trending northwest-southeast through the area. These faults are speculative and based on geophysical data (Rostein et al. 1976 as cited in the CEC RSA 2010). The Blythe Graben is mapped approximately six miles northeast of the site (Stone 2006). The Blythe Graben offsets Quaternary alluvium dated between 6,000 and 31,000 years old. The tectonic significance of the Blythe Graben is unknown. The location and elevation of alluvial deposits of the McCoy wash area that have been incised by the McCoy Wash and other drainages suggest that tectonic uplift may have affected this area since the Pliocene epoch (within the last five million years). This uplift could be related to faulting, or regional uplift associated with the basin and range extension. Because the speculated faults in the area are not considered active, and there is no direct evidence of active faulting on the site, the risk associated with surface rupture from active faults at the site is considered very low.

Several inferred faults have been mapped by some authors trending northwest-southeast through the site (Kleinfelder 2009). The suspected presence of these faults is based on a gravity study (Rostein et al. 1976 as cited in the CEC RSA 2010) and lithologic variations in adjacent mountain ranges (Hamilton 1984). Stone (2006) considered the faults too speculative or imprecisely located to be included on the geologic map for the proposed action. The mapped faults are not considered by the State or County to be active.

Water level elevation contours for the PVMGB and Palo Verde Valley Groundwater Basins drawn from year 2000 water level data gathered from the USGS database and the water level measured from the BSPP in October 2009 show that, north of the BSPP site, the groundwater flows to the southeast towards the Colorado River, following the general axial trend of McCoy Wash. Beneath the BSPP site and in areas south of the BSPP site, groundwater flow “turns” (in response to influence from the Colorado River) towards the south-southeast following the general flow path of the Colorado River. Based on the 2000 water level data in the USGS and DWR databases (USGS 2009, and DWR 2009) for wells located approximately two to three miles east of the BSPP site, the hydraulic gradient is about 0.007 ft/ft.

Aquifer Characteristics

In their development of a two-dimensional superposition model for the Parker-Palo Verde-Cibola area, which includes the PVMGB, Leake and others (2008) evaluated published aquifer testing data and through statistical analysis derived a range of transmissivity values from a low value of 6,300 ft^2/d to an average value of 26,200 ft^2/d. They selected a storage coefficient of 0.20 to approximate aquifer conditions throughout their model domain, which includes the Chuckwalla Valley Groundwater Basin and the PVMGB.

Metzger and others (1973) provided historical data from pumping tests that were conducted in the 1960s on wells in the PVMGB. They reported transmissivity values ranging from 64,000 to 1,900,000 gallons per day per foot (gpd/ft) of aquifer thickness (or 8,756 to 254,600 ft^2/day), specific yields from 100 to 2,180 gallon per minute/ft of drawdown, and hydraulic conductivities ranging from 210 to 12,300 gallons per day per square foot (gpd/ft^2). The data are summarized in Table 3.20-6. Locations of the wells are shown on Figure 28.

Groundwater production, from wells completed in the PVMGB, averages 1,650 gpm (DWR 1979). The maximum yield reported was 2,750 gpm from well 6S/22E-16A1, which is approximately six miles east of the BSPP site. The DWR (1979) indicated that large well yields are common for properly designed and developed wells near the edge of the Palo Verde Valley floodplain, which is east of and adjacent to the PVMGB.

Well yields in the rest of the PVMGB, where sand is the dominant lithology, are lower. Yields greater than 1,000 gpm are reported in wells in the McCoy Wash area. The depth of these wells range from 250 to 600 feet and the wells are 12 to 16 inches in diameter (DWR 1979).

Historic Groundwater Levels and Flow

AECOM (2009) reported that the water level data from 1971 show local variations in water level contours in the area due east of the BSPP, which suggests localized pumping in support of agriculture. Water level data from 2000 show that the water levels had recovered in the area due east of the site and show a southerly flow of groundwater coincident with the flow in the Colorado River. Groundwater flow in the Basin is from the north, southeast through McCoy Wash at a gradient of 0.001 feet/foot (ft/ft), then south-southwest at gradients of between about 0.0003 and 0.0008 ft/ft in a direction coincident with the flow of the Colorado River (AECOM, 2009).

AECOM (2009) reported that hydrographs indicate that the water level in the PVMGB has generally remained stable over the past few decades. In well Township 4 Range 21 Section 9B1 at the north end of the PVMGB, groundwater elevation remained unchanged from 1971 to 2000. In wells closer to the BSPP site, groundwater elevations have decreased about five feet in well Township 5 Range 22 Section 31E1 from 1966 to 2000 and in well Township 6 Range 22 Section 32R1 from 1947 to 2006. The relatively stable groundwater levels that have been measured

TABLE 3.20-6
HISTORICAL PUMPING TEST DATA – PALO VERDE MESA

Well ID	Distance from BSPP Site	Well Owner or Name	Date of Pump Test	Yield/ Drawdown (gpm/ft)	Depth Interval Tested (ft, bgs)	Trans- missivity (gpd/ft)	Trans- missivity (ft^2/day)	Indicated Avg Field Hydraulic Conductivity (gpd/ft^2)	Geologic Source Unit
5S/22E-28C2	2.5 mi. NE	U.S. Citrus Corp.	10/25/1962	1,450/?	270-358 382-600	64,000	8,576	210	Older Alluvium of Colorado R.
6S/22E-11H1	3.5 mi. E	H.M. Neighbour	6/18/1964	665/9	165-235	700,000	93,800	10,000	Older Alluvium of Colorado R.
6S/22E-15M1	2.5 mi. E	E. Weeks	6/12/1963	475/21	168-315	500,000	67,000	3,400	Older Alluvium of Colorado R.
6S/22E-32R1	2 mi. S-SE	W. Passey	6/11/1963	650/66	120-123 402-408 479-488	420,000	56,280	NL	Older Alluvium of Colorado R.
6S/22E-35R2	4 mi. S-SE	Southern Counties Gas Co.	10/23/1962	520/15	302-326	150,000	20,100	6,200	Older Alluvium of Colorado R.
6S/23E-24J1	11 mi. E	Clayton Ranch	7/8/1964	2,180/50	NL	1,900,000	254,600	NL	Older Alluvium of Colorado R.
6S/23E-29R1	8 mi. E	City of Blythe 8	10/23/1962	360/33	264-276 354-368	320,000	42,880	12,300	Older Alluvium of Colorado R.
6S/23E-32D1	8 mi. E	City of Blythe 9	10/23/1962	520/31	122-132 168-286	430,000	57,620	3,400	Younger Alluvium – basal gravel
6S/23E-32P1	8 mi. E	City of Blythe 1	10/23/1962	470/12	245-270 290-296	496,000	66,464	10,000	Older Alluvium of Colorado R.
6S/22E-4P1	2 mi. E	J.E. Mason	10/23/1962	100/1.6	NL	1,700,000	227,800	NL	Older Alluvium of Colorado R.

NOTES:
NL = Not listed.

SOURCE: Metzger and Others, 1973.

over this period suggest that groundwater withdrawal from the underlying aquifer has not significantly changed the water balance within the PVMGB. This is probably in large part due to recharge of water from the Colorado River (AECOM, 2009).

Groundwater Quality

In general, water quality in the PVMGB is generally higher near the edge of the Palo Verde Mesa adjacent to the Colorado River floodplain. The amount of dissolved solids becomes progressively higher away from the Colorado River floodplain and with depth. The groundwater in the area beneath the BSPP site is generally sodium sulfate-chloride in character (AECOM 2009).

According to the DWR (1979) report, the TDS content of shallow groundwater in the basin ranges from 730 to 3,100 milligrams per liter (mg/L); however, one deep well in the southwest portion of the basin had a TDS content of 4,500 mg/L. Analyses of water from 11 public supply wells in the PVMGB show that TDS content ranges from 590 to 1,790 mg/L and averages approximately 1,089 mg/L.

Table 3.20-7 presents the analytical results for a select number of wells that were sampled between October 1962 and April 1966 located within 0.5 mile and 1.5 mile from the BSPP site. Given the long screen interval for these wells, and the uncertain methodology of sampling the wells, these data likely represent an average water quality of the more permeable sediments over the screen interval. A review of the water quality data for the PVMGB and PVVGB in Table 3.20-7 indicate the following:

1. TDS concentrations (466 to 5,640 mg/L) generally exceeded the recommended standard of 500 mg/L for a drinking water resource in California. TDS concentrations above 1,000 mg/L were reported in water samples from wells due east of the BSPP site.

2. Fluoride concentrations (0.2 to 6.3 mg/L) in some cases exceed the State of California Maximum Contaminant Levels (MCLs) for drinking water (2.0 mg/L). Fluoride concentrations above the MCL are present in water samples from wells on the Mesa due east of the BSPP site. Concentrations are significantly lower and below the MCL in water samples from wells located in the floodplain.

3. Chloride concentrations range from 77.7 to 3,220 mg/L, and in some cases exceed the State of California Secondary MCL for drinking water (250 mg/L). Higher concentrations are found in wells on the Mesa in the area of McCoy Wash.

4. Boron concentrations range from 40 micrograms per liter [µg/L] to 2,000 µg/L. In the area of the BSPP most of the water samples collected exceeded the State of California Action Level for drinking water (1,000 µg/L).

5. Sulfate concentrations range from 90 to 1,850 mg/L, and in some cases exceed the State of California Secondary MCLs for drinking water (250 mg/L). The highest concentrations mirror those found for chloride and are located in the area east of the site and in the area of McCoy Wash.

TABLE 3.20-7
SUMMARY OF GROUNDWATER QUALITY DATA[a,b]
(all values reported in mg/L[c] unless otherwise indicated)

Analyte	Test Well (October 2009)[a]	Well 5/22-28C1 (Oct-1962)	Well 5/22-33J1 (Oct-1962)	Well 6/21-36R1 (May 1964)	Well 6/22-17L1 (April 1966)	All Palo Verde Mesa Groundwater Basin Wells[a]
Arsenic	ND<0.01	--[d]	--	--	--	0.0011
Bicarbonates as HCO3	--	--	--	--	--	20 – 736
Boron	1.41	--	--	1.07	1.4	0.04 – 2.0
Calcium	287	--	--	--	--	9.21 – 844
Carbonates as CO3	--	--	--	--	--	0 – 12
Fluoride	1.3	--	1.7	3	--	0.02 – 6.30
Chloride	370	440	400	420	380	77.7 – 3,220
Iron	0.123	--	--	--	--	0 – 0.4
Magnesium	29.6	--	--	--	--	0.1 – 351
Manganese	ND<0.005	--	--	--	--	0 – 3.9
Nitrate	(N)	ND<0.01	--	--	--	--
Selenium	ND<0.015	--	--	--	--	--
Sodium	457	--	--	--	--	0 – 2,000
Sulfate	970	970	380	440	400	90 – 1,850
Total Alkalinity as CaCO3	34	--	--	--	--	28 – 3,600
Total Dissolved Solids (TDS)	2,170	2,160	--	1,470	1,250	466 – 5,640
pH (units)	--	--	--	--	--	7 – 8.6

NOTES:
[a] Metals data reported from the unfiltered (“total”) sample (turbidity at the time of sampling <10NTU).
[b] Water quality data for all wells adjacent to the BSPP site are from available information in online databases and historic reports, a summary of which is provided in Appendix J of the ACFTC. Source: USGS NWIS water database, 2009.
[c] mg/L – milligrams per liter
[d] no data reported in available online databases or historic documents

SOURCE: AECOM, 2010.

In general, based on available water quality data from the immediate vicinity of the BSPP site, groundwater below the BSPP site would not meet drinking water quality primary or secondary standards for domestic supply without treatment given the elevated levels of TDS and high concentrations of fluoride, chloride, boron, and sulfate. The data show that generally, TDS and sulfate concentrations were higher with increasing distance from the Colorado River, with the highest concentrations occurring in the area of McCoy Wash and the gap between the Palo Verde Mesa and Chuckwalla Valley Groundwater Basins. Fluoride, chloride, and boron concentrations were generally lower in the eastern portions of the PVMGB (closer to the Colorado River) and increased westward towards the BSPP site. The much higher TDS concentrations below the Mesa reflect recharge of high TDS water to the PVMGB from percolation along the mountain front and underflow from Rice and Chuckwalla Valleys. Inter-mixing of water from these sources and the Colorado River produces the concentration gradient and decline in concentrations in an easterly direction from the BSPP site toward the river (AECOM, 2010).

Groundwater Wells in Proximity to the Proposed BSPP

A total of 581 water supply wells were identified in online databases in the PVMGB (see AECOM, 2010 - Appendix J). A field survey of wells that were within a one-mile radius of the BSPP site was conducted by AECOM (2009) in July 2009 to identify their locations, confirm operational status, and estimate their use within the basin. Based on the field survey, no active water supply wells were encountered. Nine out of 13 wells within one mile of the site were found to be accessible. All of these wells were used for irrigation supply. Sources of electrical power (i.e., power lines) had been removed from these wells and electrical generators were not observed at any of these wells. With no source of electricity for the water pumps, it was presumed that these nine wells were inactive (AECOM, 2009). The remaining four wells were reported to be not accessible, and as such their status could not be determined (AECOM, 2009). Available information for water supply wells located within a one-mile radius of the BSPP site is summarized in Table 3.20-8.

TABLE 3.20-8
CHARACTERISTICS OF NEARBY WELLS

State Well Number	Surface Elevation (ft msl)	Total Depth (ft bgs)	Distance from Proposed Production Well (feet)	Specific Capacity (gpm/ft)
6/21E-25L01	400.2	--	21,000	--
6/22E-08J01	408	302	11,000	35.56-64.80
6/22E-17B01	399.64	302	10,000	25.00-30.60
6/22E-17L01	400	445	11,000	37.88-54.90
6/22E-17L02	397	323	12,000	42.73-56.90
6/22E-18A01	406.88	298	9,000	30.19-35.14
6/22E-18J01	408	302	9,500	32.43-34.62
6/22E-19N02	397	300	16,000	--
6/22E-19N03	397.2	394	16,000	--
6/22E-19R01	395.6	300	16,500	--

SOURCE: Derived from AECOM, 2009 and AECOM, 2010.

3.20.3 Surface Water Hydrology

Surface water in Palo Verde Mesa drains to the southeast into the Colorado River. At the BSPP site, ephemeral washes occur in the western part of the site. These originate on the flanks of the McCoy Mountains and enter the site where they either combine to form a larger dry wash (southwest corner of the site) or disperse as they enter the sandier alluvial plain (on the northern end of the site) [CH2MHill 2008 as cited in the CEC RSA June 2010). McCoy Wash occurs about 2,000 feet from the northeastern corner of the BSPP site trending northwest to southeast and runs between the mound and knob features described above. McCoy Wash is the largest of the surface water features in the immediate vicinity. Flow in McCoy Wash can be as high as 4,000 cubic feet per second, as measured in 1976 during flooding in the watershed (CH2MHill 2008 as cited in the CEC RSA June 2010). There are no permanent bodies of water located on the BSPP site.

Off-site storm water flows impacting the BSPP site are from a large watershed area to the west and north of the site which covers approximately 10,750 acres (16.8 mi^2). FEMA flood insurance rate maps have not been prepared for the BSPP site or surrounding lands and the BSPP does not lie within a federally mapped floodplain. The upstream extents of the contributing watersheds extend into the McCoy Mountains to the west. The extent of and approximate sub-basin boundaries of the overall watershed impacting the BSPP were delineated utilizing a combination of USGS 7.5 minute quadrangle sheets and site specific aerial topography. The overall watershed boundaries, sub-basin delineations, and 100-year 24-hour storm peak discharges for each sub-basin are shown on Figure 29. Peak discharges for each sub-basin were calculated using the HEC-HMS model and generally followed the guidelines presented in the *Riverside County Flood Control and Water Conservation District Hydrology Manual,* and are summarized in Table 3.20-9.

A comparison was made between the discharge data provided as part of the Drainage Report and discharges obtained using the USGS Regional Regression Equation for the region. The purpose of the comparison was to provide some insight into the reasonableness of the calculated discharges when compared to some other regionally accepted methodology. In general, it appears that the HEC-HMS model and regional regression equations are well correlated, but begin to diverge as sub-basin area increases. The subject area is likely flatter with more dispersed flow than the "average" watershed used in the derivation of the regional regression equation for the area which could account for lower discharges for the larger watersheds. Overall, the reported discharges appear to be reasonable for the purpose of design.

Dry Washes

There are no perennial streams on the BSPP site or the Palo Verde Mesa, which impact the BSPP site. The vast majority of the time, the area is dry and devoid of any surface flow. Water runoff occurs only in response to infrequent intense rain storms. There are numerous moderately defined washes which traverse the site. These features are discernable on aerial photography. To the west side of the BSPP, they are deeper, containing poorly sorted sediment and angular cobbles and boulders. To the east, they tend to be defined by well sorted sand and vegetation. Well developed desert pavement exists between the washes. The conveyance capacity of the washes is limited, and runoff during moderate to large events would break out of these features and be conveyed across the terrain as shallow sheet flow. In general, the drainages appear to be stable and not experiencing significant downcutting or lateral migration.

Springs, Seeps and Playa Lakes

No springs are listed in the area of the PVMGB where the BSPP site is located, according to the NWIS database of Water Resources of the United States that is maintained by the USGS. One spring (McCoy Spring) is shown on a geologic map of the area (CDMG, 1967). McCoy Spring is

TABLE 3.20-9
SUMMARY OF OFFSITE PEAK DISCHARGES

Sub-basin ID	Sub-basin Area	Q100 (cfs) (HEC-HMS)	Q100 (cfs) (Regression)[a]
W1	0.54	1,323	697
W2	0.3	384	459
NW1	0.06	161	147
NW2	0.19	243	332
NW3	0.12	296	240
NW4	0.31	308	470
A2	0.02	29	67
A3	0.02	32	67
A4	0.02	29	67
A5	0.02	27	67
A6	0.02	26	67
A7	0.02	25	67
A8	0.01	24	41
A9	0.01	21	41
A10	0.01	21	41
A11	0.01	20	41
A12	0.01	17	41
A13	0.01	14	41
A14	0.53	315	688
A15	2.74	1,201	2,209
A16	2.83	1,339	2,260
A17	3.22	1,385	2,477
A18	1.26	500	1,273
SW1	0.16	208	294
SW2	1.60	2,398	1,508
SW3	0.96	747	1,049
SW4	0.33	376	492
SW5	0.23	277	380
S1	1.02	723	1,095
S2	0.13	231	254

NOTE:

[a] The regional regression equation used in the analysis above was taken from the U.S. Geological Survey Water-Resources Investigations Report 94-4002: Nationwide Summary of U.S. Geological Survey regional Regression Equations for Estimating Magnitude and Frequency of Floods for Ungaged Sites, 1993. The equation provided was $Q_{100}=1080A^{0.71}$ *for the* South Lahontan-Colorado Desert Region.

SOURCE: CEC, RSA (June 2010) Soil and Water Table 12

approximately seven miles northwest of the BSPP site and is located in Pleistocene non-marine sediments just west of the McCoy Mountains. Discharge from McCoy Spring flows west-southwest into Chuckwalla Valley.

Solid bedrock associated with the McCoy Mountains separate the BSPP site from McCoy Spring. Permeability of the bedrock is very low to nil, such that groundwater extraction from the BSPP site is not expected to affect flow from McCoy Spring. In a report on water wells and springs in Palo Verde Valley (DWR, 1978) including the Palo Verde Mesa area, no springs are shown in the McCoy Mountains or the Palo Verde Mesa (AECOM, 2010).

According to the NWIS database, where seeps and surface discharges/outfalls (along with streams, lakes, wetlands, and diversions) are categorized as “surface water sites,” three sites are located on the southern edge of the Palo Verde Mesa approximately 10 miles south of the BSPP site. These sites (site numbers 5, 6, and 7) are listed in Table 3.20-10. The northern segment of the Mule Mountains separates these three sites and associated groundwater gradients/flow directions from the BSPP site. Therefore, groundwater extraction from the BSPP site is not expected to affect these locations.

TABLE 3.20-10
SURFACE WATER DISCHARGES IN PALO VERDE MESA AND PALO VERDE VALLEY WITHIN 10 MILES OF BSPP SITE

Site No.	Location Number	Location Name	Latitude	Longitude	Type	Distance from BSPP (miles)
1	USGS 334431144121	Rannells Dr at Keim Drive Near Blythe CA	33°34'43	114°41'26	Stream	5
2	USGS 333755114372301	W Side Drain a 10th and Defrain Ave Blythe CA	33°37'55	114°37'23	Stream	7
3	USGS 333940114370801	Up W DSie Drain A 6th Ave near Blythe	33°39'40	114°37'08	Stream	7
4	USGS 332928114443101	Hodges Dr a 30th near Palo Verde CA	33°29'28	114°44'31	Stream	10
5	USGS 09533300	Wellton Mohawk Bypass Dr a AZ Son Bdry AZ	33°29'38	114°48'41	Stream	10
6	USGS 09534550	Two Forty Two Lateral Near San Luis	33°29'13	114°47'14	Stream	10
7	USGS 09534500	E Main Canal Wasteway at AZ Son Bdry	33°29'13	114°47'01	Stream	10
8	USGS 332909114440601	CRDC Near Well 6 CA	33°29'09	114°44'06	Stream	10
9	USGS 332935114433701	Palo Verde Drain A 30th Ave Palo Verde CA	33°29'35	114°43'37	Stream	10
10	USGS 333025114421401	Rannells Dr A 28th Ave Nr Ripley	33°30'25	114°42'14	Stream	9
11	USGS 333123114402300	Westside Dr Palo Verde Outfall, CA	33°31'23	114°40'23	Stream	9
12	USGS 333241114381901	Central CA Dr a 22nd Ave Nr Ripley CA	33°32'41	114°38'19	Stream	8
13	USGS 333426114355801	Lovekin Dr A 18th Nr Blythe CA	33°34'26	114°35'58	Stream	9
14	USGS 333849114354901	W Side Drain A 8th Ave Nr Blythe	33°38'49	114°35'49	Stream	8
15	USGS 333942114353601	W Side Drain A 6th Ave Nr Blythe	33°39'42	114°35'36	Stream	8

SOURCE: AECOM, 2010.

Numerous other “surface water sites” (including seeps and surface discharges) are identified in the NWIS database in the Palo Verde Valley Groundwater Basin east of the PVMGB. As many as 50 “surface water sites” are listed in the NWIS database for the Palo Verde Valley, which includes the floodplain area from the Colorado River westward to the base of the terrace (see AECOM, 2010). Fifteen of the 50 sites are within 10 miles of the BSPP site. The remaining 35 of the 50 sites are 11 or more miles east of the BSPP site – many of these are within 0.5 mile of the Colorado River. The 15 sites that are closest to the BSPP site are listed in Table 3.20-10. According to the NWIS database, these sites are streams or canals that likely collect irrigation runoff from the abundant farmland in the Palo Verde Valley.

Storm Water Flow

Storm water flow across and adjacent to the BSPP occurs in a network of generally shallow and moderately expressed alluvial channels, and during larger events as more widespread sheetflow. In general, the channels get shallower and less defined the further they extend east from the McCoy Mountains. The Applicant provided graphical results of FLO-2D modeling for existing conditions that attempted to present the extents and depths of surface flow across the BSPP during the 100-year event. The methods utilized for the FLO-2D analysis were not provided in the Drainage Report or its Technical Memorandum. The graphical results of the analysis were difficult to interpret, but did confirm the presence of some more defined drainages as well as the occurrence of widespread and shallow sheet flooding across and adjacent to the BSPP. Digital files of the FLO-2D modeling were not provided as requested during the data request process.

Surface and Groundwater Beneficial Uses

The Basin Plan for the Colorado River Basin Regional Water Quality Control Board (CRBRWQCB) establishes water quality objectives, including narrative and numerical standards that protect the beneficial uses of surface and ground waters in the region. The Basin Plan describes implementation activities and other control measures designed to ensure compliance with statewide plans and policies, and to provide comprehensive water quality planning.

Beneficial water uses are of two types: consumptive and non-consumptive. Consumptive uses are those normally associated with human activities, primarily municipal, industrial and irrigation uses that consume water and cause corresponding reduction and/or depletion of water supply. Non-consumptive uses include swimming, boating, waterskiing, fishing, hydropower generation, and other uses that do not significantly deplete water supplies.

1. Past or Historical Beneficial Uses
    a. Historical beneficial uses of water within the Colorado River Basin Region have largely been associated with irrigated agriculture and mining. Industrial use of water has become increasingly important in the region, particularly in the agricultural areas.
2. Present Beneficial Uses
    b. Agricultural use is the predominant beneficial use of water in the Colorado River Basin Region, with the major irrigated acreage being located in the Coachella,

Imperial and Palo Verde Valleys. The next largest use of water is for municipal and industrial purposes. The third major category of beneficial use, recreational use of surface waters, represents another important segment of the region's economy. The Colorado River Basin Region functions as a portion of the larger Colorado River watershed, which supplies water for agricultural and urban uses, fisheries, hydroelectric power production, recreation, and international treaty obligations.

3. Sources of Drinking Water Policy

   c. All surface and ground waters are considered to be suitable, or potentially suitable, for municipal or domestic water supply with the exception of:

      i. Surface and ground waters where the TDS exceed 3,000 mg/L, and the source is not reasonably expected by the Regional Board to supply a public water system, or

      ii. There is contamination, either by natural process or human activity, that cannot be treated for domestic use using either best management practices or best economically achievable treatment practices, or

      iii. The water source does not provide sufficient water to supply a single well capable of producing an average, sustained yield of 200 gallons per day.

Existing springs in the Colorado River Basin include the Box Spring, Crystal Spring, Old Woman Spring, Cove Spring, Mitchell Caverns Spring, Bonanza Spring, Agua Caliente Spring, Kleinfelter Spring, Von Trigger Spring, Malpais Spring, and Sunflower Spring. Based on a review of available information including the USGS NWIS database, USGS quadrangle maps and data provided by the BLM, none of these springs are within the area that would be influenced by the BSPP. Existing uses of water from springs in the Colorado River Basin include Bousic Spring, Veale Spring, Nett Spring, Gordon Spring, and Arctic Canyon Spring. None of these springs are within the area that would be influenced by the BSPP.

Water quality objectives are established for the reasonable protection of beneficial uses of water or the prevention of nuisance within a specific area.

1. General Surface Water Objectives (CRBRWQCB)

   a. *Aesthetic Qualities* – All waters shall be free from substance attributable to wastewater of domestic or industrial origin or other discharges which adversely acftfect beneficial uses not limited to: setting to form objectionable deposits; floating as debris, scum, grease, oil, wax, or other matter that may cause nuisances; and producing objectionable color, odor, taste, or turbidity.

   b. *Tainting Substances* – Waters shall be free of unnatural materials which individually or in combination produce undesirable flavors in the edible portions of aquatic organisms.

   c. *Toxicity* – All waters shall be maintained free of toxic substances in concentrations which are toxic to, or which produce detrimental physiological responses in human, plant, animal, or indigenous aquatic life. Compliance with this objective would be determined by use of indicator organisms, analyses of species diversity, population density, growth anomalies, 96-hour bioassay or bioassays of appropriate duration or other appropriate methods as specified by the CRBRWQCB. Effluent limits based upon bioassays of effluent would be prescribed where appropriate, additional numerical receiving water objectives for specific toxicants would be established as sufficient data to become available, and source control of toxic substances would be encouraged. The survival of aquatic life in surface waters subjected to a waste discharge or other controllable water quality factors, shall not be less than that for the same water body in areas unacftfected by the waste discharge, or other control water which is consistent with the requirements for "experimental water" as described in Standards Methods for the Examination of Water and Wastewater.

d. *Temperature* – temperature shall not be altered.

e. *pH* – shall range from 6.0 to 9.0

f. *Dissolved Oxygen* – shall not be reduced below the following minimum levels at any time: warm – 5.0 mg/L, cold – 8.0 mg/L, and warm and cold – 8.0mg/L

g. *Total Dissolved Solids* – discharges of wastes or wastewater shall not increase the total dissolved solids content of receiving waters, unless it can be demonstrated to the satisfaction of the Regional Board that such an increase in total dissolved solids does not adversely acftfect beneficial uses.

h. *Bacteria* – The geometric mean of the indicated bacterial densities should not exceed one or the other of the following: E. coli – 630 colonies (col) per 100 ml and enterococci – 165 col per 100 ml. Nor shall any sample exceed one other following maximum allowable: E.coli 2000 col per 100 ml and enterococci 500 col per 100 ml.

i. Any discharge, except from agricultural, shall not cause concentration of total dissolved solids in surface waters to exceed the following limits:

	TDS (mg/L)	
Location	**Annual Average**	**Maximum**
Coachella Valley Drains	2,000	2,500
Palo Verde Valley Drains	2,000	2,500

2. General Groundwater Objectives

Establishment of numerical objectives for groundwater involves complex considerations and it is acknowledged that the quality of groundwater varies significantly throughout the PVMGB and varies with depth. It is the CRBRWQCB's goal to maintain the existing quality of non-degraded groundwater basins and to minimize the quantities of contaminants reaching any groundwater basin.

a. Groundwater designated for domestic or municipal supply shall not contain taste or odor producing substances.

b. Groundwater designated for domestic or municipal supply shall not contain coliform organisms in excess of limits specified in the regulations.

c. Groundwater designated for domestic or municipal supply shall not contain concentration of chemical constituents in excess of the limits specified in the regulations.

d. Discharges of water softeners regeneration brines, other mineralized wastes, and toxic wastes to disposal facilities which ultimately discharge in areas where such waste can percolate to ground waters useable for domestic and municipal purposes, are prohibited.

Wastewater reclamation and reuse is encouraged; however, such use must meet applicable water quality standards.

3.20.4 BSPP Water Use

Wastewater

The BSPP would produce four primary wastewater streams:

1. Non-reusable sanitary wastewater produced from administrative centers and operator stations;
2. Non-reusable cooling tower blowdown from auxiliary equipment;
3. Partially recyclable boiler blowdown (to be used as cooling tower makeup); and
4. Reusable reverse osmosis (RO) and demineralized reject water that will be sent to a high efficiency reverse osmosis (HERO) type system, or concentrated to minimize water streams to the evaporation ponds.

The sanitary wastewater would consist of four separate systems (one at each Power Block) with a capacity of 2,750 gallons per day (gpd) or a total BSPP of 11,000 gpd. Sanitary wastes would be collected for treatment in septic tanks and disposed via leach fields located at each of the four power blocks as well as at the administration area and warehouse area. Smaller septic systems would be provided for the control room buildings to receive sanitary wastes at those locations.

The second wastewater stream, which includes auxiliary equipment cooling tower blowdown, RO reject water, and boiler blowdown, would be directed to one of two 4-acre evaporation ponds that will be located at each Power Block. The plant would operate on one pond for approximately four months, and then switch to the second pond. The evaporation ponds would be double-lined.

Each pond would have a minimum evaporative surface area of 3.5 acres resulting in a total of seven acres of evaporation ponds for each unit or a total of 28 acres of ponds for all four 250 MW units. The ponds would be designed and permitted as Class II Surface Impoundments in accordance with CRBRWQCB requirements, as well as the requirements of the California Integrated Waste Management Board. Multiple ponds are planned to allow plant operations to continue in the event a pond needs to be taken out of service for some reason, *e.g.*, needed maintenance. Each pond would have enough surface area so the evaporation rate exceeds the wastewater production rate at maximum design conditions and annual average conditions.

The average pond depth would be five feet. Residual precipitated solids would be removed at the end of the 30 year project life, or sooner if necessary. The ponds would maintain a minimum of two feet of freeboard to minimize the potential for overtopping due to 100-year recurrence interval rainfall event.

The pond liner system would consist of a 60 mil high density polyethylene (HDPE) primary liner and a secondary 40 mil HDPE liner. Between the liners would be a synthetic drainage geonet and collection piping to be used as part of the leachate collection and removal system (LCRS). There would be a hard surface protective layer on top of the 60 mil HPDE that would consist of a hard surface media such as reinforced concrete, roller compacted concrete, revetments, or combinations of these media as would be assessed prior to the selection of the preferred option. The hard surface would provide protection against accidental damage to the HDPE from falling objects, varying climatic conditions, and worker activities during cleanout and maintenance. Monitoring of the evaporation ponds would be required to detect the presence of liquid and/or constituents of concern.

Construction

The BSPP proposes to construct four generating units over the course of 69 months. Total water consumption over the 69 months is anticipated to be 4,100 acre-feet (ac-ft). Water from up to 10 onsite wells would be used for the following consumptive uses:

1. Dust suppression
2. Soil compaction
3. Construction/grading requirements

Domestic potable water would be brought on site in trucks and held in day tanks. The majority of the water consumption is assumed to occur over the first four years of construction and is assumed to be approximately 1,025 ac-ft/yr.

Operations

The BSPP would be a dry-cooled facility that would use about 600 ac-ft/yr (150 ac-ft/yr per unit) of groundwater from onsite wells for operational supply. Assuming continuous uninterrupted supply, a yearly volume of 600 ac-ft, which corresponds to an average flow rate of approximately 388 gallons per minute (gpm) based on 24 hours per day, 350 days per year. The peak water usage during the summer months would be about 818,000 gallons per day (gpd) or about 568 gpm, assuming continuous pumping. Water use during the winter months is estimated to be between about 293,822 gpd, or a pumping rate of about 200 gpm, assuming continuous use. Over the BSPP’s 30-year life, water use is expected to be approximately 22,100 ac-ft.

The BSPP proposes to use air-cooled condensers, “dry cooling,” for power plant cooling, and wet cooling for auxiliary equipment on hot days. Water from up to ten onsite wells would be used for the following consumptive uses:

1. Solar mirror wash water to maintain solar collector efficiency;

2. Domestic potable uses including drinking water, showering, toilets, hand washing, etc, for approximately 84 employees for Unit #1 and a total of 221 with all four units operating;

3. Power cycle makeup water to supply the steam driving the steam turbine generators (this water would be recycled and thus would not constitute consumptive use);

4. Auxiliary equipment heat rejection, for cooling generators, pumps and other equipment; and

5. Dust suppression.

Table 3.20-11 and Table 3.20-12 summarize the anticipated water requirements during operation of the proposed BSPP along with anticipated requirements for each month of the year. Estimates for water usage are based on:

1. Solar mirror washing – experience at other locations with similar climatic conditions;

2. Domestic potable use – number of employees and number of hours expected to be worked during the year. An average consumption of 37 gallons per person per day was assumed;

3. Feedwater makeup and auxiliary cooling – expected monthly power production rates; and

4. Dust suppression.

5. Calculated water requirements do not account for potential emergency flows required for fire suppression.

TABLE 3.20-11
ESTIMATED WATER USAGE BY PLANT

Water Use	Annualized Average Rate (gpm)[a]	Estimated Peak Rate (gpm)[b]	Estimated Usage (ac-ft/yr)
250 MW Plant	100	142	150
250 MW Plant	100	142	150
250 MW Plant	100	142	150
250 MW Plant	100	142	150
Total BSPP	400	568	600

[a] The estimated groundwater usage in gallons per minute is based on an average daily consumption.
[b] The peak rate for summer usage assumes continuous pumping (daily average).

SOURCE: AECOM, 2009.

TABLE 3.20-12
ESTIMATED WATER USAGE – TOTAL BSPP

Flow	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec
Gpm (average)	121	288	352	507	546	568	510	510	468	319	258	211
Acre-Feet	16.6	35.6	48.3	67.2	74.8	75.3	69.9	69.9	62.1	43.7	34.2	28.9

SOURCE: AECOM, 2009.

3.21 Wild Horse and Burros

As shown on Map 2-26 of the Approved Northern and Eastern Colorado Desert Coordinated Management Plan (2002), there are no Wild Horse and Burro Herd Areas (HAs) or Herd Management Areas (HMAs) within or adjacent to the proposed action area or right-of-way application area.

3.22 Wildland Fire Ecology

The proposed action Study Area is located within the boundaries of BLM's NECO Plan. The NECO Plan boundary is shown, for example, in Figure 14. Compared to other parts of the state, there are relatively few fires in the planning area and most are small. In the 15 years between 1980 and 1995, a handful of fires burned a total of about 6,000 acres, all outside the Study Area. Of this amount, about 900 acres in the Chemehuevi Critical Habitat Unit and about 11 acres in the Chuckwalla Critical Habitat Unit burned. Most fires in the desert are caused by lightning or vehicles.

BLM and NPS have collaborated in the development of the Fire Management Activity Plan (FMAP) 1996 for the California Desert. The FMAP brings together fire management goals for biological resources, wilderness, and other sources and establishes fire management standards and prevention and protection programs. The FMAP includes limitations on fire suppression methods in critical habitat and other tortoise habitat; the limitations are designed to limit habitat disturbance while keeping fires small.

The vegetation-fuel types in the Study Area, Sonoran creosote bush scrub, desert dry wash woodland, vegetated ephemeral swales (supporting a desert wash scrub of creosote bush and big galleta grass), unvegetated ephemeral dry wash, and stabilized and partially stabilized desert dunes, are not fire-adapted. Fire, particularly repeated wildfire is deleterious to these plant communities and tends to deplete the native woody shrubs that characterize and dominate these communities in favor of exotic weedy annuals. See Figure 14.

Exotic and invasive weedy annual plants such as Mediterranean splitgrass and red brome form a complete ground cover in some places, where they have displaced native annual and perennial grasses and forbs. There are indications that the increase in exotic annual grasses might be enhanced by nitrogen deposition from air pollution originating outside of the planning area (e.g., Los Angeles Basin, Coachella Valley) (Brooks 1998, Allen et al. 1997, Environmental Protection Agency 1996 as cited by BLM, 2002). There is some evidence that disturbances such as livestock grazing, OHV use, and fire have contributed to the spread of exotic annuals (Brooks 1998, Malo and Suarez 1995 as cited by BLM, 2002).

Sonoran Desert Scrub is the dominant community type within the NECO Planning Area, covering 3.8 million acres, or 69 percent of the total area. The large majority of its distribution (86 percent) is on public lands. Major threats to this community type include fire, grazing, off-road vehicles, and invasions of alien species. Sonoran creosote bush scrub occupies approximately 85 percent of the Study Area.

Wildfire suppression occurs with the minimum surface disturbance practical in all habitats. Wildfires are suppressed using a mix of only the following methods in order to minimize habitat disturbance:

1. Aerial attack

2. Crews using hand tools to create fire breaks
3. Mobile attack engines limited to public roads, designated open routes, and routes authorized for limited-use
4. Use of foam and/or fire retardant
5. Use of earth-moving equipment or tracked vehicles (such as bulldozers) in critical situations to protect life, property, or high-value resource.
6. Post fire-suppression mitigation includes rehabilitation of firebreaks and other ground disturbances and obliteration of vehicle tracts sufficient to discourage future casual use. Hand tools are used for rehabilitation activities whenever feasible.

Disturbed areas are more likely to support exotic annual weeds and there are three of these cover types in the Study Area, Developed, Disturbed, and Agricultural land, totaling 1,786 acres (see Section 3.18, *Vegetation Resources*). These are the areas most likely to support or carry wildfires in the Study Area.

3.23 Wildlife Resources

Introduction

The entirety of the BSPP Area supports a variety of desert-adapted wildlife that use the natural plant communities described in PA/FEIS Section 3.19. Reptile residents include side-blotched, desert spiny, desert iguana, and western whiptail lizards and sidewinders and desert patch-nosed snakes. Typical birds include verdin, black-tailed gnatcatcher, ash-throated flycatcher, and black-throated sparrow, while mammals are represented primarily by round-tailed ground squirrels, white-tailed antelope squirrels, desert kangaroo rats, pocket mice, and black-tailed jackrabbits (EDAW AECOM 2009).

3.23.1 Special Status Wildlife

Special-status wildlife are species that have been afforded special recognition by federal, state, or local resource agencies or organizations. Listed and special-status species are of relatively limited distribution and typically require unique habitat conditions. Special-status wildlife are defined as meeting one or more of the following criteria:

1. Listed as threatened or endangered or candidates for future listing as threatened or endangered under CESA or FESA;
2. Protected under other regulations (e.g., Migratory Bird Treaty Act);
3. Listed as species of concern by CDFG;
4. Considered a locally significant species, that is, a species that is not rare from a statewide perspective but is rare or uncommon in a local context such as within a county or region or is so designated in local or regional plans, policies, or ordinances; or
5. For consistency with the DEIS, any other species receiving consideration during environmental review under CEQA.

The BLM designates Sensitive species as those requiring special management considerations to promote their conservation and reduce the likelihood and need for future listing under FESA. BLM Sensitive species include all Federal Candidate and Federally Delisted species which were so designated within the last five years, and CNPS List 1B species that occur on BLM lands. For the purposes of this document, all BLM Sensitive species as special-status species.

Wildlife Resources Table 3.23-1 lists all special-status species evaluated during the analysis that are known to occur or could potentially occur in the BSPP area and vicinity. Special-status species detected within the BSPP area are discussed in more detail below. Special-status species observed during the 2009 field surveys are indicated by **bold-face type** (AECOM 2009a).

TABLE 3.23-1
SPECIAL-STATUS WILDLIFE KNOWN TO OR WITH POTENTIAL TO OCCUR IN THE BSPP BIOLOGICAL RESOURCES STUDY AREA

Common Name	Scientific Name	Status State/Federal
WILDLIFE		
Reptiles/Amphibians		
Desert tortoise	***Gopherus agassizii***	**ST/FT**
Couch's spadefoot toad	*Scaphiopus couchii*	CSC/__/BLM Sensitive
Mojave fringe-toed lizard	***Uma scoparia***	**CSC/BLM Sensitive**
Desert rosy boa	*Charina (Lichanura) trivirgata*	__/__
Chuckwalla	***Sauromalus obesus***	**__/__**
Birds		
Western burrowing owl	***Athene cunicularia hypugaea***	**CSC/BCC/BLM Sensitive**
Golden eagle	*Aquila chrysaetos*	CFP/__/BLM Sensitive
Short-eared owl	*Asio flammeus*	CSC
Ferruginous hawk	***Buteo regalis***	**WL/BLM Sensitive**
Swainson's hawk	*Buteo swainsoni*	ST
Prairie falcon	*Falco mexicanus*	WL
American peregrine falcon	*Falco peregrinus anatum*	SFP
Vaux's swift	*Chaetura vauxi*	CSC
Mountain plover	*Charadrius montanus*	CSC/__/BLM Sensitive
Northern harrier	*Circus cyaneus*	CSC
Gilded flicker	*Colaptes chrysoides*	SE
Yellow warbler	***Dendroica petechia sonorana***	**CSC**
California horned lark	*Eremophila alpestris actia*	WL
Yellow-breasted chat	*Icteria virens*	CSC
Loggerhead shrike	***Lanius ludovicianus***	**CSC/BCC**
Gila woodpecker	*Melanerpes uropygialis*	SE
Black-tailed gnatcatcher	***Polioptila melanura***	**__/__**
Purple martin	*Progne subis*	CSC
Vermilion flycatcher	*Pyrocephalus rubinus*	CSC
Bendire's thrasher	*Toxostoma bendirei*	CSC/__/BLM Sensitive
Crissal thrasher	*Toxostoma crissale*	CSC
Le Conte's thrasher	*Toxostoma lecontei*	WL/BCC/Sensitive
Mammals		
Pallid bat	*Antrozous pallidus*	CSC/__ /BLM Sensitive
Townsend's big-eared bat	*Corynorhinus townsendii*	CSC/__/BLM Sensitive
Burro	*Equus asinus*	__/__
Spotted bat	*Euderma maculatum*	CSC/__/ BLM Sensitive
Western mastiff bat	*Eumops perotis californicus*	CSC/__/ BLM Sensitive
Hoary bat	*Lasiurus cinereus*	__/__
California leaf-nosed bat	*Macrotus californicus*	CSC/__/ BLM Sensitive
Arizona myotis	*Myotis occultus*	CSC
Cave myotis	*Myotis velifer*	CSC/__/ BLM Sensitive
Yuma myotis	*Myotis yumanensis*	__/__/BLM Sensitive
Colorado Valley woodrat	*Neotoma albigula venusta*	__/__
Pocket free-tailed bat	*Nyctinomops femorosaccus*	CSC
Big free-tailed bat	*Nyctinomops macrotis*	CSC
Burro deer[a]	*Odocoileus hemionus eremicus*	__/__/__
Nelson's bighorn sheep[a]	*Ovis canadensis nelson*	__/BLM Sensitive
Yuma mountain lion	*Puma concolor browni*	CSC

TABLE 3.23-1 (Continued)
SPECIAL-STATUS WILDLIFE KNOWN TO OR WITH POTENTIAL TO OCCUR IN THE BSPP BIOLOGICAL RESOURCES STUDY AREA

Common Name	Scientific Name	Status State/Federal
WILDLIFE (cont.)		
Mammals (cont.)		
American badger	***Taxidea taxus***	**CSC**
Desert kit fox	***Vulpes macrotis arsipus***	**__/__**

NOTES:

[a] Potential deer or bighorn scat was found during 2009 field survey but could not be differentiated to species. Scat was more likely to be deer.

Status codes:

Federal

FE = Federally listed endangered: species in danger of extinction throughout a significant portion of its range
FT = Federally listed, threatened: species likely to become endangered within the foreseeable future
BCC: Fish and Wildlife Service: Birds of Conservation Concern: Identifies migratory and non-migratory bird species (beyond those already designated as federally threatened or endangered) that represent highest conservation priorities <www.fws.gov/migratorybirds/reports/BCC2002.pdf>

State

CSC = California Species of Special Concern Species of concern to CDFG because of declining population levels, limited ranges, and/or continuing threats have made them vulnerable to extinction.
SE = State listed as endangered
ST = State listed as threatened
WL = State watch list

California Native Plant Society

List 1B = Rare, threatened, or endangered in California and elsewhere
List 2 = Rare, threatened, or endangered in California but more common elsewhere
List 3 = Plants which need more information
List 4 = Limited distribution – a watch list
0.1 = Seriously threatened in California (high degree/immediacy of threat)
0.2 = Fairly threatened in California (moderate degree/immediacy of threat)
0.3 = Not very threatened in California (low degree/immediacy of threats or no current threats known)

Bureau of Land Management

BLM Sensitive = = Species that require special management consideration to avoid potential future listing under the ESA and that have been identified in accordance with procedures set forth in BLM Manual section 6840.
http://www.blm.gov/pgdata/etc/medialib/blm/wo/Information_Resources_Management/policy/blm_manual.Par.43545.File.dat/6840.pdf

Global Rank/State Rank

Global rank (G-rank) is a reflection of the overall condition of an element throughout its global range. Subspecies are denoted by a T-Rank; multiple rankings indicate a range of values

G1 or S1 = Less than 6 viable element occurrences (EOs) OR less than 1,000 individuals
G2 or S2 = 6-20 EOs OR 1,000-3,000 individuals
G3 or S3 = 21-100 EOs OR 3,000-10,000 individuals
G4 or S4 = Apparently secure; this rank is clearly lower than G3 but factors exist to cause some concern; i.e., there is some threat, or somewhat narrow habitat.
G5 or S5 = Population or stand demonstrably secure to ineradicable due to being commonly found in the world.

State rank (S-rank) is assigned much the same way as the global rank, except state ranks in California often also contain a threat designation attached to the S-rank. An H-rank indicates that all sites are historical

.1 = very threatened
.2 = threatened
.3 = no current threats known

SOURCE: CNDDB 2009.

Desert Tortoise

The desert tortoise was state-listed in California as threatened on August 3, 1989. The Mojave population was federally-listed as threatened on April 2 1990, and critical habitat was designated on February 8, 1994. The Mojave population of the desert tortoise includes those animals living north and west of the Colorado River in the Mojave Desert of California, Nevada, Arizona, and southwestern Utah, and in the Sonoran (Colorado) Desert in California (1990; USFWS 1994). The desert tortoise's range, outside the listed Mojave population, extends into the Sonoran Desert, where tortoises occur in the lower Colorado River Valley, Arizona uplands, plains of Sonora, and the central Gulf Coast; the species has not been documented in northeastern Baja California (Germano *et al.* 1994) (Figures 30 and 31).

Desert tortoises are well adapted to living in a highly variable and often harsh desert environment. They spend much of their lives in burrows, even during their seasons of activity, which generally coincides with the greatest annual forage availability. In late winter or early spring, they emerge from over-wintering burrows and typically remain active through fall. Activity does decrease in summer, but tortoises often emerge after summer rain storms to drink (Henen *et al.* 1998). During activity periods, desert tortoises eat a wide variety of herbaceous vegetation, particularly grasses and the flowers of annual plants (Berry 1974; Luckenbach 1982; Esque 1994). During periods of inactivity, they reduce their metabolism and water loss and consume very little food. Adult desert tortoises lose water at such a slow rate that they can survive for more than a year without access to free water of any kind and can apparently tolerate large imbalances in their water and energy budgets (Nagy and Medica 1986; Peterson 1996a, b; Henen *et al.* 1998).

The size of desert tortoise home ranges varies with respect to location and year (Berry 1986a) and also serves as an indicator of resource availability and opportunity for reproduction and social interactions (O'Connor *et al.* 1994). Females have long-term home ranges that may be as little or less than half that of the average male, which can range to up to 200 acres (Burge 1977; Berry 1986a; Duda *et al*. 1999; Harless *et al*. 2009). Core areas used within tortoises' larger home ranges depend on the number of burrows used within those areas (Harless *et al*. 2009). Over its lifetime, each desert tortoise may use more than 1.5 square miles of habitat and may make periodic forays of more than seven miles at a time (Berry 1986a).

Tortoises are long-lived and grow slowly, requiring 13 to 20 years to reach sexual maturity, and have low reproductive rates during a long period of reproductive potential (Turner *et al.* 1984a; Bury 1987; Germano 1994). Mating occurs both during spring and fall (Black 1976; Rostal *et al.* 1994), and the number of eggs as well as the number of clutches (set of eggs laid at a single time) that a female desert tortoise can produce in a season is dependent on a variety of factors including environment, habitat, availability of forage and drinking water, and physiological condition (Turner *et al.* 1986, 1987; Henen 1997; McLuckie and Fridell 2002). Egg-laying occurs primarily from April to July (Rostal et al. 1994; USFWS 1994); the female typically lays 2-14 eggs (average 5-6) eggs in an earthen chamber excavated near the mouth of a burrow or under a bush (Woodbury and Hardy 1948; USFWS 1994). The eggs typically hatch 90 to 120 days later, between August and October. The success rate of clutches has proven difficult to measure, but predation, while highly variable (Bjurlin and Bissonette 2004), appears to play an important role in clutch failure (Germano 1994).

The majority of threats to the desert tortoise and its habitat are associated with human land uses. Many of those identified in the 1994 Recovery Plan, and that formed the basis for listing the species as threatened, continue to affect the tortoise today (USFWS 2008a). Some of the threats identified at the time of listing include urbanization, upper respiratory tract disease and possibly other diseases, predation by common ravens and domestic and feral dogs, unauthorized off-road vehicle activity, authorized vehicular activity, illegal collecting, mortality on paved roads, vandalism, drought, livestock grazing, feral burros, non-native plants, changes to natural fire regimes, and environmental contaminants (USFWS 1994).

Even though a wide range of threats are known to affect desert tortoises and their habitat, very little is known about their demographic impacts on tortoise populations or the relative contributions each threat makes to tortoise mortality (Boarman 2002a). Extensive research shows that all of these threats can directly kill or indirectly affect tortoises; research has also clarified many mechanisms by which these threats act on individuals. While current research results can lead to predictions about how local tortoise abundance should be affected by the presence of threats, quantitative estimates of the magnitude of these threats, or of their relative importance, have not yet been developed. Thus, the Draft Revised Recovery Plan focuses on expanding the knowledge of individual threats and places emphasis on understanding their multiple and combined effects on tortoise populations (USFWS 2008a).

The original *Desert Tortoise (Mojave Population) Recovery Plan* identified six recovery units (Upper Virgin River, Northeastern Mojave, Eastern Mojave, Eastern Colorado, Northern Colorado, and Western Mojave) and recommended the establishment of 14 DWMAs throughout the recovery units (USFWS 1994) (Figure 31). Since 1994, greater insight into patterns of both ecological and genetic variation within the Mojave desert tortoise population has been gained. While the Draft Revised Recovery Plan has not yet been finalized, based on this new information, the revision redefines the recovery units to balance both distinctiveness and variability within the population. Given the generally continuous variation in genetic structure and biomes across the Mojave desert tortoise's range, the approach in delineating revised recovery units stresses identification of geographic discontinuities or barriers that coincide with any observed variation among tortoise populations. Several potential barriers are evident from topographic maps, the U.S. Geological Survey habitat model (Nussear et al. 2009), and landscape genetic analyses (Hagerty 2008). Differences in genetic, ecological, and physiological characteristics to help highlight boundaries or other differences between units were used in the delineation. In doing this, the USFWS considered demographic, ecological, and behavioral considerations to be of greater importance than genetic issues alone, as have been suggested by researchers providing recommendations on the formulation of conservation plans for threatened or endangered species (Avise 2004:486-487; Mace and Purvis 2008). The Draft Revised Recovery Plan reduces the number of recovery units from six to five, which reflects the newly obtained information and ensures that local adaptations and critical genetic diversity are maintained (USFWS 2008a).

According to the 1994 Recovery Plan, the BSPP is located within Eastern Colorado Recovery Unit, which was merged with the Northern Colorado Recovery Unit in the USFWS Draft Revised Recovery Plan and referred to simply as the Colorado Desert Recovery Unit (USFWS 2008a). Within this recovery unit desert tortoise are found primarily in “well-developed washes, desert pavements, piedmonts, and rocky slopes characterized by relatively species-rich succulent scrub, creosote bush scrub, and blue palo verde-ironwood-smoke tree communities” (USFWS 1994). Habitat within this recovery unit has been described as being in excellent condition despite declines in tortoise densities over the past several decades; disturbance was estimated at less than 1.3 percent throughout (USFWS 2005). The highest desert tortoise densities within this recovery unit occur in Chemehuevi and Ward valleys (approximately 60 miles north of the BSPP site), on the Chuckwalla Bench within the Chuckwalla Desert Wildlife Management Area (DWMA and associated Critical Habitat Unit, about 10 miles west of the BSPP site are shown in Figure 31) and in Joshua Tree National Park (approximately 40 miles northwest of the BSPP site). Desert tortoise densities at the Chuckwalla Bench in 1992 were estimated between 22 and 49 adults per square kilometer (approximately 57–127 adults per square mile) but have shown declining trends (Berry 1997; Tracey et al 2004).

According to the 1994 Recovery Plan, tortoise densities in the Eastern Colorado Recovery Unit were estimated between five and 175 adult tortoises per square mile and the area was given a threat level of 4 out of 5 (5 = extremely high) (CEC, RSA June 2010 citing USFWS 1994). Density estimates based on range-wide line distance sampling monitoring from 2001–2005 (citing USFWS 2006) are lower than estimates from earlier studies (Luckenbach 1982; Berry 1984), but these simple comparisons cannot be taken at face value when the historical monitoring efforts were conducted using different techniques at different scales and with different goals. Differences may reflect a difference in scale between methods, with relatively large historical tortoise densities estimated in small, local areas being smoothed over larger areas with range-wide sampling. However, low tortoise densities across recovery units from 2001-2005 may also represent continued decline of populations throughout the Mojave Desert since the species was listed (CEC, RSA June 2010 citing USFWS 2006).

As part of the application process, the Applicant prepared an evaluation of desert tortoise habitat in the region based on the recent USGS habitat model (Nussear et al. 2009). Based on the model, habitat quality is ranked from 0-1, with 1 representing high quality habitat. The BSPP Disturbance Area (Disturbance Area) includes the entire Proposed Action footprint area within solar plant site fence line including solar fields, power block, transmission facilities, office and maintenance buildings, laydown area, bioremediation area, and leach fields. Values in the BSPP Disturbance Area range from of 0.4-0.6 in the western most edge of the solar facility site to 0.3 and below for the rest of the BSPP Disturbance Area (AECOM 2010a Figure DR-BIO-45).

Protocol-level surveys of part of the BSPP Disturbance Area were conducted in spring 2009. The Applicant conducted additional protocol-level surveys in fall 2009 and spring 2010 to cover the southernmost 2.1 miles of the proposed transmission line corridor and the substation site. Spring 2009 survey results of the BSPP Disturbance Area include one adult desert tortoise, 65 burrows (Class 1-5), 147 pallets (Class 1-5), 45 scat (Class 1-5), 383 tortoise shell remains (Class 2-5), and one drinking depression (AECOM 2010a). Additional observations of two adult desert tortoises from BSPP Area buffers are included in the Revised Desert Tortoise Technical Report (AECOM 2010i). During 2010 surveys, an additional live tortoise was observed, along with Class 2 burrows, bone fragments, and other desert tortoise sign, indicating use of the BSPP area, particularly the south side.

There are 7,077 acres of suitable desert tortoise habitat in the BSPP Disturbance Area (AECOM 2010a, Habitat Mitigation and Monitoring Plan). The entire BSPP Disturbance Area contains suitable desert tortoise habitat, though soils south of I-10 are sandier, and provide less favorable habitat (AECOM 2010a, Preliminary Habitat Mitigation and Monitoring Plan).

Mojave Fringe-toed Lizard

Mojave fringe-toed lizards are widespread geographically across the Mojave and northern Colorado deserts, occurring primarily in San Bernardino, eastern Riverside, and southeastern Inyo counties. (Figures 32 and 33) Their distribution is naturally fragmented because of its obligate habitat specificity to loose sand, a patchy habitat type (Murphy et al. 2007). Many local populations of this species are quite small, with small patches of sand supporting small populations of lizards. This fragmented pattern of distribution leaves the species vulnerable to local extirpations from additional habitat disturbance and fragmentation (Murphy et al. 2007). The loose wind-blown sand habitat, upon which the species is dependent, is a fragile ecosystem requiring the protection against both direct and indirect disturbances (Weaver, 1981; Barrows, 1996). Environmental changes that stabilize sand, affect sand sources, or block sand movement corridors will also affect this species (Turner et al. 1984; Jennings and Hayes 1994). Additional threats to this species include habitat loss or damage from urban development, off-highway vehicles (OHVs), and agriculture. Aside from the direct loss of land, development can also increase predators, such as the common raven, to Mojave fringe-toed lizard-occupied habitat.

CEC, RSA June 2010 citing Murphy et al. (2006) identified two maternal lineages of this species; the northern lineage is associated with the Amargosa River drainage system, and the southern with the Mojave River drainage system, Bristol Trough, Clark's Pass (including Palen Lake and Pinto Wash), and the Colorado River sand transport systems.

The Mojave fringe-toed lizard is found in arid, sandy, sparsely vegetated habitats and is associated with creosote scrub throughout much of its range (Norris 1958; Jennings and Hayes 1994). This species is totally restricted to habitats of fine, loose, aeolian sand, typically with sand grain size no coarser than 0.375 mm in diameter (Turner et al. 1984; Jennings and Hayes 1994; Stebbins 1944). It burrows in the sand for both cover from predators and protection from undesirable temperatures (Stebbins 1944), though it will also seek shelter in rodent burrows. They are primarily insectivorous, but also eat plant food including leaves, seeds, and buds (Stebbins 1944).

Mojave fringe-toed lizards normally hibernate from November to February, emerging from hibernation sites from March to April. The breeding season is April to July, and adult Mojave fringe-toed lizards reach sexual maturity two summers after hatching. Females deposit two-five eggs in sandy hills or hummocks May through July (Mayhew 1964, Jennings and Hayes 1994). April to May, while temperatures are relatively cool, this species is active during mid-day; from May to September, they are active in mornings and late afternoon, but seek cover during the hottest parts of the day. Common predators of the Mojave fringe-toed lizard include burrowing owls, leopard lizards, badgers, loggerhead shrikes, roadrunners, various snakes, and coyotes (Jennings and Hayes 1994).

The only habitat for Mojave fringe-toed lizard in the BSPP Disturbance Area is the 37 acres of stabilized and partially stabilized sand dune habitat south of I-10 at the proposed Colorado substation site and along the proposed transmission line corridor. During October 2009 protocol desert tortoise surveys, 57 Mojave fringe-toed lizards were observed; 15 of these were found within the proposed substation footprint (AECOM 2009a). Figure DR-BIO-80 in the Blythe Solar Power Project Data Responses (AECOM 2009a) shows the locations of Mojave fringe-toed lizards observed in the BSPP Disturbance Area and associated buffers.

Couch’s Spadefoot Toad

Couch’s spadefoot toad is found in southeastern California east through Arizona, New Mexico, Texas, and Oklahoma, south to San Luis Potosi, Nayarit, Mexico, at the southern tip of Baja California, Mexico, and an isolated population in Colorado. In California, it is found in the extreme southeast, including southeastern San Bernardino County and eastern Riverside and Imperial Counties (Jennings and Hayes 1994) (Figure 34).

Couch’s spadefoot are found in a variety of plant communities, including desert dry wash woodland, creosote bush scrub, and alkali sink scrub. They require habitat with substrate capable of sustaining temporary pools for breeding, and loose enough to permit burial in subterranean burrows (Jennings and Hayes 1994, BLM CDD 2002). Breeding habitat includes temporary impoundments at the base of dunes as well as road or railroad embankments, temporary pools in washes or channels, pools that form at the downstream end of culverts, and playas (Morey 2005; Morey, pers. comm.; Mayhew 1965). Natural scour sites in washes with breeding toads (Dimmitt 1977) had washed down to a hardpan, which enabled ponding (Dimmitt, pers. comm.). The majority of known Couch’s spadefoot toad breeding ponds are artificial, though this may be because of the difficulty of locating natural ponds within the limited amount of time ponds may retain water. Couch’s spadefoot require a food source, primarily alate termites, but also includes beetles, ants, grasshoppers, solpugids, scorpions, and centipedes.

This species is dormant from 8-10 months of the year, emerging from burrows at the onset of warm summer rains. Emergence appears to be triggered by the low frequency sound caused by falling rain, though it appears to be inhibited by low soil temperatures.

Threats to Couch’s spadefoot include loss of habitat from urbanization and agriculture and impacts from OHVs, which can destroy potential pool habitat. There are also indications that the low-frequency sound created by OHVs may trigger emergence cues, and result in emergence in poor environmental conditions (Jennings and Hayes 1994). Emergence may also be triggered by construction vehicle noise (Dimmitt, pers. comm.).

No Couch's spadefoot toads were observed during surveys conducted in 2009 and spring 2010; however, because of the short time this species is above ground, and because the surveys were not conducted during the proper season (i.e., after summer rains), the lack of observations does not suggest the species is absent from the BSPP site. There are nearby known records for this species (Dimmitt 1977), including a breeding pond near the intersection of I-10 and Wiley Well Road (about eight miles from the substation site), another near I-10 and State Route 78 (about six miles from the substation site), and another approximately nine miles north of the BSPP site on the Blythe-Midland Road. The closest CNDDB records include two from Imperial County (1989 and 2002) that are between 12 and 17 miles south of the BSPP area (CNDDB 2010). The BSPP area falls within the range for this species as the range is described in the Northern & Eastern Colorado Desert Coordinated Management Plan (BLM CDD 2002) and Amphibian and Reptile Species of Special Concern in California (Jennings and Hayes 1994). The Applicant has provided preliminary spring 2010 survey results which indicate multiple potential breeding pond sites (AECOM 2010u) within the BSPP area, including three within the linear route and nine within the Study Area buffer.

Western Burrowing Owl

The western burrowing owl inhabits arid lands throughout much of the western United States and southern interior of western Canada (Haug et al. 1993) and is typically a year-round resident in much of California (Gervais et al. 2008).

Burrowing owls are unique among the North American owls in that they nest and roost in abandoned burrows, especially those created by California ground squirrels, kit fox, desert tortoise, and other wildlife. Burrowing owls have a strong affinity for previously occupied nesting and wintering habitats. They often return to burrows used in previous years, especially if they were successful at reproducing there in previous years (Gervais et al. 2008). The southern California breeding season (defined as from pair bonding to fledging) generally occurs from February to August with peak breeding activity from April through July (Haug et al. 1993).

In the Colorado Desert, burrowing owls generally occur at low densities in scattered populations, but they can be found in much higher densities near agricultural lands where rodent and insect prey tend to be more abundant, including along the lower Colorado River (Gervais et al. 2008) (Figure 35). Burrowing owls tend to be opportunistic feeders. Large arthropods, mainly beetles and grasshoppers, comprise a large portion of their diet. Small mammals, especially mice and voles (*Microtus*, *Peromyscus*, and *Mus* spp.), are also important food items for this species. Other prey animals include reptiles and amphibians, young cottontail rabbits, bats, and birds, such as sparrows and horned larks. Consumption of insects increases during the breeding season (Haug et al. 1993).

Threats to burrowing owls include habitat modification and destruction of ground squirrel burrows. Other threats include pesticide accumulation, burrow destruction from farming practices and canal and road maintenance, roadside shooting, and direct mortality from squirrel poisons (BLM CDD 2002; Gervais et al. 2008).

Protocol-level surveys of part of the BSPP Disturbance Area were conducted in spring 2009. The southern-most 2.1 miles of the transmission line corridor and the substation were added to the BSPP after surveys were completed and these areas were surveyed in fall 2009. The entire BSPP Disturbance Area (7,077 acres) is considered suitable burrowing owl nesting and foraging habitat, although the sandier habitat south of I-10 is of lower value (Solar Millennium 2009b, Western Burrowing Owl Technical Report). One burrowing owl was observed within the BSPP Disturbance Area at an active burrow during Phase II burrowing owl surveys in March 2009. In total, 92 burrows with burrowing owl sign were observed during 2009 Phase II and III surveys. An additional burrow with sign was observed near the transmission line Disturbance Area during fall 2009 surveys (Solar Millennium 2009b, Western Burrowing Owl Technical Report). All habitats within the BSPP Disturbance Area are considered suitable for this species. Additional surveys were conducted in 2010 to support an update of the biological resources analysis prepared in 2009 and to accommodate changes to the Study Area. During the 2010 surveys, one burrowing owl was observed at an active burrow on the BSPP site and three inactive burrows with various levels of burrowing owl sign were detected (AECOM 2010v). All together, 2009 and 2010 surveys found six western burrowing owls in the Study Area (AECOM 2010w).

Golden Eagle

Golden eagles are typically year-round residents throughout most of their western United States range. They breed from late January through August with peak activity March through July (Kochert et al. 2002). Migratory patterns are usually fairly local in California where adults are relatively sedentary, but dispersing juveniles sometimes migrate south in the fall. This species is generally considered to be more common in southern California than in the northern part of the state (USFS 2008).

Habitats for this species typically include rolling foothills, mountain areas, and deserts. Golden eagles need open terrain for hunting and prefer grasslands, deserts, savanna, and early successional stages of forest and shrub habitats. Golden eagles primarily prey on lagomorphs and rodents but will also take other mammals, birds, reptiles, and some carrion (Kochert et al. 2002). This species prefers to nest in rugged, open habitats with canyons and escarpments, with overhanging ledges and cliffs and large trees used as cover. See Figures 36 and 37.

The status of golden eagle populations in the United States is not well known, although there are indications that populations may be in decline (USFWS 2009b, Kochert et al. 2002). Accidental death from collision with man-made structures, electrocution, gunshot, and poisoning are the leading causes of mortality for this species, and loss and degradation of habitat from agriculture, development, and wildfire continues to put pressure on golden eagle populations (Kochert et al. 2002; USFWS 2009b).

Absent interference from humans, golden eagle breeding density is determined by either prey density or nest site availability, depending upon which is more limiting (USFWS 2009b). A compilation in Kochert of breeding season home ranges from several western United States studies showed an average home range of 20–33 square kilometers (7.7 to 12.7 square miles) that ranged from 1.9 to 83.3 square kilometers (0.7 to 32.2 square miles) (Kochert 2002). In San

Diego, a study of 27 nesting pairs found breeding ranges to be an average of 36 square miles with a range from 19 to 59 square miles (Dixon 1937). Other studies from within and outside the United States include ranges from nine to 74.2 square miles (McGahan 1968; Watson et al. 1992 [range of 14.7 to 26.1 pairs per 1,000 square kilometers]). Due to low prey densities, golden eagles in the Mojave Desert are estimated to range 100-120 square miles (Bittner, pers com. March 2010 to Amy Fesnock, BLM California State Office). An Environmental Assessment (EA) and Implementation Guidance for take permits has been issued under the Bald Eagle and Golden Eagle Protection Act (AECOM 2010x).

In Spring 2010 the Applicant along with applicants of other adjacent proposed solar development projects jointly funded golden eagle helicopter surveys, following the USFWS's February 2010 Interim Golden Eagle Inventory and Monitoring Protocols (Pagel et al. 2010). One golden eagle survey was conducted in April of 2010 and another was completed in May. A report on the golden eagle surveys became available on June 16, 2010 (AECOM 2010x).

The 2010 surveys found two golden eagle territories within ten miles of the project boundary in the McCoy Mountains and the Big Maria Mountains, but found no active eagle nests within 10 miles of the BSPP. The inactive golden eagle nest was located in the McCoy Mountains approximately 3 miles west of the BSPP. This nest was in poor condition and showed strong signs of weathering and is the process of deteriorating. One active golden eagle nest was located in the Big Maria Mountains northeast of the site; however, this nest was not occupied (no fledglings or eggs) during spring 2010 and is just outside the 10-mile buffer surrounding the BSPP. Suitable nesting substrates (i.e., cliff ledges, rocky outcrops, or large trees) for golden eagle do not occur within one mile of the proposed BSPP. No golden eagles were observed during other surveys in the Study Area, including avian point count surveys. However, these surveys were conducted within the BSPP site only and therefore were not designed to survey potential golden eagle nesting habitat near the site, and did not assess the quality of foraging habitat or prey abundance for eagles. The entire Study Area is, however, suitable foraging habitat for the golden eagle.

Loggerhead Shrike

Loggerhead shrikes are uncommon residents throughout most of the southern portion of their range, including southern California. In southern California they are generally much more common in interior desert regions than along the coast (Humple 2008). Loggerhead shrikes initiate their breeding season in February and may continue with raising a second brood as late as July; they often re-nest if their first nest fails or to raise a second brood (Yosef 1996).

This species can be found within lowland, open habitat types, including creosote scrub and other desert habitats, sage scrub, non-native grasslands, chaparral, riparian, croplands, and areas characterized by open scattered trees and shrubs. Fences, posts, or other potential perches are typically present. In general, loggerhead shrikes prey upon large insects, small birds, amphibians, reptiles, and small rodents over open ground within areas of short vegetation, usually impaling prey on thorns, wire barbs, or sharp twigs to cache for later feeding (Yosef 1996). Loss of habitat to agriculture, development, and invasive species is a major threat; this species has shown a significant decline in the Sonoran Desert (Humple 2008).

The entire BSPP Study Area contains suitable habitat for loggerhead shrike, and this was the second most common bird species (32 records) observed during avian point count surveys (these were conducted in all but the southern-most 2.1 miles of the transmission line corridor and the substation site; these areas were added after spring 2009 surveys were completed) (CEC, RSA June 2010 citing Solar Millennium 2009a, Avian Point Count Technical Report, AFC Volume II). In addition, fledglings were seen on a number of occasions, and at least one active nest was found on April 11, 2009, one day before the commencement of the Avian Point Count study. Several recently used nests were also found, mostly in desert ironwood (Olneya tesota) (Solar Millennium 2009a, Avian Point Count Technical Report, AFC Volume II).

Le Conte's Thrasher

In California, Le Conte's thrasher is a resident in the San Joaquin Valley and the Mojave and Colorado deserts (Figure 38). It occurs in desert flats, washes and alluvial fans with sandy and/or alkaline soil and scattered shrubs. It rarely occurs in monotypic creosote scrub habitat, because creosote bush is unable to support a nest, or in massive Sonoran Desert woodlands (Prescott 2005). Preferred nest substrate includes thorny shrubs and small desert trees. Breeding activity occurs from January to early June, with a peak from mid-March to mid-April (BLM CDD 2002). Le Conte's thrashers forage for food by digging and probing in the soil. They eat arthropods, small lizards and snakes, and seeds and fruit; the bulk of their diet consists of beetles, caterpillars, scorpions, and spiders.

This species was not observed during BSPP surveys, including avian surveys conducted over a period of four weeks in the spring of 2009. However, this species occurs in low densities and detecting them is difficult because their ventriloqual vocalizations carry over long distances, vocalizations are crepuscular, and they are secretive (Cal-PIF 2009). Le Conte's thrasher may occur on the BSPP site; the BSPP Disturbance Area contains 730 acres of desert dry wash woodland, which is suitable habitat for this species. The closest CNDDB record for this species is a nesting record from 1977, about 8 miles southwest of the site (CNDDB 2010).

Black-tailed gnatcatcher

A year round resident in southwestern United States and central and northern Mexico, in California the black-tailed gnatcatcher is found in the southeast desert wash habitat from Palm Springs and Joshua Tree National Monument south, and along the Colorado River. It is now rare in eastern Mojave Desert north to the Amargosa River, Inyo Co. This species nests primarily in wooded desert wash habitat, but also occurs in creosote scrub habitat during the non-breeding season.

This species was the most common species detected during avian point count surveys conducted in the BSPP site (35 records) and was found predominantly in creosote bush scrub/desert dry wash woodland. The closest CNDDB record for this species is a 1977 record of a nesting pair, approximately nine miles west of the BSPP site (CNDDB 2010)

California horned lark

The California horned lark is found throughout California except the north coast, and is less common in mountainous areas. This species prefers open areas that are barren or with short vegetation including deserts, brushy flats, and agricultural areas. Eggs are laid March to early June, and this species frequently lays a second clutch.

The BSPP site contains suitable habitat for this species, especially in creosote bush scrub. This species was observed frequently in this habitat during surveys. There are numerous CNDDB records for this species in western Riverside County (CNDDB 2010).

American Badger

American badgers were once fairly widespread throughout open grassland habitats of California. Badgers are an uncommon permanent resident with a wide distribution across California, except from the North Coast area. Badgers inhabit burrows and often predate and forage on other small mammal burrows as evidenced by claw marks along the edges of existing burrows. This species is most abundant in the drier open stages of most shrub, forest, and herbaceous habitats with friable soils. Badgers are generally associated with treeless regions, prairies, parklands, and cold desert areas (Zeiner *et al* 1990). Badgers feed mainly on various species of small mammals and capture some of its prey above ground foraging on birds, eggs, reptiles, invertebrates, and carrion. Most of the CNDDB records from the Palo Verde Valley area of Riverside County are prior to 1960 and the closest to the BSPP site is just north of Palo Verde approximately 14 miles south of the site (CNDDB 2010).

The entire Study Area is considered suitable habitat for badgers (Figure 39) and badger sign was detected during the 2009 field surveys. Surveyors observed eleven badger dens and over 80 wildlife burrows showing evidence of predation by badgers (Solar Millennium 2009a). Including 2010 surveys, nineteen badger dens and over 90 animal burrows showing evidence of predation by badgers were observed within the Study Area (AECOM 2010w). Based on the distribution of sign this species uses the western half of the Study Area more than the eastern half (AECOM 2010w).

Desert Kit Fox

Desert kit fox is an uncommon to rare permanent resident of arid regions of the southern portion of California. Kit fox occur in annual grasslands, or grassy open, arid stages of vegetation dominated by scattered herbaceous species. Kit fox occur in association with their prey base which is primarily cottontail rabbits, ground squirrels, kangaroo rats and various species of insects, lizards, or birds (Zeiner *et al* 1990). California Code of Regulations 14 CCR Section 460 stipulates that desert kit fox may not be taken at any time. Protection provided by kit fox dens for use as shelter, escape, cover, and reproduction is vital to the survival of the species.

Desert kit fox burrows, complexes and scat were observed throughout the Study Area during spring 2009 (Solar Millennium 2009a) and the entire Study Area is suitable habitat for this species (Figure 39). In addition, several kit fox burrows and complexes were found within the substation and transmission line survey areas (AECOM 2010a, Figure BIO-DR-79). The desert kit fox population size within the Study Area is substantial. There were 179 desert kit fox burrows and 51 complexes observed throughout the Study Area (AECOM 2010w). Suitable prey base (wood rats, pocket mice, ground squirrels, cottontail rabbits) and habitat to support this species occurs throughout much of the undeveloped portions of the Study Area.

Nelson's Bighorn Sheep

Desert bighorn sheep is a BLM California Sensitive Species, a State Fully Protected Species, and a State Game Species (BLM CDD 2002). The Nelson's bighorn sheep includes bighorns from the Transverse Ranges through most of the desert mountain ranges of California and adjacent Nevada and northern Arizona to Utah. Essential habitat for bighorn sheep includes steep, rocky slopes of desert mountains, termed "escape terrain." Their agility on steep rocky terrain is an adaptation used to escape predators such as coyotes, eagles, and cougars (Wehausen 1992). Surface water is another element of desert bighorn habitat considered essential to population health. Male and female bighorn sheep inhabiting desert ecosystems can survive without consuming surface water (Krausman et al. 1985), and males appear to drink infrequently in many situations; however, there are no known large populations of bighorn sheep in the desert region that lack access to surface water. In the spring, when annual plants are available, bighorn tend to disperse downhill to bajadas and alluvial fans to forage. Desert bighorn have a long lambing season that can begin in December and end in June in the Mojave Desert, and a small percentage of births commonly occur in summer as well (Wehausen 1992).

Over the past 140 years, bighorn sheep have suffered considerable population declines throughout their range, and metapopulations have been fragmented by roads and other barriers with a resulting decline in genetic diversity (Bleich et al. 1996, Epps et al. 2005). Disease, sometimes brought about by contacts with domestic sheep, drought and predation, interacting with other anthropogenic factors may also have contributed to declines in bighorn sheep populations (Wehausen 2005). Loss of surface water sources may also diminish the viability of existing populations (Wehausen 2005).

Two metapopulations of bighorn sheep occur within the NECO planning area, the Southern Mojave and Sonoran. Within these metapopulations, there are smaller, somewhat isolated subpopulations of bighorn sheep known as demes (BLM CDD 2002). The NECO Plan addresses the conservation of the bighorn sheep through the designation of Bighorn Sheep Wildlife Habitat Management Areas (WHMAs), which overlay the entire range of their occurrence and movement corridors. See, Figure 40. The western portion of the Study Area, but not the BSPP Disturbance Area, occurs within a bighorn sheep WHMA (AECOM 2010a Preliminary Mitigation and Monitoring Plan Figure 9). This bighorn sheep WHMA occurs in the McCoy Mountains within the Southern Mojave metapopulation; the McCoy Mountains are believed unoccupied, but there have been no recent, systematic surveys to verify this status. Nearby occupied WHMAs include in the Palen and Granite Mountains. Recent surveys also suggest bighorn sheep may occur in the Little Maria Mountains (Wehausen 2009). Sheep are difficult to detect in ranges with very low number of individuals such as the McCoy Mountains and other ranges thought to be extinct. The McCoy mountain range has been determined to be an important area for sheep recovery and is designated as a desert bighorn sheep WHMA within BLM.

Bighorn sheep have recently been documented within two mountain ranges that were thought to be unoccupied. In December 2009 a male bighorn sheep was killed in the northern section of the Big Maria Mountains (Rodriguez pers. comm.). Also in December 2009, DNA testing of scat found in the Little Maria Mountains was confirmed to be that of a male bighorn sheep (Rodgriguez pers. comm.). These examples confirm that sheep do occur in the ranges adjacent to the McCoy Mountains and have the ability to naturally recolonize that range in the future.

Sheep are capable of crossing large expanses of lands between mountain ranges. For example five Peninsular bighorn sheep ewes were documented on the Imperial Valley Solar 2 site which is approximately seven miles from the nearest mountain range. Telemetry data have documented animals traveling across the flats approximately 10 -12 miles between the Old Dad’s and Marble Mountains (Rodriguez pers. comm.). Also, CDFG captured and moved a ram from the Colorado River area near Parker to the Whipple Mountains and he eventually traveled back down to the river area which was approximately 150 air miles (300 miles on land) (Rodriguez pers. comm.).

Potential evidence of this species was observed within the Study Area during spring 2009 surveys; two potential bighorn sheep scat locations were found within the western portion of the Study Area during 2009 surveys near the lower elevations of the McCoy Mountains (Solar Millennium 2009a, AECOM 2010a). Characteristics of the scat found during spring 2009 surveys overlap with the characteristics of burro deer, and therefore it is not possible to verify with absolute confidence presence of bighorn sheep on the BSPP site (AECOM 2010a). The facility footprint and one-mile buffer area, including sections of McCoy Wash, were surveyed again on December 9 and 11, 2009 for potential bighorn sheep and mule deer sign and no sign (tracks or scat) were observed for either species (AECOM 2010a). Based on information provided by the Applicant (AECOM 2010a, Data Response BIO-53) and consultation with experts (Rodgriguez pers. comm.), it is more likely that the sign found during spring 2009 surveys was burro deer. Aerial surveys for bighorn sheep were conducted in 2010 in conjunction with golden eagle surveys in a 10 mile radius of the Study Area (AECOM 2010x). At CDFG’s request, a bighorn sheep biologist was present during the surveys to observe bighorn sheep within the various mountain ranges surrounding the site and direct the surveyors on avoiding disturbance to lambing areas. Pilots were also veteran bighorn sheep surveyors. Surveys were conducted by helicopter in two phases. Mountain ranges in the vicinity that were surveyed include: the entire McCoy Mountain range; the entire Little Chuckwalla Mountain range; and the majority of the Big and Little Maria Mountains. no bighorn sheep were detected within the McCoy, Big Maria, or Little Maria Mountains. One bighorn sheep was found 11 miles southwest of the BSPP in the Little Chuckwalla Mountains. The Study Area provides suitable dispersal habitat for this species. However, no big horn sheep were detected in the project area or the McCoy Mountains during site surveys or the golden eagle surveys.

Burro Deer

Burro deer is a subspecies of mule deer (*Odocoileus hemionus*) found in the Colorado Desert of southern California (Figure 44). This species is found in the Colorado region of the Sonoran Desert near the Colorado River and within desert dry wash woodland communities. Some burro deer are resident along the Colorado River, but a significant portion move into desert areas in response to water and forage. During the hot summers, water is critical, and burro deer concentrate along the Colorado River or the Coachella Canal where water developments have been installed and where the microphyll (small-leaved) woodland is dense and provides good forage and cover. With late summer thundershowers and cooler temperatures, deer move away from the Colorado River and Coachella Canal and then up the larger washes into mountains or wash complexes in the foothills (BLM CDD 2002).

During spring 2009 field surveys, scat and tracks were observed in rocky substrate and deep washes within the western portion of the Study Area that were determined indiscernible between mule deer and bighorn sheep. Follow-up surveys in December 2009 did not detect wildlife use in desert washes of the Study Area. Additional scat was found in another wash within the western portion of the buffer area of the facility footprint. Scat of bighorn sheep and mule deer vary depending on time of year, type of vegetation and foraging, age, and sex of the animal. The tracks found within the Study Area were observed within rocky, uneven ground making it difficult to decipher between tracks of bighorn sheep and mule deer (AECOM 2010a). Probable burro deer tracks were observed at the southern end of the transmission line route south of I-10.The entire Study Area is suitable habitat for burro deer.

Other special status wildlife that were not detected and not expected in the Study Area are found in Table 3.23-2.

TABLE 3.23-2
SPECIAL-STATUS WILDLIFE WITH LOW TO MODERATE POTENTIAL TO OCCUR AT THE BSPP SITE

Birds		
Bendire's thrasher *Toxostoma bendirei*	Bendire's thrashers are known in California from scattered locations in Kern, Inyo, San Bernardino, and Riverside counties. This species is a summer resident in southeastern California, and arrives at breeding grounds from mid-March through May, and departs by late August. This species favors open grassland, shrubland, or woodland with scattered shrubs, primarily in areas that contain large cholla, Joshua tree, Spanish bayonet, Mojave yucca, palo verde, mesquite, catclaw, desert-thorn, or agave. The status of populations of this species is poorly understood, but threats are believed to be loss of habitat due to urbanization, harvesting of yucca and Joshua trees, overgrazing, and off-road vehicle activity. In parts of the range, grazing may increase habitat suitability by increasing the area with scattered junipers.	The desert dry wash vegetation community provides potential habitat for this species (270 acres), although this species was not observed during surveys. There are CNDDB (2010) records from near the Desert Center, approximately 35 miles west of the BSPP site, from 2004.
Crissal thrasher *Toxostoma crissale*	Crissal thrashers are non-migratory residents ranging from southern Nevada and southeastern California to western Texas and central Mexico. This species prefers habitats characterized by dense, low scrubby vegetation, which, at lower elevations, includes desert and foothill scrub and riparian brush. Nests of this species typically consist of an open cup of twigs, lined with finer vegetation, and are placed in the middle of a dense shrub.	Based on a review of the vegetation community descriptions provided by the Applicant, the BSPP site does not contain suitable dense scrub habitat preferred by this species. They are known from the area, including from McCoy Spring, Palen Valley, and Chuckwalla Well (Fitton 2008). The closet occurrences based on the CNDDB (2010) are two historical records about six to eight-miles east of the site (from 1917 and 1919) and a more recent record (1977) approximately 8.5 miles to the west.
Ferruginous hawk *Buteo regalis*	Ferruginous hawks do not breed in California, but are winter residents and in California are most common in grassland and agricultural areas in the southwest. Ferruginous hawks are found in open terrain from grasslands to deserts, and are usually associated with concentrations of small mammals. Threats to this species include loss of wintering habitat from urbanization and cultivation.	The BSPP site contains suitable wintering habitat for this species, and one ferruginous hawk was observed during BSPP surveys (Solar Millenium 2009a, Biological Resources Technical Report). There are nine CNDDB (2010) records for this species in western Riverside County.
Gila woodpecker *Melanerpes uropygialis*	The Gila woodpecker's range is limited to a small area of southwestern United States and northwestern Mexico. In California, this species is found only along the Colorado River and in small numbers in Imperial County. In southeastern California, Gila woodpeckers were formerly associated with desert washes extending up to one mile from the Colorado River. Currently, they are found only in riparian areas along the Colorado River.	In California, this species is currently known only from the Colorado River; therefore this species is not expected on the BSPP site. The Applicant has also indicated in the Biological Technical Report (Solar Millennium 2009a, Biological Resources Technical Report) that the site does not contain suitable nesting habitat for this species. The closest CNDDB (2010) record for this species is a 1986 record east of the site at the Colorado River.
Gilded flicker *Colaptes chrysoides*	In California, the gilded flicker is known from the southeast; habitat includes stands of giant cactus, Joshua tree, and riparian groves of cottonwoods and tree willows in warm desert lowlands and foothills. Until the mid-1990's, this species was considered a subspecies of northern flicker (*C. atratus*). This species nests primarily in cactus, but also will use cottonwoods and willows of riparian woodlands. This species may be nearly extinct in California.	This species is not expected to regularly use the BSPP site due to lack of suitable habitat. The closest CNDDB (2010) record for this species is a 1983 record approximately 17 miles northeast of the site, along the Colorado River.

TABLE 3.23-2 (Continued)
SPECIAL-STATUS WILDLIFE WITH LOW TO MODERATE POTENTIAL TO OCCUR AT THE BSPP SITE

Birds (cont.)		
Mountain plover *Charadrius montanus*	Mountain plovers do not breed in California, but are winter visitors primarily from September to mid-March. In California they are found in the Central Valley, Antelope Valley, San Jacinto Valley, Imperial Valley, and Palo Verde Valley. Mountain plover habitat includes short-grass prairie or their equivalents, and in southern California deserts are associated primarily with agricultural areas, though use of these areas is suspected to be because of loss of native grassland and playa habitats.	This species is not expected to extensively use the site, but may use nearby agricultural areas. The closest CNDDB (2010) record for this species is in Imperial County at the southern end of the Salton Sea.
Northern harrier *Circus cyaneus*	In western North America, the northern harrier breeds from northern Alaska south to Baja California, Mexico. This species does not commonly breed in desert regions of California, where suitable habitat is limited, but winters broadly throughout California in areas with suitable habitat. Northern harriers forage in open habitats including deserts, pasturelands, grasslands, and old fields.	The BSPP site contains suitable wintering habitat for the northern harrier, and this species was observed during BSPP surveys (Solar Millennium 2009a, Appendix F Desert Tortoise Tech Report, Attachment 5). There are no CNDDB (2010) nesting records for this species in eastern Riverside County.
Peregrine falcon *Falco peregrines*	The Peregrine falcon’s year-round range includes coastal and northwestern California and the Sierra Nevada and other California mountains. Additionally, this species winters inland throughout the Central Valley and in northeastern California. They are rare in the arid southeast, but they occur and are suspected to breed in the lower Colorado River Valley. Peregrine falcons require open habitat for foraging, and prefer breeding sites near water. Nesting habitat includes cliffs, steep banks, dunes, mounds, and some human-made structures.	This species may forage on the BSPP site and nest in nearby mountains, but was not observed on the site during BSPP surveys. There are no CNDDB (2010) records for Riverside County.
Prairie falcon *Falco mexicanus*	The prairie falcon inhabits dry environments in the North American west from southern Canada to central Mexico. It is found in open habitat from annual grasslands to alpine meadows at all elevations up to 3,350 m, but is associated primarily with perennial grasslands, savannahs, rangeland, some agricultural fields, and desert scrub areas. They require cliffs or bluffs for nesting though will sometimes nest in trees, on power line structures, on buildings, or inside caves or stone quarries. Ground squirrels and horned larks are the primary food source, but prairie falcon will also prey on lizards, other small birds, and small rodents.	Prairie falcons were observed during surveys, and the entire BSPP Disturbance Area (7,077 acres) contains suitable foraging habitat for this species. The BSPP site does not contain suitable nesting habitat, although adjacent mountains may. There are numerous CNDDB (2010) records in the region for this species, including eyrie records from Little Maria Mountains to the north (1977) and the Chuckwalla Mountains to the southwest (1978).
Purple martin *Progne subis*	The historical breeding range of the purple martin includes southern California, though populations have shrunk dramatically. Neither the historical or current breeding range, however, includes the Colorado Desert. Purple martins habitat requirements include adequate nest sites and availability of large aerial insects, and therefore are most abundant near wetlands and other water sources. Threats to this species include loss of large tree and snags and competition from European starlings.	This species was observed migrating through the BSPP site, but is not expected to extensively use the site. There are six CNDDB (2010) records for this species from western Riverside County, the most recent of which include nesting records from 1983 and 1993.

TABLE 3.23-2 (Continued)
SPECIAL-STATUS WILDLIFE WITH LOW TO MODERATE POTENTIAL TO OCCUR AT THE BSPP SITE

Birds (cont.)		
Short-eared owl *Asio flammeus*	Short-eared owls breed through much of northern North America, and are year-round residents in some areas of California. Historically, this species occurred throughout much of California, west of the southern deserts, in low numbers. Currently, small populations breed in regularly in the Great Basin and in the Sacramento/San Joaquin River Delta area, but sporadically in other parts of its former range. Short-eared owls require open country that supports small mammal populations, and that also provides adequate vegetation to provide cover for nests. This includes salt- and freshwater marshes, irrigated alfalfa or grain fields, and ungrazed grasslands and old pastures.	The BSPP site contains suitable wintering habitat for the short-eared owl. This species was not observed during BSPP surveys, it was observed during surveys for a nearby proposed energy facility site immediately east of the McCoy Mountains. There are no Riverside County CNDDB (2010) records for this species.
Swainson's hawk *Buteo swainsoni*	Swainson's hawks require large areas of open landscape for foraging, including grasslands and agricultural lands that provide low-growing vegetation for hunting and high rodent prey populations. Swainson's hawks typically nest in large native trees such as valley oak, cottonwood, walnut, and willow, and occasionally in nonnative trees, such as eucalyptus within riparian woodlands, roadside trees, trees along field borders, isolated trees, small groves, and on the edges of remnant oak woodlands. While there are historical breeding records of this species from the Colorado Desert, this species is now known from southern California only as a spring and fall migrant. This reduction in breeding range is believed to be from loss of nesting habitat.	The BSPP site may provide foraging habitat for migrating individuals, and this species was observed in the BSPP site during surveys. There are no CNDDB (2010) records for this species in Riverside County.
Vaux's swift *Chaetura vauxi*	This species is not known to breed in Riverside County or elsewhere in southern California. Very few nests have been found so their breeding range has been inferred from sightings of birds flying over potential nesting areas during their nesting season, in June and July. Vaux's swifts prefer to nest in the hollows formed naturally inside of large old conifer trees, especially snags, which are entirely lacking from the BSPP site.	This species was observed during surveys, but occurrences are expected to be of migrants, only.
Vermilion flycatcher *Pyrocephalus rubinus*	Vermilion flycatchers are rare breeders or residents in localized areas of southern California, including along the Colorado River. They are usually found near water in arid scrub, farmlands, parks, golf courses, desert, savanna, cultivated lands, and riparian woodlands; nesting substrate includes cottonwood, willow, and mesquite.	Within the BSPP vicinity, occurrences of this species are limited to the Colorado River. This species is not expected on the BSPP site. The closest CNDDB (2010) records are a historical record from six miles west of the study area from 1919, and a recent (1983) record from the Blythe golf course.
Yellow warbler *Dendroica petechia*	Yellow warblers historically bred throughout much of California except for high elevations, the Colorado Desert, and most of the Mojave Desert. Breeding abundance for this species has declined in much of California, as has the breeding range, especially in the Central Valley and parts of Owens Valley. In southeastern California, this species is known only from the lower Colorado River Valley from the middle of San Bernardino County through Riverside and Imperial Counties. Currently, this species no longer breeds in much of the Riverside County segment of the lower Colorado River Valley. This species commonly uses wet, deciduous thickets for breeding, and seeks a variety of wooded, scrubby habitats in winter.	This species was observed during surveys, but is not expected to nest on the BSPP site due to lack of suitable habitat. The closest CNDDB (2010) records for this species are two 1986 records east of the site at the Colorado River.

TABLE 3.23-2 (Continued)
SPECIAL-STATUS WILDLIFE WITH LOW TO MODERATE POTENTIAL TO OCCUR AT THE BSPP SITE

Birds (cont.)		
Yellow-breasted chat *Icteria virens*	The yellow-breasted chat occurs as a summer resident and migrant in California. In the southeastern California, the yellow-breasted chat breeds primarily in scattered locations in Owen's Valley and the Mojave, from the Salton Sea, and from the lower Colorado River Valley. This species occupies shrubby riparian habitat with an open canopy, and will next in non-native species including tamarisk. Threats to this species include loss of riparian habitat, and, it is suspected, pressure from cowbird parasitism.	In this region, this species is associated with the Colorado River only. The BSPP site does not contain suitable habitat for this species. CNDDB (2010) records in the region are associated with the Salton Sea or the Colorado River. The closest CNDDB records for this species are two 1986 records east of the BSPP site at the Colorado River.
Mammals		
Arizona myotis *Myotis occultus*	This species has been found from southeastern California through Arizona, New Mexico, and south into Chihauhau, Mexico. Arizona myotis is most commonly known from conifer forests from 6,000 to 9,000 feet in elevation, although maternity roosts are known from much lower elevations including areas along the Colorado River in California.	This species is not expected to occur due to lack of suitable habitat and the BSPP occurring below elevations where roosts typically occur. The Applicant has indicated that the Study Area lacks suitable habitat requirements for bat roosts for Arizona myotis (AECOM 2010a). The closest CNDDB (2010) record is a historical occurrence from 1945 approximately 10 miles south of the BSPP site near the town of Ripley.
Big-free tailed bat *Nyctinomops macrotis*	This species ranges from most of South America northward to include Mexico, Arizona, New Mexico, southern and western Texas, southern California, southeastern Nevada, southern Utah, and north and western Colorado from generally sea level to 8,000 feet in elevation. This species occurs in desert shrub, woodlands, and coniferous forests. It roosts mostly in the crevices of rocks although big free-tailed bats may roosts in buildings, caves, and tree cavities	This species has the potential to occur as a roosting and foraging bat in the BSPP site. The nearest occurrences for this species in Riverside County are from the vicinity of Palm Springs and Joshua Tree National Park (CNDDB 2010).
California leaf-nosed bat *Macrotus californicus*	California leaf-nosed bat is a species of concern and a BLM Sensitive species indicating it is covered under the NECO. California leaf-nosed bats occur in the deserts of California, southern Nevada, Arizona and south to northwestern Mexico. In California, they are now found primarily in the mountain ranges bordering the Colorado River Basin. In California, the two largest roosts (each sheltering 1,500 bats during winter months) are in mines in extreme southeastern California. This species depends on either caves or mines for roosting habitat. All major maternity, mating, and overwintering sites are in mines or caves (BLM CDD 2002). Radio-telemetry studies of Macrotus in the California desert show that the California leaf-nosed bat forages almost exclusively among desert wash vegetation within 6 miles (10 km)of their roost (WBWG 2005-2009).	No evidence of this species and/or bat roosts were observed during spring 2009 field surveys. Follow-up surveys were performed during December 2009 to investigate wash drainages and rock crevices for evidence of bat roosts and no sign of bat roosts were found. This species has a potential to roost and forage within the site. There are several CNDDB (2010) records in the vicinity of the BSPP. The nearest record is approximately 3 miles west of the BSPP from 1993 from the McCoy Mountains from creosote bush scrub habitat (CNDDB 2010); approximately 300 adults were observed roosting. All habitats within the BSPP Disturbance Area are suitable for this species.
Cave myotis *Myotis velifer*	The cave myotis occurs from western Texas, to southern Nevada, southeastern California (only along the Colorado River), southward into Mexico, and is also widely distributed in Arizona. This species is found primarily at lower elevations (the Sonoran and Transition life zones) of the arid southwest in areas dominated by creosote bush, palo verde, and cactus. This species is a "cave dweller" and caves are the main roosts although this species may also use mines, buildings, and bridges for roosts.	The nearest CNDDB record for this species is from 2002 near the I-15 bridge over the Colorado River in Blythe. Individual bats of this species were detected acoustically during April 2002 (CNDDB 2010).

TABLE 3.23-2 (Continued)
SPECIAL-STATUS WILDLIFE WITH LOW TO MODERATE POTENTIAL TO OCCUR AT THE BSPP SITE

Mammals (cont.)		
Colorado Valley wood rat *Neotoma albigula venusta*	Occurs from southern Nevada, southeastern California, northeastern Baja California, to western Arizona. Colorado Valley wood rats are found in a variety of habitats including low desert, pinyon-juniper woodlands, and desert-transition chaparral. Suitable habitat elements for this species include washes where organic debris gathers, areas of prickly pear cactus and mesquite, rocky areas, and crevices in boulders which are used for cover and nest sites.	The nearest CNDDB record is from 1934 near Blythe and approximately seven miles southeast of the BSPP site (CNDDB 2010).
Hoary bat *Lasiurus cinereus*	Hoary bat is the most widespread of North American bats and are highly associated with forested habitats in the west. They are highly associated with forested habitats in the west. Hoary bats roost are usually located at the edge of a clearing although more unusual roosting sites have been reported in caves, beneath rock ledges, woodpecker holes, squirrel nests, and building sides.	This species may occur in the area as a foraging bat species. The closest CNDDB (2010) record is a historical occurrence approximately seven miles southeast of the BSPP from the town of Neighbors from 1919.
Pallid bat *Antrozous pallidus*	The pallid bat is a California species of concern and a BLM Sensitive species indicating it is covered under the NECO. Pallid bats inhabit low elevation (less than 6,000 feet) rocky, arid deserts and canyonlands, shrub/steppe grasslands, but also occur in higher elevation coniferous forests, greater than 7,000 feet in elevation. This species is most abundant in xeric landscapes including the Great Basin, Sonoran, and Mojave Deserts (WBWG 2005-2009). Pallid bats are known from Cuba, Mexico, and throughout the southwestern and western United States. Population trends are not well known, but there are indications of decline. Pallid bats roost alone, in small groups (two to 20 bats), or gregariously (100s of individuals). Day and night roosts include crevices in rocky outcrops and cliffs, caves, mines, trees with exfoliating bark, and various human structures such as bridges, barns, porches, bat boxes, and human-occupied as well as vacant buildings (WBWG 2005-2009).	No evidence of this species and/or bat roosts were observed during spring 2009 field surveys. In order to further address use of the BSPP site and buffer area by bats, project biologists conducted a two-day visual survey to survey large washes and rock crevices specifically for bat sign (roosting locations, guano piles, staining on trees, etc.) during December 9 and 11, 2009 and no evidence of bat use of the Study Area was observed during these surveys; Anabat/Sonobat surveys were not conducted in conjunction of these surveys which allows for more precise identification of bat species based on the recording of echolocation frequencies. The Applicant has indicated that the pallid bat may potentially roost within the Study Area (AECOM 2010a). Primary suitable roosting habitat for bats in the area includes washes with large trees within the western portions of the Study Area in the foothills and washes and in the McCoy Wash in the northeastern portion of the BSPP site. All habitats within the Study Area are suitable habitats for pallid bat.
Pocketed free-tailed bat *Nyctinomops femorosaccus*	Pocketed free-tailed bat is a California species of concern. This species occurs in western North America, from southern California, central Arizona, southern New Mexico, western Texas, south into Mexico and Baja, California (WBWG 2005-2009). Despite only a limited number of records, pocketed free-tailed bats are known to occur in the desert from March through August, when they then migrate out of the area. In California, they are found primarily in creosote bush and chaparral habitats in proximity to granite boulders, cliffs, or rocky canyons.	This species has a potential to roost and forage on the BSPP site based on what is understood of its habitat requirements and roosting habits. The nearest CNDDB record for this species is from 2002 near the I-15 bridge over the Colorado River in Blythe. Individual bats of this species were detected acoustically during April 2002 (CNDDB 2010).

TABLE 3.23-2 (Continued)
SPECIAL-STATUS WILDLIFE WITH LOW TO MODERATE POTENTIAL TO OCCUR AT THE BSPP SITE

Mammals (cont.)		
Spotted bat *Euderma maculatum*	This species is known from all the states west of and including Montana, Wyoming, Colorado, New Mexico and Texas. Although broadly distributed, this species is rarely common, but may occur locally from southern British Columbia, northern Arizona, Arizona/Utah border, and western Texas from below sea level to 8,100 feet above mean sea level. Spotted bats occur in arid, low desert habitats to high elevation conifer forests and prominent rock features appear to be a necessary feature for roosting.	This species has a potential to roost and forage in the Study Areabased on what is understood of its habitat requirements and roosting habits. The nearest CNDDB record is a historical occurrence from 1907 in the Colorado Desert near Mecca (CNDDB 2010).
Townsend's big-eared bat *Corynorhinus townsendii*	This species has been reported in a wide variety of habitat types ranging from sea level to approximately 9,000 feet. Habitat associations include coniferous forests, deserts, native prairies, riparian communities, active agricultural areas, and coastal habitat types. Foraging associations include edge habitats along streams, adjacent to and within a variety of wooded habitats.	This species has a potential to roost and forage within the study area. There are no CNDDB occurrences within 10 miles of the site.
Western mastiff bat *Eumops perotis*	The subspecies that occurs in North America, *E. p. californicus*, ranges from central Mexico across the southwestern United States including parts of California, southern Nevada, Arizona, southern New Mexico and western Texas. Recent surveys have extended the previously known range to the north in both Arizona with several localities near the Utah border and California. It is found in a variety of habitats, from desert scrub to chaparral to oak woodland and into the ponderosa pine belt and high elevation meadows of mixed conifer forests. Surveys in northern Arizona have documented roosts at approximately 3,600 feet elevation and foraging bat species at 7,500 feet (WBWG 2005-2009).	The BSPP site supports suitable roosting and foraging habitat for western mastiff bat. There are no CNDDB occurrences within 10 miles of the site.
Yuma mountain lion *Puma concolor browni*	In the NECO planning area, mountain lions primarily inhabit the low mountains and extensive wash systems in and around Chuckwalla Bench, Chuckwalla Mountains, Chocolate Mountains, Picacho Mountains, Milpitas Wash, Vinagre Wash, and other washes in that area. Mountain lions typically occur in habitat areas with extensive, well-developed riparian or shrubby vegetation interspersed with irregular terrain, rocky outcrops, and community edges. Mountain lions are restricted to the southern Colorado Desert from Joshua Tree National Park south and east to the Colorado River. Burro deer, the primary prey item, are known to spend the hot summer and fall in riparian areas along the Colorado River and in dense microphyll woodlands near the Coachella Canal.	This species likely uses the BSPP site but no definitive sign for this species was observed during 2009 spring surveys.
Yuma myotis *Myotis yumanensis*	This species ranges across the western third of North America from British Columbia, Canada, to Baja California and southern Mexico. Yuma myotis is usually associated with permanent sources of water, typically rivers and streams, feeding primarily on aquatic emergent insects, but Yuma myotis also use tinajas in the arid west. It occurs in a variety of habitats including riparian, arid scrublands and deserts, and forests. The species roosts in bridges, buildings, cliff crevices, caves, mines, and trees.	This species has a potential to roost and forage within the BSPP site. The nearest CNDDB record is from 2002 near the Blythe bridge over the Colorado River. Individual bats of this species were detected acoustically during April 2002 (CNDDB 2010).

TABLE 3.23-2 (Continued)
SPECIAL-STATUS WILDLIFE WITH LOW TO MODERATE POTENTIAL TO OCCUR AT THE BSPP SITE

Reptiles/Amphibians		
Desert rosy boa *Charina (Lichanura) trivirgata*	In California, desert rosy boas are found only in the southern part of the state south of Los Angeles, from the coast to the Mojave and Colorado deserts (Zeiner et al. 1990, updated 1997; BLM CDD 2002). It is uncommon throughout its range. Desert rosy boas are found in habitats with moderate to dense vegetation and rocky cover, such as desert canyons, washes, and mountains. They have been found under rocks, in boulder piles and along rock outcrops and vertical canyon walls. Their diet consists of small mammals and birds. Rosy boas are primarily nocturnal, but may be out in the evening or morning in the spring and may appear during the day. The greatest activity occurs in late spring to early or mid-summer. They hibernate in winter. Desert rosy boas are not listed, but are included in the NECO and the BSPP area is within the range of this species.	There are four CNDDB records of this species from Riverside County, the majority of which are reported from western Riverside County near Cabazon, Lake Matthews, Lake Elsinore, and Hemet areas from disturbed sage scrub habitats with rocky soils and outcroppings. This species was not observed during spring 2009 field surveys; however temperatures may have been too low and therefore not during an optimal time to identify this species in the field. The BSPP site does not contain the preferred substrate, and therefore the site is not expected to provide important habitat for this species.
Western chuckwalla *Sauromalus obesus*	This species has no protective status or designation. Western chuckwalla occurs in southeastern California, southern Nevada, southeastern Utah, and western Arizona. Chuckwallas occur in virtually all undisturbed rocky hillsides and often escape into deep rock crevices to evade predators. These areas are typically vegetated by creosote bush and other such drought-tolerant scrub habitats.	This species was detected during spring 2009 field surveys (Solar Millennium 2009a, Volume II, Biological Technical Report). Suitable large, rock outcroppings do not occur on the BSPP site which is often preferred by this species.

SOURCE: CEC, RSA (June 2010) Biological Resources Table 4.

CHAPTER 4
Environmental Consequences

4.1 Introduction

This chapter assesses environmental consequences or impacts that would result from the implementation of proposed action or the alternatives described in Chapter 2. These analyses consider both short-term impacts during construction and decommissioning, and long-term impacts during operations. The scope of the impact analyses presented in this chapter is commensurate with the level of detail for the alternatives provided in Chapter 2, Alternatives Including the Proposed Action, and the availability and/or quality of data necessary to assess impacts. Baseline conditions for assessing the potential environmental impacts are described in Chapter 3.

The impact assessment that follows focuses on the general impacts that could occur as a result of implementing each of the alternatives. The methodology for this assessment conforms with the guidance found in the following sections of the CEQ regulations for implementing NEPA: 40 CFR Section 1502.24, *Methodology and Scientific Accuracy*; 40 CFR Section 1508.7, *Cumulative Impact*; and 40 CFR Section 1508.8, *Effects*. The CEQ regulations require agencies to "rigorously explore and objectively evaluate" the impacts of the alternatives. This chapter discusses short-and long-term direct, indirect and cumulative impacts of the proposed action and alternatives; identifies mitigation measures to address adverse impacts; and summarizes the residual and unavoidable adverse impacts on an issue-by-issue basis.

4.1.1 Analytical Assumptions

The following impacts analysis was conducted with the following assumptions:

1. The laws, regulations, and policies applicable to BLM authorizing ROW grants for renewable energy development facilities would be applied consistently for all action alternatives.

2. The proposed facility would be constructed, operated, maintained and decommissioned as described in each action alternative.

3. Short-term impacts are those expected to occur during the construction phase and the first five years of the operation and maintenance phase. Long-term impacts are those that would occur after the first five years of operation.

4.1.2 Types of Effects

The potential impacts from those actions that would have direct, indirect, and cumulative effects were considered for each resource. Effects and impacts as used in this document are synonymous and could be beneficial or detrimental.

Direct effects are caused by the action and occur at the same time and place as the action; indirect effects are caused by the action and occur later in time or further in distance, but are still reasonably foreseeable. 40 CFR 1508.8. Cumulative impacts are those effects resulting from the incremental impacts of an action when combined with other past, present, and reasonably foreseeable future actions (regardless of which agency or person undertakes such actions). 40 CFR 1508.7. Cumulative impacts could result from individually insignificant but collectively significant actions taking place over a period of time. Short-term impacts occur only for a short time after implementation of a management action; for example, construction noise impacts from construction activities would be considered short-term. By contrast, long-term effects occur for an extended period after implementation of a management action; for example, operational noise during power plant operations would be a long-term impact, as it would last for as long as the plant is in operation.

Section 1502.16 of the CEQ regulations forms the scientific and analytic basis for the comparisons of alternatives as described under Section 1502.14, Alternatives including the Proposed Action. The environmental consequences chapter (PA/FEIS Chapter 4) consolidates the discussions of those elements required by sections 102(2)(C)(i), (ii), (iv), and (v) of NEPA which are within the scope of this EIS and as much of Section 102(2)(C)(iii) as is necessary to support the comparisons. The discussion includes the environmental impacts of the alternatives, including any adverse environmental effects which cannot be avoided, the relationship between short-term uses of man's environment and the maintenance and enhancement of long-term productivity, and any irreversible or irretrievable commitments of resources which would be involved in the proposal should it be implemented.

4.1.3 Resources and Resource Uses Not Affected or Present in the Action Area

Resources, BLM program areas or other aspects of the human environment that are not affected or present in the BSPP area include: environmental justice; wild and scenic rivers; national scenic or historic trails, monuments, recreation areas, or conservation areas; cooperative management and protection areas; outstanding natural areas; forest reserves; back country byways; wetlands; livestock grazing; and wild horse and burros.

4.1.4 Cumulative Scenario Approach

This PA/FEIS analyzes the cumulative impact of the construction, operation and maintenance, closure and decommissioning of the ROW grant and all other elements of the proposed action, taking into account the effects in common with other past, present, and reasonably foreseeable future actions. The cumulative effects analysis highlights past actions that are closely-related either in time or space (i.e., temporally or in geographic proximity) to the proposed action, present actions that are ongoing at the same time this EIS was being prepared; and reasonably foreseeable future actions, including those for which there are existing decisions, funding, formal proposals, or which are highly probable, based on known opportunities or trends.

The intensity, or severity, of the cumulative impacts analysis considers the magnitude, geographic extent, duration and frequency of the effects (CEQ, 1997). The magnitude of the effect reflects the relative size or amount of the effect; the geographic extent considers how widespread the effect may be; and the duration and frequency refer to whether the effect is a one-time event, intermittent, or chronic (CEQ, 1997). Varying degrees of information exist about projects within the cumulative scenario. Therefore, for resource areas were quantitative information is available, a quantitative analysis is provided; however, if said level of detail is not available, a qualitative analysis is provided. If the proposed action and alternatives would have no direct or indirect effects on a resource, the PA/FEIS does not analyze potential cumulative effects on that resource. See, for example, Section 4.1.3, Resources and Resource Uses Not Affected or Present in the Action Area.

For the proposed action, the cumulative scenario includes projects identified in Table 4.1-1 (Cumulative Scenario). Table 4.1-1 identifies each resource or BLM program, the cumulative analysis impacts area (which is the geographic scope for each cumulative effects issue), elements to consider, and which renewable projects, other BLM authorized actions and other known actions or activities are located or would occur within the cumulative analysis impacts area. Most of the projects listed below have been, are being, or would be required to undergo their own independent environmental review under NEPA or CEQA or both, as applicable. Figure 6 identifies existing and reasonably foreseeable future projects along the I-10 Corridor. Table 4.1-2 identifies projects in the immediate vicinity of the I-10 corridor.

With the exception of climate change, which is a global issue, the BLM has identified the California desert as the largest area within which cumulative effects should be assessed for all disciplines. However, within the desert region, the specific area of cumulative effect varies by resource. For each resource, the geographic scope of analysis is based on the topography surrounding the BSPP and the natural boundaries of the resource affected, rather than jurisdictional boundaries. The geographic scope of cumulative effects often extends beyond the scope of the direct effects, but not beyond the scope of the direct and indirect effects of the proposed action and alternatives. Table 4.1-1 identifies the relevant geographic scope for each discipline’s analysis of cumulative impacts.

In addition, each project in a region would have its own implementation schedule, which may or may not coincide or overlap with the proposed action’s schedule. This is a consideration for short-term impacts from the BSPP. However, to be conservative, the cumulative analysis assumes that all projects in the cumulative scenario are built and operating during the operating lifetime of the proposed BSPP.

TABLE 4.1-1
CUMULATIVE SCENARIO

Resource or BLM Program	Cumulative Analysis Impact Area	Elements to Consider	BLM Renewable Energy Projects	Other BLM Authorized Actions	Other Known Actions/Activities
Air Resources	Mojave Desert Air Basin	PM2.5, PM10, ozone	Blythe, Genesis, Rice, Palen, Desert Sunlight, Chuckwalla, Eagle Crest Pump Storage, Nextera McCoy, Bullfrog Big Maria Vista, Desert Quartzite, EnXco, Desert Lily Soleil, Mule Mountain Solar, Associated Gen-tie Trans Lines,	Eagle Mtn Landfill, D-PV2, Colorado River Substation, Red Bluff Substation, DSW Trans Line, OHV, LTVAs,	I-10, Blythe Airport Solar 1, Chuckwalla Valley Raceway,
Global Climate Change	International, national and regional	CO2e	All		
Cultural Resources	Cultural sites, traditional use areas, and cultural landscapes on the plant site, along the linear facilities corridor and in the general vicinity of the site, including along the I 10 corridor	Ground-disturbing activities and the cultural character of the site and its vicinity. Cultural resources, including archaeological (prehistoric and historic), and ethnographic resources.	See Figure 9, which includes: Blythe, Genesis, Rice, Palen, Desert Sunlight, Chuckwalla, Eagle Crest Pump Storage, Nextera McCoy, Bullfrog Big Maria Vista, Desert Quartzite, EnXco, Mule Mountain Solar, Associated Gen-tie Trans Lines, etc.	Eagle Mtn Landfill, D-PV2, Colorado River Substation, Red Bluff Substation, DSW Trans Line, OHV, LTVAs. Etc.	Blythe Airport Solar 1, Chuckwalla Valley Raceway, various commercial and residential projects, etc.
Lands and Realty	Eastern Riverside County	Designated utility corridors (e.g., transmission lines, cellular telephone towers, poles), existing ROWs, I-10	Blythe, Genesis, Rice, Palen, Desert Sunlight, Chuckwalla, Eagle Crest Pump Storage, Bullfrog Big Maria Vista, Desert Quartzite, EnXco, Desert Lily Soleil, Mule Mountain Solar, Associated Gen-tie Trans Lines,	Eagle Mtn Landfill, D-PV2, Colorado River Substation, Red Bluff Substation, DSW Trans Line, OHV, LTVAs,	Blythe Airport Solar 1, Chuckwalla Valley Raceway,
Multiple Use Classes	CDCA Plan areas bearing the multiple use class designation “Limited”	Restriction or preclusion of otherwise allowable use opportunities	McCoy Soleil, Mule Mountain Solar, maybe also Red Bluff Substation	None	Blythe Airport Solar 1; First Solar’s Blythe
Noise	See Figure 44, Noise Measurement Locations and Noise Contours	Equipment, motor vehicles, high pressure steam blow	None	None	None
Paleontological Resources	Eastern Riverside County	Ground-disturbing activities; rock units with potential high sensitivity or known paleontological resources	Blythe, Genesis, Rice, Palen, Desert Sunlight, Chuckwalla, Eagle Crest Pump Storage, Nextera McCoy, Bullfrog Big Maria Vista, Desert Quartzite, EnXco, Desert Lily Soleil, Mule Mountain Solar, Associated Gen-tie Trans Lines,	Eagle Mtn Landfill, D-PV2, Colorado River Substation, Red Bluff Substation, DSW Trans Line, OHV, LTVAs,	Blythe Airport Solar 1, Chuckwalla Valley Raceway,

TABLE 4.1-1 (Continued)
CUMULATIVE SCENARIO

Resource or BLM Program	Cumulative Analysis Impact Area	Elements to Consider	BLM Renewable Energy Projects	Other BLM Authorized Actions	Other Known Actions/Activities
Public Health and Safety					
Hazardous materials/ hazardous waste	Mojave Desert Air Basin, watershed, groundwater basin, with focus on and in the vicinity of the site	Releases, spills, emissions, bacteria; ground disturbance that exposes existing subsurface conditions; engineering and administrative controls; health risks	See Air Resources, above; see also, Water Resources, below, in this Table 4.1-1.		
Waste management	California Desert, with emphasis on Riverside County	Solid and liquid wastes	Blythe, Genesis, Rice, Palen, Desert Sunlight, Chuckwalla, Eagle Crest Pump Storage, Nextera McCoy, Bullfrog Big Maria Vista, Desert Quartzite, EnXco, Desert Lily Soleil, Mule Mountain Solar, Associated Gen-tie Trans Lines	Eagle Mtn Landfill, D-PV2, Colorado River Substation, Red Bluff Substation, DSW Trans Line, OHV, LTVAs,	Blythe Airport Solar 1, Chuckwalla Valley Raceway,
Transmission line safety and nuisance	Immediate vicinity of the proposed line	Interference with radio-frequency communication; noise; fire hazards; hazardous shocks; nuisance shocks; and electric and magnetic field (EMF) exposure	Big Maria Vista Solar, Blythe Energy Project Transmission Line, Colorado River Substation and Expansion, Desert Quartzite, Palen, Chuckwalla Solar I	West-wide Section 368 Energy Corridors, Devers-Palo Verde Transmission Line, Blythe Energy Project	Interstate 10
Aviation safety	Air space governed by the Blythe Airport Land Use Compatibility Plan	Navigable airspace; reflectivity and temporary flash occurrences; radio frequency emissions and potential interference; thermal plumes; height and location of structures; clear space within Compatibility Zone D; bird strike and avian-aviation incompatibilities	All		
Traffic and transportation safety	I-10 corridor	Equipment that exceeds roadway load or size limits; hazardous materials transport	Same as Cultural Resources, above.		
Worker safety and fire protection	BSPP site and linear facilities corridor; jurisdictional boundary of the Riverside County Fire Department (RCFD) plus mutual aid agencies	Site access; fire response; hazardous materials response; advanced life support/paramedic services; disaster preparedness	Blythe, Genesis, Rice, Palen, Desert Sunlight, Chuckwalla, Eagle Crest Pump Storage, Nextera McCoy, Bullfrog Big Maria Vista, Desert Quartzite, EnXco, Desert Lily Soleil, Mule Mountain Solar, Associated Gen-tie Trans Lines	Eagle Mtn Landfill, D-PV2, Colorado River Substation, Red Bluff Substation, DSW Trans Line, OHV, LTVAs,	Blythe Airport Solar 1, Chuckwalla Valley Raceway,

**TABLE 4.1-1 (Continued)
CUMULATIVE SCENARIO**

Resource or BLM Program	Cumulative Analysis Impact Area	Elements to Consider	BLM Renewable Energy Projects	Other BLM Authorized Actions	Other Known Actions/Activities
Geologic hazards	BSPP site and linear facilities corridor	Accelerated and/or environmentally harmful soil erosion; corrosive soils; earthquake fault ruptures; earthquake induced ground deformations (e.g. lateral spreading, subsidence, liquefaction, or collapse), or otherwise unstable soils; landslides.	Big Maria Vista Solar, Blythe Energy Project Transmission Line, Colorado River Substation and Expansion, Desert Quartzite, Palen, Chuckwalla Solar I	West-wide Section 368 Energy Corridors, Devers-Palo Verde Transmission Line, Blythe Energy Project	Interstate 10
Recreation	California Desert, with emphasis on eastern Riverside County	Dispersed recreational opportunities and experiences, ACECs, LTVAs	Blythe, Genesis, Rice, Palen, Desert Sunlight, Chuckwalla, Eagle Crest Pump Storage, Nextera McCoy, Bullfrog Big Maria Vista, Desert Quartzite, EnXco, Desert Lily Soleil, Mule Mountain Solar, Associated Gen-tie Trans Lines	Eagle Mtn Landfill, D-PV2, Colorado River Substation, Red Bluff Substation, DSW Trans Line, OHV, LTVAs,	Blythe Airport Solar 1, Chuckwalla Valley Raceway,
Social Economics	Social: Eastern Riverside County Economic: Riverside County	Flow of goods and services; impacts to local infrastructure and services; ability to meet housing demand; employment/labor demand; possible positive impacts to regional economic sectors and/or adverse community impacts; severance or other tax benefits; ability of communities to absorb impacts.	Blythe, Genesis, Rice, Palen, Desert Sunlight, Chuckwalla, Eagle Crest Pump Storage, Nextera McCoy, Bullfrog Big Maria Vista, Desert Quartzite, EnXco, Desert Lily Soleil, Mule Mountain Solar, Associated Gen-tie Trans Lines,	Eagle Mtn Landfill, D-PV2, Colorado River Substation, Red Bluff Substation, DSW Trans Line, OHV, LTVAs,	Blythe Airport Solar 1, Chuckwalla Valley Raceway,
Soil Resources	Mojave Desert Air Basin and watershed	Erosion	See Air Resources, above; see also, Water Resources, below, in this Table 4.1-1.		
Special Designations	Wilderness Areas within sight or hearing distance of the site (i.e., Palen/McCoy, Big Maria Mountains and Little Chuckwalla Mountains Wilderness Areas); more generally, the I-10 corridor	Views, glint, glare, noise, recreation	See related resource sections in this Table 4.1-1.		
Transportation and Public Access	Transportation: Eastern Riverside County, focusing on the I-10 corridor Public Access: NECO Plan area	Construction traffic – materials and workers OHV recreation opportunities, changes in viewscape, unauthorized routes;	I-10 Corridor: Same as Cultural Resources, above. NECO Plan Area: See Figure 56, including BSPP, Genesis, Palen, Chuckwalla, First Solar/Desert Sunlight, etc.; see also cumulative projects identified for Vegetation Resources, below.		

TABLE 4.1-1 (Continued)
CUMULATIVE SCENARIO

Resource or BLM Program	Cumulative Analysis Impact Area	Elements to Consider	BLM Renewable Energy Projects	Other BLM Authorized Actions	Other Known Actions/Activities
Vegetation Resources	NECO Plan area	Ephemeral drainages and natural communities; special status plants; stabilized and partially stabilized dunes and sand transport corridors; invasive plants	See generally, Figure 56.		
			Blythe, Genesis, Rice, Palen, Desert Sunlight, Chuckwalla, Eagle Crest Pump Storage, Nextera McCoy, Bullfrog Big Maria Vista, Desert Quartzite, EnXco, Desert Lily Soleil, Mule Mountain Solar, Associated Gen-tie Trans Lines,	Eagle Mtn Landfill, D-PV2, Colorado River Substation, Red Bluff Substation, DSW Trans Line, OHV, LTVAs,	Blythe Airport Solar 1, Chuckwalla Valley Raceway,
Visual Resources	I-10 corridor; Figure 23	Project appearance; construction-related dust, light, glint and glare; views from key observation points	See Figure 9 and Figure 23, which include, for example:		
			Blythe, Genesis, Rice, Palen, Desert Sunlight, Chuckwalla, Eagle Crest Pump Storage, Nextera McCoy, Bullfrog Big Maria Vista, Desert Quartzite, EnXco, Desert Lily Soleil, Mule Mountain Solar, Associated Gen-tie Trans Lines,	Eagle Mtn Landfill, D-PV2, Colorado River Substation, Red Bluff Substation, DSW Trans Line, OHV, LTVAs,	Blythe Airport Solar 1, Chuckwalla Valley Raceway,
Water Resources					
Surface water	Watershed	Hydrology and quality	Blythe, Nextera McCoy, Bullfrog Big Maria Vista, Desert Quartzite, Mule Mountain Solar, Associated Gen-tie Trans Lines,	D-PV2, Colorado River Substation, DSW Trans Line, OHV, LTVAs,	First Solar Blythe, Blythe Airport Solar 1,
Groundwater	Palo Verde Mesa Groundwater Basin	Basin balance, levels and quality	Blythe, Nextera McCoy, Bullfrog Big Maria Vista, Desert Quartzite, Mule Mountain Solar	Colorado River Substation, DSW Trans Line, OHV, LTVAs,	First Solar Blythe, Blythe Airport Solar 1,
Wildland and Fire Ecology	Eastern Riverside County	Mortality of plants and wildlife, loss of forage and cover; changes to the vegetation communities; spread of invasive plants; consequences of subsequent extreme weather events; air quality	Blythe, Genesis, Rice, Palen, Desert Sunlight, Chuckwalla, Eagle Crest Pump Storage, Nextera McCoy, Bullfrog Big Maria Vista, Desert Quartzite, EnXco, Desert Lily Soleil, Mule Mountain Solar, Associated Gen-tie Trans Lines	Eagle Mtn Landfill, D-PV2, Colorado River Substation, Red Bluff Substation, DSW Trans Line, OHV, LTVAs,	Blythe Airport Solar 1, Chuckwalla Valley Raceway,
Wildlife Resources	Recovery Plan Area defined by NECO; Critical Habitat Unit defined by USFWS/CDFG; existing range or eastern Riverside County	Desert Tortoise, Mojave fringe-toed lizard, Couch's spadefoot toad, migratory birds, golden eagle, western burrowing owl, American badger, kit fox, Nelson's big horn sheep. Also, mortality and injury; special status wildlife; wildlife movement and connectivity; indirect impacts, including from lighting, collisions and climate change.	Blythe, Genesis, Rice, Palen, Desert Sunlight, Chuckwalla, Eagle Crest Pump Storage, Nextera McCoy, Bullfrog Big Maria Vista, Desert Quartzite, EnXco, Desert Lily Soleil, Mule Mountain Solar, Associated Gen-tie Trans Lines,	Eagle Mtn Landfill, D-PV2, Colorado River Substation, Red Bluff Substation, DSW Trans Line, OHV, LTVAs,	Blythe Airport Solar 1, Chuckwalla Valley Raceway,

TABLE 4.1-2
RENEWABLE ENERGY PROJECTS IN THE CALIFORNIA DESERT DISTRICT

BLM Field Office	Number of Projects & Acres	Total MW
Solar Energy		
Barstow Field Office	18 projects 132,560 acres	12,875 MW
El Centro Field Office	7 projects 50,707 acres	3,950 MW
Needles Field Office	17 projects 230,480 acres	15,700 MW
Palm Springs Field Office	17 projects 123,592 acres	11,873 MW
Ridgecrest Field Office	4 projects 30,543 acres	2,835 MW
TOTAL – CA Desert District	***63 projects 567,882 acres***	***47,233 MW***
Wind Energy		
Barstow Field Office	25 projects 171,560 acres	n/a
El Centro Field Office	9 projects (acreage not given for 3 of the projects) 48,001 acres	n/a
Needles Field Office	8 projects 115,233 acres	n/a
Palm Springs Field Office	4 projects 5,851 acres	n/a
Ridgecrest Field Office	16 projects 123,379 acres	n/a
TOTAL – CA Desert District	***62 projects 433,721 acres***	n/a

SOURCE: CEC, RSA (June 2010) Section B.3.4, Table 1A.

Renewable Energy Projects Included in the Cumulative Scenario

A large number of renewable projects have been proposed on BLM managed land, State land, and private land in California. As of January 2010, there were 244 renewable projects proposed in California in various stages of the environmental review process or under construction. As of December 2009, 49 of these projects, representing approximately 10,500 MW, were planning on requesting American Recovery and Reinvestment Act funds from the Federal government. Solar, wind, and geothermal development applications have requested use of BLM land, including approximately one million acres of the California desert. State and private lands have also been targeted for renewable solar and wind projects. In addition, nearly 80 applications for solar and wind projects are being considered on BLM land in Nevada and Arizona. (CEC RSA June 2010) Renewable energy projects in BLM’s California Desert District are identified in Table 4.1-2.

Large renewable projects now described in applications to the BLM and on private land are competing for utility Power Purchase Agreements, which will allow utilities to meet state-required Renewable Portfolio Standards. Not all of the projects listed will complete the environmental review process, and not all projects will be funded and constructed. It is unlikely that all of these projects will be constructed for the following reasons:

1. Not all developers will develop the detailed information necessary to meet BLM and Energy Commission standards. Most of the solar projects with pending applications are proposing generation technologies that have not been implemented at large scales. As a result, preparing complete and detailed plans of development (PODs) is difficult, and completing the required NEPA and CEQA documents is especially time-consuming and costly.

2. As part of approval by the appropriate Lead Agency under NEPA and/or CEQA (generally the BLM and/or Energy Commission), all regulatory permits must be obtained by the applicant or the prescriptions required by the regulatory authorities incorporated into the Lead Agency's license, permit or ROW grant. The large size of these projects may result in permitting challenges related to endangered species, mitigation measures or requirements, and other issues.

3. Also after project approval, construction financing must be obtained (if it has not been obtained earlier in the process). The availability of financing will be dependent on the status of competing projects, the laws and regulations related to renewable project investment, and the time required for obtaining permits.

The BLM reviewed the list of renewable energy projects on State and private lands that the Energy Commission evaluated (RSA Table 1B) and determined that several among them do not meet the standard for consideration within the NEPA Cumulative Analysis. Reasons include: (i) BLM's NEPA Handbook H-1790-1 states, "Analyzing future actions, such as speculative developments, is not required;"(ii) Where information about the status of a potential upcoming project is not available, it is impossible to determine what impacts would result from its construction, operation, maintenance or ultimate decommissioning and, without this data, there can be no reasoned analysis of additive, countervailing or synergistic effects; and (iii) a cumulative impact analysis appropriately is concerned with impacts that are sufficiently likely to occur and not with guesswork about possible projects that can be conceived of or imagined. Accordingly, the following renewable energy (wind and solar) projects that were considered by the Energy are not considered by the BLM:

1. *In Humboldt County*: Bear River Ridge (70 MW);

2. *In Shasta County*: Padoma Wind Energy (175 MW);

3. *In Montezuma Hills, Solano County*: Shiloh III (200 MW); Montezuma Wind II (52-60); and Montezuma Hills Wind Project (34-37 MW);

4. *In Sacramento County*: Rancho Seco Solar Thermal (15-17 MW solar trough);

5. *In Contra Costa County*: Tres Vaqueros (42 MW wind repower);

6. *In Stanislaus County*: Stanislaus Solar Project I (20 MW solar PV) and Stanislaus Solar Project II (20 MW solar PV);

7. *In Kings County*: Sun City Project Phase 1 (20 MW solar PV) and Synapse Solar 2 (20 MW solar PV/solar thermal);

8. *In Kern County*: Maricopa Sun Solar Complex (350 MW Solar PV); Panoche Ranch Solar Farm (250 MW Solar PV); Monte Vista (126 MW Solar PV); Lost Hills (32.5 solar PV); Tehachapi Photovoltaic Project (20 MW solar PV); T, squared, Inc. (19 MW solar PV); Global Real Estate Investment Partners, LLC (solar PV); Recurrent Energy (solar PV); Man-Wei Solar (solar PV); Regenesis Power for Kern County Airports Dept.; Manzana Wind Project (246 MW); Pine Canyon (150 MW); and Aero Tehachapi (65 MW).

9. *In San Bernardino County*: Boulevard Associates (20 MW solar PV);

10. *In Los Angeles County*: Gray Butte Solar PV (150 MW Solar PV) and NRG Alpine Suntower (40 MW solar PV and 46 MW solar thermal);

11. *In Brawley / Imperial County*: Orni 18, LLC Geothermal Power Plant (49.9 MW) and Black Rock Geothermal 1,2,and 3; and

12. *In the City of Vernon*: City of Vernon Wind Energy Project (300 MW).

Solar, wind and geothermal energy projects identified and analyzed by the Energy Commission as being on State and private lands that also are considered by the BLM are identified in Table 4.1 3. Proposed solar energy projects within BLM's cumulative scenario also are shown on Figure 9.

Other BLM-Authorized Actions and Known Actions/Activities in the Cumulative Scenario

Other existing BLM authorized actions and other known actions/activities along the I-10 corridor in Eastern Riverside County are identified in Table 4.1-4.

Other future foreseeable projects along the I-10 corridor in Eastern Riverside County are identified in Table 4.1-5.

4.1.5 Mitigation Measures Included in the Analysis

For impacts identified in the following resource sections, mitigation measures have been developed that would be implemented during all appropriate phases of the project from initial ground breaking, to operations, and through closure and decommissioning. The mitigation measures include a combination of the following:

1. Measures that have been proposed by the applicant;

2. Conditions of Certification (COCs) proposed by the California Energy Commission;

3. Regulatory requirements of other federal, state, and local agencies;

4. USFWS terms and conditions identified in the Biological Opinion; and

5. Additional BLM-proposed mitigation measures, standard right-of-way (ROW) grant terms and conditions, and best management practices.

TABLE 4.1-3
RENEWABLE ENERGY PROJECTS ON STATE AND PRIVATE LANDS

Project Name	Location	Status
Solar Projects		
Solargen Panoche Valley Solar Farm (400 MW Solar PV)	San Benito County	EIR in progress
San Joaquin Solar 1 and 2 (107 MW Solar hybrid)	Fresno	Under environmental review
Palmdale Hybrid Power Project Unit 1 (50 MW solar thermal, part of a hybrid project)	City of Palmdale	Under environmental review
Lucerne Valley Solar (50 MW solar PV)	San Bernardino	Under environmental review
Abengoa Mojave Solar Project (250 MW solar thermal)	San Bernardino County, Harper Lake	Under environmental review
Rice Solar Energy Project (150 MW solar thermal)	Riverside County, north of Blythe	Under environmental review
3 MW solar PV energy generating facility	San Bernardino County, Newberry Springs	MND published for public review
Blythe Airport Solar 1 Project (100 MW solar PV)	Blythe, California	MND published for public review
First Solar's Blythe (21 MW solar PV)	Blythe, California	Under construction
California Valley Solar Ranch (SunPower) (250 MW solar PV)	Carrizo Valley, San Luis Obispo County	Under environmental review
LADWP and OptiSolar Power Plant (68 MW solar PV)	Imperial County, SR 111	Under environmental review
Topaz Solar Farm (First Solar) (550 MW solar PV)	Carrizo Valley, San Luis Obispo County	Under environmental review
AV Solar Ranch One (230 MW solar PV)	Antelope Valley, Los Angeles County	Under environmental review
Bethel Solar Hybrid Power Plant (49.4 MW hybrid solar thermal and biomass)	Seeley, Imperial County	Under environmental review
Mt. Signal Solar Power Station (49.4 MW hybrid solar thermal and biomass)	8 miles southwest of El Centro, Imperial County	Under environmental review
Wind Projects		
Alta-Oak Creek Mojave Project (up to 800 MW)	Kern County, west of Mojave	Under environmental review
PdV Wind Energy Project (up to 300 MW)	Kern County, Tehachapi Mountains	Approved
Iberdrola Tule Wind (200 MW)	San Diego County, McCain Valley	EIR/EIS in progress
AES Daggett Ridge (84 MW)	San Bernardino	EIS in progress
Granite Wind, LLC (81 MW)	San Bernardino	EIR/EIS in progress
Solano Wind Project Phase 3 (up to 128 MW)	Montezuma Hills, Solano County	Under environmental review
Hatchet Ridge Wind Project	Shasta County, Burney	Under construction
Lompoc Wind Energy Project	Lompoc, Santa Barbara County	Approved
Pacific Wind (Iberdrola)	McCain Valley, San Diego County	Under environmental review
TelStar Energies, LLC (300 MW)	Ocotillo Wells, Imperial County	Under environmental review
Geothermal Projects		
Buckeye Development Project	Geyserville, Sonoma	Under environmental review

SOURCE: CEC RSA June 2010 Section B.3.4, Table 1A. The CEC compiled this list from the projects on CEQAnet as of November 2009 and the projects located on private or State lands that are listed on the Energy Commission Renewable Action Team website as requesting ARRA funding. Additional renewable projects proposed on private and State lands but not requesting ARRA funds are listed on the website.

TABLE 4.1-4
EXISTING PROJECTS ALONG THE I-10 CORRIDOR (Eastern Riverside County)

ID #	Project Name; Agency ID	Location	Ownership	Status	Acres	Project Description
1	Interstate 10	Linear project running from Santa Monica to Blythe (in California)	Caltrans	Existing	N/A	Interstate 10 (I-10) is a major east-west route for trucks delivering goods to and from California. It is a four lane divided highway in the Blythe region.
2	Chuckwalla Valley State Prison	19025 Wiley's Well Rd. Blythe, CA	CA Dept. of Corrections & Rehabilitation	Existing	1,080	State prison providing long-term housing and services for male felons classified as medium and low-medium custody inmates jointly located on 1,720 acres of State-owned property. APN 879040006,008, 012, 027, 028, 029, 030,
3	Ironwood State Prison	19005 Wiley's Well Rd. Blythe, CA	CA Dept. of Corrections & Rehabilitation	Existing	640	ISP jointly occupies with Chuckwalla Valley State Prison 1,720 acres of State-owned property, of which ISP encompasses 640 acres. The prison complex occupies approximately 350 acres with the remaining acreage used for erosion control, drainage ditches, and catch basins. 879040001, 004, 009, 010, 011, 015, 016, 017, 018, 019, 020
4	Devers-Palo Verde Transmission Line	From the Midpoint Substation to Devers Substation	SCE	Existing	N/A	Existing 500 kV transmission line parallel to I-10 from Midpoint Substation, approximately 10 miles southwest of Blythe, to the SCE Devers Substation, near Palm Springs.
5	Blythe Energy Project	City of Blythe, north of I-10, 7 miles west of the CA/AZ border	Blythe Energy, LLC	Existing	76	520 MW combined-cycle natural gas-fired electric-generating facility. Project is connected to the Buck Substation owned by WAPA.
6	West-wide Section 368 Energy Corridors	Riverside County, parallel to DPV corridor	BLM, DOE, U.S. Forest Service	Approved by BLM and U.S. Forest Service	N/A	Designation of corridors on federal land in the 11 western states, including California, for oil, gas, and hydrogen pipelines and electricity transmission and distribution facilities (energy corridors). One of the corridors runs along the southern portion of Riverside County.
7	Eagle Mountain Pumping Plant	Eagle Mountain Road, west of Desert Center	Metropolitan Water District of Southern California	Existing		144 ft. pumping plant that is part of the Metropolitan Water District of Southern California's facilities. APNs 807150007, 807150009, 807150010

TABLE 4.1-4 (Continued)
EXISTING PROJECTS ALONG THE I-10 CORRIDOR (Eastern Riverside County)

ID #	Project Name; Agency ID	Location	Ownership	Status	Acres	Project Description
8	Recreational Opportunities	Eastern Riverside County	BLM	Existing	N/A	BLM has numerous recreational opportunities on lands in eastern Riverside County along the I-10 corridor including the Wiley's Well Campground, Coon Hollow Campground, and multiple Long-Term Visitor Areas. See PA/FEIS Chapter 3.13.
9	Kaiser Mine	Eagle Mountain, north of Desert Center	Kaiser Ventures, Inc.	Mining activities stopped in 1983.		Kaiser Steel mined iron ore at Kaiser Mine in Eagle Mountain and provided much of the Pacific Coast steel in the 1950s. Mining project also included the Eagle Mountain Railroad, 51 miles long. Imported steel captured market share in the 1960s and 1970s and primary steelmaking closed in the 1980s. 701380031

SOURCE: CEC RSA June 2010 Section B.3.4, Table 2.

These requirements are generically referred to as "Mitigation Measures" throughout this PA/FEIS. Because these Mitigation Measures are derived from a variety of sources, they also are required, and their implementation regulated, by the various agencies. This, in turn, is the project description that has been presented to the USFWS for consultation and is the project description upon which the terms and conditions of the Biological Opinion are based. The Applicant is required to comply with the terms and conditions of the Biological Opinion.

Many of the other mitigation measures are required by agencies other than the BLM and their implementation will be enforced by those other agencies against the Applicant. For instance, FWS's Endangered Species Act Section 7 Mitigation Measures will be included in the Record of Decision (ROD), and the National Historic Preservation Act Section 106 Programmatic Agreement will include a number of processes that also will be included in the ROD. The Applicant will be required by the ROD and the ROW grant to comply with the requirements of those other agencies (see, e.g., 43 CFR 2805.12(a) (Federal and state laws and regulations), (i)(6) (more stringent state standards for public health and safety, environmental protection and siting, constructing, operating, and maintaining any facilities and improvements on the ROW). Any non-compliance with implementation of these other Federal or state requirements may impact the approval status of the ROD and ROW grant.

TABLE 4.1-5
FUTURE FORESEEABLE PROJECTS ALONG THE I-10 CORRIDOR (Eastern Riverside County)

ID #	Project Name; Agency ID	Location	Ownership	Status	Acres	Project Description
A	Four Commercial Projects	Blythe, CA	Various	Approved	N/A	Four commercial projects have been approved by the Blythe Planning Department including the Agate Road Boat & RV Storage, Riverway Ranch Specific Plan, Subway Restaurant and Motel, and Agate Senior Housing Development.
B	Intake Shell	Blythe, CA		Under Construction	N/A	Reconstruction of a Shell facility located at Intake & Hobsonway. Demolition occurred in 2008, reconstruction planned for 2009-2010.
C	Fifteen Residential Developments	Blythe, CA	Various	Approved/ Under Construction	N/A	Twelve residential development projects have been approved by the Blythe Planning Department including: Vista Palo Verde (83 Single Family Residential [SFR]), Van Weelden (184 SFR), Sonora South (43 SFR), Ranchette Estates (20 SFR), Irvine Assets (107 SFR), Chanslor Village (79 SFR), St. Joseph's Investments (69 SFR), Edgewater Lane (SFR), The Chanslor Place Phase IV (57 SFR), Cottonwood Meadows (103 Attached SFR), Palo Verde Oasis Phase IV (29 SFR). Three residential development projects have been approved and are under construction including: The Chanslor Phase II & III (78 SFR), River Estate at Hidden Beaches, Mesa Bluffs Villas (26 Attached SFR).
D	Devers-Palo Verde 2 Transmission Line Project	From the Midpoint Substation to Devers Substation	SCE	Project was approved by CPUC 11/2009.	N/A	New 500 kV transmission line parallel to the existing Devers-Palo Verde Transmission Line from Midpoint Substation, approximately 10 miles southwest of Blythe, to the SCE Devers Substation, near Palm Springs. The ROW for the 500 kV transmission line would be adjacent to the existing DPV ROW and would require an additional 130 feet of ROW on federal and State land and at least 130 feet of ROW on private land and Indian Reservation land.
E	Colorado Substation and reasonably foreseeable Expansion	10 miles southwest of Barstow	SCE	Project was approved by CPUC 11/2009.	44	The new 500/230 kV substation would be constructed within a rectangular area approximately 1,000 feet by 1,900 feet, resulting in approximately 44 acres permanently disturbed. The 500 kV switching station would include buses, circuit breakers, and disconnect switches. The switchyard would be equipped with 108-foot-high dead-end structures. Outdoor night lighting would be designed to illuminate the switchrack when manually switched on. Expand substation into a full 500/220 kV substation on approximately 90 acres of land.
F	Blythe Energy Project Transmission Line	From the Blythe Energy Project (Blythe, CA) to Devers Substation	Blythe Energy, LLC	Under construction	N/A	Transmission Line Modifications including upgrades to Buck Substation, approximately 67.4 miles of new 230 kV transmission line between Buck Substation and Julian Hinds Substation, upgrades to the Julian Hinds Substation, installation of 6.7 miles of new 230 kV transmission line between Buck Substation and SCE's DPV 500 kV transmission line.

TABLE 4.1-5 (Continued)
FUTURE FORESEEABLE PROJECTS ALONG THE I-10 CORRIDOR (Eastern Riverside County)

ID #	Project Name; Agency ID	Location	Ownership	Status	Acres	Project Description
G	Desert Southwest Transmission Line	118 miles primarily parallel to DPV	Imperial Irrigation District	Permitted, not constructed	N/A	New, approximately 118-mile 500 kV transmission line from a new substation/switching station near the Blythe Energy Project to the existing Devers Substation located approximately 10 miles north of Palm Springs, California.
H	Green Energy Express Transmission Line Project	70-mile transmission line from the Eagle Mountain Substation to southern California	Green Energy Express LLC	September 9, 2009, Green Energy Express LLC filed a Petition for Declaratory Order requesting that FERC approve certain rate incentives for the project	N/A	70-mile double-circuit 500 kV transmission line and new 500/230 kV substation from near the Eagle Mountain Substation (eastern Riverside County) to Southern California
I	Blythe Energy Project II	Blythe, CA. Near the Blythe Airport and I-10	Blythe Energy, LLC	Approved December 2005	30 acres (located on Blythe Energy Project land)	520 MW combined-cycle power plant located entirely within the Blythe Energy Project site boundary. Blythe Energy Project II will interconnect with the Buck Substation constructed by WAPA as part of the Blythe Energy Project. Project is designed on 30 acres of a 76-acre site.
J	Eagle Mountain Pumped Storage Project	Eagle Mountain iron ore mine, north of Desert Center	Eagle Crest Energy Company	License application filed with FERC in June 2009	1,524	1,300 MW pumped storage project designed to store off-peak energy to utilize during on-peak hours. The captured off-peak energy will be used to pump water to an upper reservoir where the energy will be stored. The water will then be released to a lower reservoir through an underground electrical generating facility where the stored energy will be released back into the Southwestern grid during “high demand peak” times, primarily weekdays. Estimated water use is 8,100 AFY for the first four-year start-up period and replacement water is 1,763 AFY thereafter. 1
K	Palen Solar Power Project	North of I-10, 10 miles east of Desert Center	Solar Millennium LLC/Chevron Energy	Undergoing environmental review, construction to begin beginning of 2011.	5,200	500 MW solar trough project on 5,200 acres. Facility would consist of two 250 MW plants. Approximately 3,870 acres would be disturbed. Project would include interconnection to the SCE Red Bluff Substation. Project would use 300 AFY.
L	NextEra (FPL) McCoy	Northwest of Blythe, CA, immediately north of Blythe Solar Power Project	NextEra (FPL)	Plan of Development in to Palm Springs BLM	20,608	250 MW solar trough project. ROW in process for monitoring water well drilling.
M	Mule Mountain Soleil Project	North of Wileys Well Road, east of Genesis Solar Energy Project	enXco	POD in to BLM		300 MW solar photovoltaic project location on X acres.

TABLE 4.1-5 (Continued)
FUTURE FORESEEABLE PROJECTS ALONG THE I-10 CORRIDOR (Eastern Riverside County)

ID #	Project Name; Agency ID	Location	Ownership	Status	Acres	Project Description
N	McCoy Soleil Project	6 miles north of Desert Center	enXco		1,216	100 MW photovoltaic plant on 1,216 acres of BLM land. Would require a 5-8 mile transmission line to planned SCE Red Bluff Substation.
O	Genesis Solar Energy Project	North of I-10, 25 miles west of Blythe and 27 miles east of Desert Center	NextEra (FPL)	Undergoing environmental review. Construction to begin at the end of 2010.		250 MW solar trough project located on 4,640 acres north of the Ford Dry Lake. Project includes six mile natural gas pipeline and a 5.5 mile gen-tie line to the Blythe Energy Center to Julian Hinds Transmission Line, then travel east on shared transmission poles to the Colorado River Substation.
P	Big Maria Vista Solar Project	North of I-10, approximately 12 miles northwest of Blythe	Bullfrog Green Energy	Plan of Development submitted to BLM	2,684	500 MW solar photovoltaic project on 2,684 acres of land. Project would be built in three phases and would require 6,000 gallons of water monthly.
Q	Chuckwalla Solar I	1 mile north of Desert Center	Chuckwalla Solar I, LLC	Plan of Development submitted to BLM	4,083	200 MW solar photovoltaic project on 4,083 acres of land. Project would be developed in several phases and would tap into an existing SCE 161-kV transmission line crossing the site.
R	Rice Solar Energy Project	Rice Valley, Eastern Riverside County	Rice Solar Energy, LLC (SolarReserve, LLC)	Undergoing environmental review. Construction to begin in 2011	1,410	150 MW solar power tower project with liquid salt storage. Project is located on approximately 1,410 acres and includes a power tower approximately 650 feet tall and a 10-mile long interconnection with the WAPA Parker-Blythe transmission line.
S	Blythe Airport Solar I Project	Blythe Airport	U.S. Solar	Application has been submitted to City of Blythe, City of Blythe approved the project in November, 2009	640	100 MW solar photovoltaic project located on 640 acres of Blythe airport land.
T	Blythe PV Project	Blythe	First Solar	CPUC approved project terms of a 20 year power purchase agreement for sale of 7.5 MW, Under construction in fourth quarter, 2009	200	7.5 MW solar photovoltaic project located on 200 acres. Project was constructed by First Solar and sold to NRG Energy.
U	Desert Quartzite	South of I-10, 8 miles southwest of Blythe	First Solar (previously OptiSolar)	POD in to BLM	7,724	600 MW solar photovoltaic project located on 7,724 acres. Adjacent to DPV transmission line and SCE Colorado Substation. Approximately 27 AF would be used during construction and 3.8 AFY during operation.
V	Desert Sunlight	North of Desert Center	First Solar (previously OptiSolar)	POD in to BLM	5,000-6,000	250 MW solar photovoltaic project located on 5,000-6,000 acres. Project would tie into the SCE Red Bluff Substation. Approximately 27 AF would be used during construction and 3.8 AFY during operation.

TABLE 4.1-5 (Continued)
FUTURE FORESEEABLE PROJECTS ALONG THE I-10 CORRIDOR (Eastern Riverside County)

ID #	Project Name; Agency ID	Location	Ownership	Status	Acres	Project Description
W	Mule Mountain Solar Project	South of I-10, approximately 4 miles west of Blythe	Bullfrog Green Energy	Plan of Development in to Palm Springs BLM	2,684	500 MW solar concentrating photovoltaic project located on 2,684 acres. Considering interconnection with proposed SCE Colorado Substation. Approximately 6,000 gallons of water would be required monthly.
X	Eagle Mountain Soleil	6 miles north of Desert Center	enXco		1,216	100 MW photovoltaic plant on 1,216 acres of BLM land. Would require a 5-8 mile transmission line to planned SCE Red Bluff Substation.
Y	Red Bluff Substation	Unknown at this time – near Desert Center	SCE		N/A	Proposed 230/500 kV Substation near Desert Center. Planned to interconnect renewable projects near Desert Center with the DPV transmission line.
Z	Chuckwalla Valley Raceway	Desert Center Airport (no longer a functioning airport)	Developer Matt Johnson	Under construction, track expected to be open in mid 2010	400	Proposed 500-mile race track located on 400 acres of land that used to belong to Riverside County and was used as the Desert Center airport. APN 811142016, 811142006
AA	Eagle Mountain Landfill Project	Eagle Mountain, North of Desert Center	Mine Reclamation Corporation and Kaiser Eagle Mountain, Inc.	U.S. Court of Appeals for the Ninth Circuit issued its regarding the EIS for the project in 11/09 and ruled that the land exchange for the project was not properly approved by the administrative agency. Kaiser's Mine and Reclamation is considering all available options.	~ 3,500	The project proposed to develop the project on a portion of the Kaiser Eagle Mountain Mine in Riverside County, California. The proposed project comprises a Class III nonhazardous municipal solid waste landfill and the renovation and repopulation of Eagle Mountain Townsite. The proposal by the proponent includes a land exchange and application for rights-of-way with the Bureau of Land Management and a Specific Plan, General Plan Amendment, Change of Zone, Development Agreement, Revised Permit to Reclamation Plan, and Tentative Tract Map with the County. The Eagle Mountain landfill project is proposed to accept up to 20,000 tons of non-hazardous solid waste per day for 50 years.
AB	Wileys Well Communication Tower (part of the Public Safety Enterprise Communication System)	East of Wileys Well Road, just south of I-10	Riverside County	Final EIR for the Public Safety Enterprise Communication System published in August 2008.	N/A	The Public Safety Enterprise Communication project is the expansion of the County of Riverside's fire and law enforcement agencies approximately 20 communication sites to provide voice and data transmission capabilities to assigned personnel in the field.

TABLE 4.1-5 (Continued)
FUTURE FORESEEABLE PROJECTS ALONG THE I-10 CORRIDOR (Eastern Riverside County)

ID #	Project Name; Agency ID	Location	Ownership	Status	Acres	Project Description
Additional Projects Outside Cumulative Figure Boundaries						
	Paradise Valley "New Town" Development	Approximately 30 miles west of Desert Center (7 miles east of the city of Coachella)	Glorious Land Company	Notice of Preparation of an EIR published in December of 2005. Still under environmental review.	6,397	Company proposed to develop a planned community as an international resort destination with residential, recreational, commercial, and institutional uses and facilities. The project is planned as a self-contained community with all public and quasi-public services provided. The project is located outside the Coachella Valley Water District (CVWD) boundaries and the applicant has entered into an agreement with the CVWD to manage artificial recharge of the Shaver's Valley groundwater. The proponent has purchased a firm water supply from Rosedale-Rio Bravo Water District in Kern County. In-kind water will be transferred to the MWD which will release water from the Colorado River Aqueduct to a 38 acre percolation pond on the project site. The MWD will deliver approximately 10,000 AFY to the percolation pond and over the long term, no net loss of groundwater in storage is anticipated.
	Proposed National Monument (former Catellus Lands)	Between Joshua Tree National Park and Mojave National Preserve		In December 2009, Senator Feinstein introduced bill S.2921 that would designate two new national monuments including the Mojave Trails National Monument.	941,000 acres	The proposed Mojave Trails National Monument would protect approximately 941,000 acres of federal land, including approximately 266,000 acres of the former railroad lands along historic Route 66. The BLM would be given the authority to conserve the monument lands and also to maintain existing recreational uses, including hunting, vehicular travel on open roads and trails, camping, horseback riding and rockhounding.
	BLM Renewable Energy Study Areas	Along the I-10 corridor between Desert Center and Blythe	BLM	Proposed		The DOE and BLM identified 24 tracts of land as Solar Energy Study Areas in the BLM and DOE Solar PEIS. These areas have been identified for in-depth study of solar development and may be found appropriate for designation as solar energy zones in the future.
	Solar Energy projects along Arizona Border	Approximately 15 miles east of the CA/ AZ border along I-10 corridor	Various	Applications filed in to Arizona BLM field offices, application status listed as pending.		Five solar trough and solar power tower projects have been proposed along the I-10 corridor approximately 15 miles east of the CA/AZ border. The projects have been proposed on BLM administered-land in the Yuma and Kingman Field Offices and have requested use of approximately 75,000 acres.

NOTE:

[1] Water usage for the Eagle Mountain Pumped Storage Project was based on the information provided to FERC by the Eagle Crest Energy Company in the Responses to Deficiency of License Application and Additional Information Request dated October 26, 2009.

SOURCE: CEC, RSA (June 2010) Section B.3.4, Table 3.

As noted above, the BLM recognizes that the Energy Commission COCs are not generally within the enforcement authority of the BLM since the CEC COCs are requirements originating in State law and regulation. While the Applicant must comply with these measures, they are not directly enforceable by the BLM except in the general sense referred to above. For those COCs that are also within the enforcement authority of the BLM because of overlapping authorities, the BLM incorporates those COCs into its ROW grant as its own terms and conditions subject to its enforcement authority. Appendix G contains a list of COCs and denotes those measures that will be monitored and managed by the CEC, and those that will be subject to joint administration between the BLM and CEC.

In some instances, the BLM identified potential impacts to public land resources that would not be and have not been identified as mitigation measures required by these other agencies. In these instances, individual mitigation measures have been developed by the BLM and incorporated into the ROW grant, and will be monitored and managed solely by the BLM. In addition, standard terms and conditions for approval of the use of public land have been identified in the ROD and incorporated into the proposed ROW grant and therefore will be enforced by the BLM as part of any ROW grant approved for the project.

4.1.6 Terms and Conditions found in FLPMA and BLM ROW Regulations

Title V of the Federal Land Policy and Management Act of 1976 addresses the issuance of ROW authorizations on public land. The BLM has identified all the lands that will be occupied by facilities associated with the BSPP that are needed for its construction, operation, and maintenance. The general terms and conditions for all public land rights of way are described in FLPMA section 505, and include measures to minimize damage and otherwise protect the environment, require compliance with air and water quality standards, and compliance with more stringent state standards for public health and safety, environmental protection, siting, construction, operation, and maintenance of ROWs. The Secretary may prescribe additional terms and conditions as s/he deems necessary to protect Federal property, provide for efficient management, and among other things, generally protect the public interest in the public lands subject to or lands adjacent thereto. For this project, terms and conditions have been incorporated into the ROW that are necessary to protect public safety, including security fencing and on-site personnel. The environmental consequences analysis in the EIS identifies impacts and mitigation measures to reduce/eliminate impacts. The mitigation measures identified by the BLM and incorporated as a term and condition of the ROW grant provide those actions necessary to prevent unnecessary or undue degradation of the public lands as required by FLPMA section 302. The additional mitigation measures that are identified and described in the EIS and that will be enforced by the other agencies, as noted above, provide additional protection to public land resources.

Specifically, the PA/FEIS identifies recommended mitigation measures that would:

1. Require compliance with Mojave Desert Air Quality Management District State regulations, reduce carbon emissions, and minimize dust;

2. Require planning and compliance with Federal, State and local agency requirements for drainage, erosion and sediment control, wastewater management, groundwater use and monitoring, and stormwater control and monitoring;

3. Require measures to protect public health and safety including traffic control, transmission line standards, and worker safety plans; and

4. Require biological resource mitigation and cultural resources mitigation to protect sensitive environmental resources and cause the least damage to the environment and protect the public interest, while allowing the project to be constructed.

Finally, all BLM ROW grants are approved subject to regulations contained at 43 CFR 2800. Those regulations specify that the BLM may, at any time, change the terms and conditions of a ROW grant "as a result of changes in legislation, regulations, or as otherwise necessary to protect public health or safety or the environment." 43 CFR 2805.15(e).

The BLM will monitor conditions and review any ROW grant issued for the BSPP to evaluate if future changes to the grant terms and conditions are necessary or justified under this provision of the regulations to further minimize or reduce impacts resulting from the project.

If approved, the solar energy ROW authorization will include diligent development terms and conditions, consistent with the requirements of 43 CFR 2805.12(i)(5). Failure of the holder to comply with the diligent development terms and conditions provides the BLM authorized officer the authority to suspend or terminate the authorization (43 CFR 2807.17).

If approved, the solar energy ROW authorization would include a required "Performance and Reclamation" bond to ensure compliance with the terms and conditions of the ROW authorization, consistent with the requirements of 43 CFR 2805.12(g). The "Performance and Reclamation" bond will consist of three components. The first component will be hazardous materials, the second component will be the decommissioning and removal of improvements and facilities, and the third component will address reclamation, revegetation, restoration and soil stabilization.

4.2 Impacts on Air Resources

4.2.1 Impact Assessment Methodology

Dispersion Modeling Assessment

This impact assessment focuses on the general air quality impacts that could occur as a result of implementing the proposed action or alternatives. The methodology for this assessment conforms with the guidance found in the CEQ regulations for implementing NEPA. See, 40 CFR 1502.24 (Methodology and Scientific Accuracy); 40 CFR 1508.7 (Cumulative Impact), and 40 CFR 1508.8 (Effects).

The CEQ regulations require that agencies rigorously explore and objectively evaluate the impact of the alternatives. Under NEPA, the BLM considered the Applicant's use of the U.S. Environmental Protection Agency guideline American Meteorological Society/EPA Regulatory Model (AERMOD) to estimate ambient impacts from BSPP construction and operation. This is consistent with the Energy Commission's consideration of impacts of the BSPP and alternatives in the RSA.

In accordance with the Federal Clean Air Act (CAA) requirements, the air quality in a given region or area is measured by the concentrations of various pollutants in the atmosphere. The measurement of these criteria pollutants in ambient air are expressed in units of parts per million (ppm) or micrograms per cubic meter (µg/m3). The air quality in a region is a result of not only the types and quantities of atmospheric pollutants and pollutant sources in an area, but also surface topography and the prevailing meteorological conditions. This analysis evaluates the expected air quality impacts from emissions of criteria air pollutants from the construction and operation of the BSPP and its alternatives.

To evaluate impacts on air quality using AERMOD, the construction emission sources for the site were grouped into two categories: equipment (off-road equipment); and vehicles (on-road equipment), where the exhaust and fugitive dust emissions for each type were calculated for particulate matter modeling. Emissions from onsite equipment engines and fugitive dust emission sources were modeled as area sources. Similar modeling procedures were used by the Applicant to determine impacts from the operating maintenance vehicle exhaust and fugitive dust emissions, while the stationary sources (boilers, heaters, engines, cooling towers) were modeled as point sources.

This air dispersion model provides a means of predicting the location and ground level magnitude of the impacts of a new emissions source. These models consist of several complex series of mathematical equations, which are repeatedly calculated by a computer for many ambient conditions to provide theoretical maximum offsite pollutant concentrations for short-term (one-hour, three-hour, eight-hour, and 24-hour) and annual periods. The model results are generally described as maximum concentrations, often described as a unit of mass per volume of air, such as micrograms per cubic meter ($\mu g/m^3$).

The inputs for the air dispersion model include four power blocks with stack information (exhaust flow rate, temperature, and stack dimensions), specific engine and vehicle emission data and meteorological data, such as wind speed, atmospheric conditions, and site elevation. For this proposed action, the meteorological data used as inputs to the model included hourly wind speeds and directions measured at the Blythe Airport meteorological station during 2002 through 2004.

For the determination of one-hour average and annual average construction NOx concentrations the Ozone Limiting Method (OLM) was used to determine worst-case near field NO_2 impacts. The NOx emissions from internal combustion sources, such as diesel engines, are primarily in the form of nitric oxide (NO) rather than NO_2. The NO converts into NO_2 in the atmosphere, primarily through the reaction with ambient ozone, and NOx OLM assumes full conversion of stack NO emission with the available ambient ozone. The NOx OLM method used assumed an initial NO_2/NOx ratio of 0.1 for all NOx emission sources. Actual monitored hourly background ozone data from Niland, California were used for all of 2002 and January through April of 2003, and Blythe monitoring data were used from May 2003 through 2004, based on data availability, to provide ozone data that corresponds with the years of meteorological data that were used to calculate maximum potential NO to NO_2 conversion to determine the maximum hourly NO_2 impacts.

The Applicant has also provided a modeling analysis to show compliance during operation with the new federal one-hour NO_2 standard (Galati & Blek 2010f). This modeling analysis, also using the AERMOD dispersion model, includes the use of the NOx_OLM modeling option and used a post-processor developed by the Applicant to also add in the actual hourly NO_2 background data and determine the 98th percentile of daily maximums (eighth highest) for each modeled receptor location. The NOx_OLM option considers that the emissions of NOx are initially primarily in the form of NO that over time oxidizes, primarily through a reaction with ozone, to NO_2. The initial NO_2/NOx ratio was set at the default value of 0.1 and the conversion of the rest of the NOx to NO_2 is assumed to be limited by the hourly ambient ozone concentration. For this modeling analysis, the Applicant obtained hourly monitored ozone and NO_2 concentration data, concurrent with the 2002 to 2004 meteorological data, as noted above for ozone, and from Palm Springs for NO_2. While using ozone and NO_2 concentration data from the same source is preferred, the remoteness of the site and limited number of stations made this an unreasonable option. However, the use of the older ambient ozone and NO_2 background data is conservative, as the ambient concentrations for both have been dropping since the 2002 to 2004 period (CEC, RSA June 2010, C.1-22).

Background concentrations provided by the Applicant were replaced where appropriate[1] with the available highest ambient background concentrations from the last three years at the most representative monitoring stations as shown in Table 4.2-1. The information presented in Table 4.2-1 has been updated since the publication of the DEIS to use peak values from 2007 to 2009 background data for gaseous pollutants (2009 data was not yet available); the updated information shows an improvement in worst-case background concentrations for many of the

[1] This does not include the background for the federal one-hour NO_2 standard since the Applicant's modeling analysis uses actual monitored NO_2 concentrations to determine the combined BSPP plus background average 98th percentile 1-hour NO_2 impacts.

TABLE 4.2-1
BACKGROUND CONCENTRATIONS (μg/m³)

Pollutant	Averaging Time	Recommended Background	Limiting AAQS[b]	Percent of Standard
NO_2	1 hour	119	339	35
	Annual	19	57	33
CO	1 hour	2645	23,000	12
	8 hour	878	10,000	9
PM10	24 hour	83	50	166
	Annual	30.5	20	153
PM2.5	24 hour[a]	20.5	35	59
	Annual	8.7	12	73
SO_2	1 hour	23.6	655	4
	3 hour	15.6	1,300	1
	24 hour	13.1	105	12
	Annual	3.5	80	4

NOTES:
[a] PM2.5 24-hour data shown are 98th percentile values which is the basis of the ambient air quality standard and the basis for determination of the recommended background concentration.
[b] The limiting AAQS is the most stringent of the CAAQS or NAAQS for that pollutant and averaging period.

SOURCE: ARB 2009c, U.S.EPA 2009b and Energy Commission Staff Analysis

criteria pollutants included in the air dispersion modeling analysis. Modeled impacts to these background concentrations were added, and the results were then compared with the ambient air quality standards for each respective air contaminant to determine whether the BSPP’s emission impacts would cause a new exceedance of an ambient air quality standard or would contribute to an existing exceedance.

Construction Modeling Analysis

The total duration of proposed construction is estimated to be approximately 69 months and would include the construction of the solar field and the four identical units, each with its own power block. The total fenced facility would cover 5,950 acres, and the permanent disturbance area of the proposed BSPP would be approximately 7,025 acres, including rerouted drainage channels and access roads outside of the fence line. Construction elements of the BSPP would include the four solar power plants (power block and solar array, as well as other ancillary facilities such as the administration buildings, warehouse, and parking lot), an approximately ten-mile natural gas supply pipeline, an electric transmission line to a substation located approximately five miles to the southwest, access roads, and rerouted drainage channels.

Combustion emissions would result from the off-road construction equipment, including diesel construction equipment used for site grading, excavation, and construction of onsite structures; off-road construction equipment used at the onsite batch plant; and on-road vehicles, including heavy duty diesel trucks used to deliver materials, other on-road diesel trucks used during construction, and worker personal vehicles and pickup trucks used to transport workers to and from and around the construction site. Fugitive dust emissions would result from site grading/excavation activities; construction of power plant facilities, roads, and switchyard; the use of an onsite batch plant; the installation of the new transmission line, the new gas pipeline, and the new onsite water pipelines; and vehicle travel on paved and unpaved roads. There also would be emissions associated with the use of an onsite fuel depot.

The annual emissions for the shorter duration offsite construction activities are based on the following construction durations:

1. Access Road Construction – two months
2. Gas Pipeline Construction – four months
3. Transmission Line Construction – eight months

Using estimated peak hourly, daily and annual construction equipment exhaust emissions, the Applicant modeled the proposed BSPP's construction emissions to determine impacts (Solar Millennium 2010a). To determine the construction impacts on ambient standards (i.e. one-hour through annual) it was assumed that the emissions would occur during a daily construction schedule of 10-hour days from March through September (7 am to 5 pm) and eight hour days from October through February (8 am to 4 pm).

The predicted proposed BSPP pollutant concentration levels were added to a conservatively estimated background of existing emission concentration levels (Table 4.2-1) to determine the cumulative effect. Table 4.2-2 presents the results of the Applicant's modeling analysis. The construction-related maximum daily emissions modeling analysis for the BSPP, including both the onsite fugitive dust and vehicle tailpipe emission sources, is summarized in Table 4.2-3, and maximum annual emissions are summarized in Table 4.2-4.

TABLE 4.2-2
MAXIMUM BSPP CONSTRUCTION IMPACTS

Pollutants	Avg. Period	Project Impact ($\mu g/m^3$)	Background ($\mu g/m^3$)	Total Impact ($\mu g/m^3$)	Standard ($\mu g/m^3$)	Percent of Standard
NO_2 [a]	1-hr.	335.9	NA	335.9	339	99
	Annual	4.3	19	23.3	57	41
CO	1-hr	1,068.7	2,645	3,714	23,000	16
	8-hr	423.6	877	901	10,000	9
PM10	24	43.0	83	126	50	252
	Annual	3.9	30.5	34.4	20	172
PM2.5	24	14.4	20.5	34.9	35	99
	Annual	0.6	8.7	9.3	12	77
SO_2	1-hr	3.4	23.6	27.0	665	4
	3-hr	2.3	15.6	17.3	1,300	1
	24	0.6	13.1	13.7	105	13
	Annual	0.01	3.5	3.5	80	4

NOTE: Modeled 1-hour NO_2 concentrations were determined using the OLM method with time-matched ambient NO_2background.

SOURCE: Galati & Blek2010f, Table 2-2 of Attachment A.

TABLE 4.2-3
BSPP CONSTRUCTION – MAXIMUM DAILY EMISSIONS (lbs/day)

	NOx	VOC	CO	PM10	PM2.5	SOx
Onsite Construction Emissions						
Main Power Block (entire BSPP)						
Off-road Equipment Exhaust	832.61	88.15	464.35	35.57	26.89	1.82
On-road Equipment Exhaust	27.77	2.33	14.63	1.34	1.23	0.04
Asphaltic Paving	--	0.00	--	--	--	--
Fugitive Dust from Paved Roads	--	--	--	6.06	2.76	--
Fugitive Dust from Unpaved Roads	--	--	--	614.07	61.44	--
Fugitive Dust from Constr. Activities	--	--	--	246.38	76.35	--
Batch Plant Emissions	*17.86*	*1.30*	*9.84*	*17.48*	*17.48*	*0.03*
Fuel Depot	--	*3.50*	--	--	--	--
Subtotal - Power Block Onsite Emissions	**878.24**	**95.28**	**488.82**	**920.90**	**186.15**	**1.89**
Power Block On-road Equipment (offsite)	328.27	45.67	403.89	101.98	51.66	0.77
Access Road Construction (offsite)	211.84	24.20	92.78	114.92	39.87	0.45
Gas Pipeline Construction (offsite)	14.83	1.99	8.79	7.85	2.78	0.03
Transmission Line Construction (offsite)	13.67	1.55	15.81	8.30	3.02	0.03

NOTE: Emissions that were not added may not be additive due to occurring at different times during the construction schedule, and all emissions include fugitive dust as appropriate.

SOURCE: AECOM 2010a, Tables E.2-7, E.2-10, E.2-12 & E.2-14, Galati & Blek2010f.

TABLE 4.2-4
BSPP CONSTRUCTION - MAXIMUM ANNUAL EMISSIONS (tons/year)

	NOx	VOC	CO	PM10	PM2.5	SOx
Construction Emissions						
Main Power Block (entire BSPP)						
Off-road Equipment Exhaust	96.27	10.34	54.68	4.35	3.29	0.21
On-road Vehicles (onsite and offsite)	3.45	0.30	1.84	0.14	0.13	0.00
Asphaltic Paving	--	0.01	--	--	--	--
Fugitive Dust from Paved Roads	--	--	--	0.68	0.31	--
Fugitive Dust from Unpaved Roads	--	--	--	68.77	6.88	--
Fugitive Dust from Constr. Activities	--	--	--	26.95	8.29	--
Batch Plant Emissions	*2.14*	*0.16*	*1.18*	*2.30*	*2.30*	*0.00*
Fuel Depot	--	*0.64*	--	--	--	--
Subtotal - Power Block Emissions	***101.86***	***11.45***	***57.70***	***103.19***	***21.20***	***0.22***
Power Block On-road Equipment (offsite)	34.60	5.00	43.97	11.19	5.71	0.08
Access Road Construction (offsite)	4.66	0.53	2.04	2.53	0.88	0.01
Gas Pipeline Construction (offsite)	0.64	0.09	0.38	0.34	0.12	0.00
Transmission Line Construction (offsite)	0.87	0.10	1.10	0.63	0.23	0.00

NOTE: Emissions that were not added may not be additive due to occurring at different times during the construction schedule, and all emissions include fugitive dust as appropriate.

SOURCE: AECOM 2010a, Tables E.2-7, E.2-10, E.2-12 & E.2-14, Galati & Blek2010f.

Operation Modeling Analysis

Using estimated peak hourly, daily and annual operating emissions, the Applicant modeled the BSPP's operation emissions to determine impacts. This modeling analysis was revised to address the changes to the BSPP description (Galati & Blek 2010f), and includes the local cumulative sources that are discussed later in the Cumulative Impacts section. The predicted proposed BSPP and cumulative sources pollutant concentration levels were added to conservatively estimated worst-case maximum background concentration levels (Table 4.2-1) to determine the cumulative effect. Table 4.2-5 presents the results of the Applicant's modeling analysis of operations-phase emissions. This analysis includes emissions from the stationary sources for all four power blocks and the onsite fugitive dust and vehicle tailpipe emission sources estimated by the Applicant. Table 4.2-6 presents operation-related maximum daily emissions modeling analysis for the BSPP. Table 4.2-7 presents operation-related maximum annual emissions modeling analysis for the BSPP. The following are the stationary and mobile emission source operating assumptions that were used to develop the operation emissions estimates for the BSPP:

Stationary emission sources (total equipment for all four power blocks):

a. Auxiliary boiler (4 total): 35 MMBtu per hour natural gas-fired auxiliary boiler used for start up. Maximum daily operation would be limited to 12 hours per day at full load and five hours per day at 25 percent load. Annual operation would be limited to 5,100 hours (600 hours at a full load and 4,500 hours at 25 percent load).

b. Emergency fire water pump engine (four total): 300 hp diesel-fired engine. Tested once a week, up to one-hour test, not to exceed 50 hours per year.

c. Emergency generator engine (four total): 2,922 hp diesel-fired engine. Tested once a week, up to one-hour test, not to exceed 50 hours per year.

d. Two-cell auxiliary wet cooling tower (four total two-cell units): 6,034 gallons per minute cooling tower to remove residual heat from balance of plant (BOP) equipment. Each cooling tower would have a maximum run time of 24 hours per day and 8,760 hours per year.

e. One fuel depot consisting of two, 2,000 gallon on-road vehicle diesel tanks, two 8,000-gallon off-road vehicle diesel tanks, one 500-gallon gasoline tank, and a wash water holding tank. The fuel farm would include secondary spill containment, a covered maintenance area, also with secondary containment, and a concrete pad for washing vehicles.

f. HTF ullage system (four total). Vented up two hours per day and 400 hours per year.

g. HTF piping system (four total). Assumes 3,050 valves, four pump seals, 7,594 connectors, and 10 pressure relief valves each. The HTF piping system fugitive emissions have been recalculated by staff, consistent with the procedures developed by Kern County Air Pollution Control District that consider the properties of the HTF during the daily operation cycle, where it is assumed that for 16 hours per day the HTF in the piping system is consistent with the properties of a light liquid and for 8 hours per day the HTF in the piping system is consistent with the properties of a heavy liquid. The specific emission factors used are set forth in Table 4.2-8.

TABLE 4.2-5
BSPP OPERATION EMISSION IMPACTS

Pollutants	Avg. Period	Project Impact (μg/m³)	Background (μg/m³)	Total Impact (μg/m³)	Standard (μg/m³)	Percent of Standard
NO2	1-hr CAAQS	168.5	119	288	339	85
	1-hr NAAQS	178.7	NA	178.7	188	95
	Annual	0.90	19	19.9	57	35
CO	1-hr	267.6	2,645	2,913	23,000	13
	8-hr	86.5	878	965	10,000	10
PM10	24	22.3	83	105.3	50	211
	Annual	2.7	30.5	33.2	20	166
PM2.5	24	2.9	20.5	23.4	35	67
	Annual	0.8	8.7	9.5	12	79
SO2	1-hr	7.4	23.6	31.0	665	5
	3-hr	3.1	15.6	18.7	1,300	1
	24-hr	0.8	13.1	13.9	105	13
	Annual	0.1	3.5	3.6	80	5

SOURCE: Galati & Blek2010f, Air Quality Table 11.

TABLE 4.2-6
BSPP OPERATIONS – MAXIMUM DAILY EMISSIONS (lbs/day)

	NOx	VOC	CO	PM10	PM2.5	SOx
Onsite Operation Emissions						
Auxiliary Boilers	20.61	9.28	69.69	18.55	18.55	0.50
Emergency Fire Pump Engines	7.53	0.40	6.87	0.40	0.40	0.01
Emergency Generators	117.39	6.18	66.94	3.86	3.86	0.12
Auxiliary Cooling Towers	---	---	---	2.90	2.90	---
HTF Vents	---	185.78	---	---	--	---
HTF Piping Fugitives	---	17.51	---	---	--	---
Onsite Maintenance Vehicles	2.25	0.23	1.34	809.84	81.06	0.02
Fuel Depot	--	0.48	--	--	--	--
Subtotal of Onsite Emissions	***147.78***	***219.86***	***144.84***	***835.55***	***106.77***	***0.66***
Offsite Emissions						
Delivery Vehicles	8.30	0.61	2.32	0.62	0.44	0.01
Employee Vehicles	4.72	4.94	47.02	9.74	4.56	0.07
Subtotal of Offsite Emissions	***13.02***	***5.55***	***49.34***	***10.36***	***5.00***	***0.08***
Total Maximum Daily Emissions	**160.80**	**225.41**	**194.18**	**845.91**	**111.77**	**0.74**

SOURCE: AECOM 2010a, Table E.3-9b and Table E.2-7e (Blythe Data Response Emissions.xlsx), and CEC staff estimate for employee vehicles and HTF fugitives, Galati & Blek2010f, initial comments on SA/EIS.

TABLE 4.2-7
BSPP OPERATIONS – MAXIMUM ANNUAL EMISSIONS (tons/yr)

	NOx	VOC	CO	PM10	PM2.5	SOx
Onsite Operation Emissions						
Auxiliary Boilers	1.34	0.60	4.54	1.21	1.21	0.03
Emergency Fire Pump Engines	0.19	0.01	0.17	0.01	0.01	0.0003
Emergency Generators	2.93	0.15	1.67	0.10	0.10	0.0031
Auxiliary Cooling Towers	---	---	---	0.53	0.53	---
HTF Vents	---	0.60	---	---	--	---
HTF Fugitives	---	33.90	---	---	--	---
Onsite Maintenance Vehicles	0.22	0.02	0.15	72.69	7.28	0.00
Fuel Depot	--	0.09	--	--	--	--
Subtotal of Onsite Emissions	**4.68**	**35.37**	**6.53**	**74.54**	**9.12**	**0.04**
Offsite Emissions						
Delivery Vehicles	1.52	0.11	0.42	0.12	0.08	0.00
Employee Vehicles	0.86	0.90	8.58	1.78	0.83	0.01
Subtotal of Offsite Emissions	**2.38**	**1.01**	**9.00**	**1.90**	**0.91**	**0.01**
Total Maximum Annual Emissions	**7.06**	**36.38**	**15.53**	**76.44**	**10.04**	**0.06**

SOURCE: AECOM 2010a, Table E.3-9b and Table E.2-7e (Blythe Data Response Emissions.xlsx), and CEC staff estimate for employee vehicles and HTF fugitives, Galati & Blek2010f, initial comments on SA/EIS.

TABLE 4.2-8
EMISSION FACTORS

Piping Component	Light Liquid Emission Factor (lb/hr/source)	U.S.EPA Reference Table	Heavy Liquid Emission Factor (lb/hr/source)	U.S.EPA Reference Table
Valves	5.55E-04	Table 2-9 (100 ppm)	1.90E-05	Table 2-4 (Heavy Oil)
Pump Seals	1.86E-03	Table 2-9 (100 ppm)	5.30E-05	Table 2-12 (Zero Factor)
Flanges/Connectors	1.65E-05	Table 2-12 (Zero Factor)	1.65E-05	Table 2-12 (Zero Factor)
Pressure Relief Valves	9.85E-02	Table 2-5 (<10,000 ppm)	1.90E-05	Table 2-4 (Heavy Oil)

NOTE: for pressure relief valves the in service emission factors are for gas service, rather than light liquid service.

SOURCE: USEPA 1995 as cited in the CEC RSA June 2010.

These emission factors may not assume appropriate control efficiencies for the inspection and maintenance program required by MDAQMD. This emission estimate will be revised as determined necessary and appropriate pursuant to adaptive management principles, after further consideration of the effectiveness of the inspection and maintenance program.

Mobile emissions sources:

a. Estimates included emissions for employee trips, assuming 221 employees per day averaging 30 miles round trip per employee.

b. Mobile emissions sources required for operation and maintenance were estimated by the Applicant based on vehicle miles traveled (VMT) and operating hours. For example, a mirror washing cycle or event can be completed in 10 days, which would allow for approximately 36 washing events per year, but it was assumed that washing would only be required once a week during October through March and twice a week during April through September, for a total of 78 washing events per year (AECOM 2010a, DR-AIR-14, Galati and Blek, 2010f). Each mobile source has different basis for emissions estimates as provided in the Applicant's revised emission estimate spreadsheets (AECOM 2010a).

Closure and Decommissioning

The anticipated lifespan of the BSPP is estimated to be 30-40 years. Closure and decommissioning-related impacts would occur from the onsite and offsite emissions that would result when the facility is dismantled and the site is restored. Such impacts would be a one-time, limited-duration event. Given expected advances in fuel efficiency and other air quality control-related advancements, it would be speculative to project the types and volumes of air emissions that would be associated with the construction and other equipment that would be necessary to decommission the BSPP. Nonetheless, as a conservative worst-case scenario, air quality impacts associated with the ultimate decommissioning of the BSPP are evaluated using the same methods as initial construction emissions, as discussed above, and are anticipated to be comparable in type and magnitude, but likely to be lower than, construction-related emissions.

4.2.2 Discussion of Direct and Indirect Impacts

Proposed Action

The modeling analysis for both the construction and operation phases indicates that, with the exception of 24-hour and annual PM10 impacts that the BSPP would not create new exceedances or contribute to existing exceedances for any of the modeled air pollutants. The conditions that would create worst-case project modeled impacts (low wind speeds) are not the same conditions when worst-case background is expected for PM10/PM2.5. Additionally, the worst-case PM2.5 and PM10 impacts occur at the fence line and drop off quickly with distance. Therefore, the impacts, when including mitigation measures, would not contribute substantially to exceedances of the PM10 CAAQS in downwind areas.

Ozone

There are air dispersion models that can be used to quantify ozone impacts, but they are used for regional planning efforts where hundreds or even thousands of sources are input into the model to determine ozone impacts. There are no regulatory agency models approved for assessing single source ozone impacts. However, because of the known relationship of NOx and VOC emissions to ozone formation, it can be said that the emissions of NOx and VOC from the BSPP do have the potential (if left unmitigated) to contribute to higher ozone levels in the region.

PM2.5 Impacts

Secondary particulate formation, which is assumed to be 100 percent PM2.5, is the process of conversion from gaseous reactants to particulate products. The process of gas-to-particulate conversion, which occurs downwind from the point of emission, is complex and depends on many factors, including local humidity and the presence of air pollutants. The basic process assumes that the SOx and NOx emissions are converted into sulfuric acid and nitric acid first and then react with ambient ammonia to form sulfate and nitrate. The sulfuric acid reacts with ammonia much faster than nitric acid and converts completely and irreversibly to particulate form. Nitric acid reacts with ammonia to form both a particulate and a gas phase of ammonium nitrate. The particulate phase would tend to fall out; however, the gas phase can revert back to ammonia and nitric acid. Thus, under the right conditions, ammonium nitrate and nitric acid establish a balance of concentrations in the ambient air.

The emissions of NOx and SOx from BSPP do have the potential (if left unmitigated) to contribute to higher PM2.5 levels in the region; however, the region is in attainment with PM2.5 standards and the low level of NOx and SOx emissions from the BSPP would not result in an increase such to cause non-attainment.

Regional Air Quality Improvement

The BSPP would have indirect emission reductions from fossil-fuel fired power plant electrical generation. This would be due to the BSPP displacing the need for their operation, since solar renewable energy facilities would operate on a must-take basis.[2] However, the exact nature and location of such reductions is not known.

Alternatives

Reconfigured Alternative

Impacts would be essentially the same as the proposed action. The increase in footprint of 150 acres would have a minimally greater effect than the proposed action.

Reduced Acreage Alternative

Peak construction impacts would be the same as the proposed action since construction activity levels are estimated to be similar. Long term construction impacts would be less since the construction period would be reduced. Operation impact levels would be reduced since only three of the four proposed units would be built and operated.

No Action Alternative A

No impacts to air quality would occur since the BSPP would not be constructed and operated.

[2] This refers to the fact that the contract between the owner of this solar power facility and the utility will require that the utility take all generation from this facility with little or no provisions for the utility to direct turn down of generation from the facility.

No Action Alternative B

No impacts to air quality would occur since the BSPP would not be constructed and operated. Furthermore, no impacts could occur from future solar development; however, impacts to air quality could result from the development of other renewable energy projects (i.e., wind) or other uses allowable under Multiple Use Class L.

No Action Alternative C

No impacts to air quality would occur since the BSPP would not be constructed and operated. Future impacts would be possible should another application be received. Any impacts would be analyzed as a part of the permitting process. Impacts could be comparable to, greater or less than those of the proposed action, depending on the nature and intensity of the proposed use.

4.2.3 Discussion of Cumulative Impacts

Cumulative effects are defined as “the impact on the environment which results from the incremental impact of the action when added to other past, present, and reasonably foreseeable future actions regardless of what agency (Federal or non-Federal) or person undertakes such actions” (40 CFR 1508.7).

Impacts resulting from construction, operation, maintenance and decommissioning of the BSPP and its alternatives could result in a cumulative effect on air quality when combined with the air quality impacts of other past, present, or reasonably foreseeable future actions. The geographic scope of the cumulative effects analysis for air quality consists of the Mojave Desert Air Basin, which is comprised of four air districts: the Kern County APCD (governing the eastern portion of Kern County), the Antelope Valley AQMD (governing the northeastern portion of Los Angeles County), the Mojave Desert AQMD (San Bernardino County and eastern-most Riverside County), and the eastern portion of the South Coast AQMD (eastern Riverside County). This geographic scope of cumulative impacts analysis was established based on the natural boundaries of the affected resource, and not on jurisdictional boundaries. Potential cumulative effects on air quality could be short-term (i.e., limited to the BSPP’s proposed 69-month construction period) or long-term (i.e., occur during the projected 30-40 year lifespan of the proposed action).

This analysis is concerned with criteria air pollutants. Such pollutants have impacts that are usually (though not always) cumulative by nature. Although possible, rarely would an individual project alone cause a violation of a Federal or state criteria pollutant AAQS. However, a new source of pollution may contribute to violations of criteria pollutant AAQSs because of existing background sources or foreseeable future projects. Air districts try to attain the criteria pollutant AAQSs by adopting attainment plans that provide a programmatic approach to such attainment. Depending on the air district, these plans typically include requirements for air offsets and the use of Best Available Control Technology (BACT) for new sources of emissions, and restrictions of emissions from existing sources of air pollution.

Consequently, most of the preceding impacts discussion reflects cumulative impacts with the BSPP or alternatives. For example existing conditions within the cumulative impacts area reflect a combination of the natural condition and the effects of past actions; existing conditions are described in PA/FEIS Section 3.2, *Air Quality*, and background concentrations of various pollutants are summarized in Table 4.2-1. Direct and indirect effects of the construction and operation of the BSPP are analyzed above within this context. (Results of the BSPP-specific construction modeling analysis, including onsite fugitive dust and vehicle tailpipe emission sources, are provided in Table 4.2-2. See also Tables 4.2-3 and 4.2.4.). This Subsection 4.2.3 provides additional analysis related to cumulative impacts concerning the project's emissions combined with other local major emission sources.

Past, present and reasonably foreseeable future actions making up the cumulative scenario are identified in Section 4.1. Among them, projects that would be developed within the same air basin as the BSPP (i.e., in eastern Kern County, northeastern Los Angeles County, San Bernardino County and eastern Riverside County) could contribute to short-term or long-term pollutant concentration levels. There are a number of other large development projects proposed in the region. For example, other utility-scale solar energy projects, such as the Genesis, Rice, Palen and Desert Sunlight solar power projects, are expected to contribute air pollutants in comparable amounts as the BSPP. Other, non-renewable energy projects are expected to contribute construction-related air pollutants, including fugitive dust and tailpipe emissions, in amounts consistent with the intensity and duration of each project's construction period, although operations-related air emissions would differ. Cumulative impacts would vary by alternative to the BSPP only to the degree to which direct and indirect impacts would vary by alternative. This potential for substantial new development in the Mojave Desert Air Basin and corresponding increase in emissions within the air basin requires the incorporation of mitigation measures to avoid or reduce the potential contribution of the BSPP to cumulative air quality impacts. Those measures are summarized below.

4.2.4 Summary of Mitigation Measures

The implementation of mitigation measures imposed by the Energy Commission as Conditions of Certification for the BSPP also would avoid or reduce impacts on the quality of the human environment. These mitigation measures are set forth in Appendix G. The following mitigation measures would avoid or minimize impacts on air resources:

AQ-SC1, AQ-SC2, AQ-SC3, AQ-SC4, AQ-SC5, AQ-SC6, AQ-SC8

AQ-1, AQ-2, AQ-3, AQ-4, AQ-5, AQ-6, AQ-7, AQ-9, AQ-10, AQ-11, AQ-12, AQ-13, AQ-14, AQ-15. AQ-16, AQ-17, AQ-18, AQ-19, AQ-20, AQ-21, AQ-22, AQ-23, AQ-24, AQ-25, AQ-26, AQ-27, AQ-28, AQ-29, AQ-30, AQ-31, AQ-32, AQ-33, AQ-34, AQ-35, AQ-36, AQ-37, AQ-38, AQ-39, AQ-40, AQ-41, AQ-42, AQ-43, AQ-44, AQ-45, AQ-46, AQ-47, AQ-48, AQ-49, AQ-50, AQ-51, AQ-52, AQ-53, AQ-54, AQ-55, AQ-56, AQ-57, AQ-58, AQ-59, AQ-60, AQ-61, AQ-62, AQ-63, AQ-64

4.2.5 Residual Impacts after Mitigation Measures were Implemented

Residual Air Quality impacts are the emissions associated with construction and operation as outlined in Tables 4.2-4 and 4.2-5.

4.2.6 Unavoidable Adverse Impacts

None.

4.3 Impacts to Global Climate Change

4.3.1 Impact Assessment Methodology

The methodology to assess impacts to climate change under NEPA is continuing to evolve as consensus forms as to how best to evaluate such effects on proposed action-specific and cumulative levels. The CEQ published draft guidance on February 18, 2010 for Federal agencies to improve their consideration of the effects of greenhouse gas (GHG) emissions and climate change in their evaluation of proposals for Federal actions under NEPA. For example, the CEQ proposes that agencies should consider the direct and indirect GHG emissions from the action and to quantify and disclose those emissions in the environmental document (40 CFR 1508.25). The CEQ further proposes that agencies should consider mitigation measures to reduce proposed action-related GHG emissions from all phases and elements of the proposed action and alternatives over its/their expected life, subject to reasonable limits based on feasibility and practicality.

For the BSPP and alternatives, this Section 4.3 carefully considers detailed information about the potential for construction-, operation-, maintenance- and decommissioning-related activities to emit GHGs and, thereby, contribute meaningfully to global warming in light of the combined emissions of other broad-scale causes of climate change. GHG emissions are quantified and set forth in Tables 4.3-1 and 4.3-2. Although it is doubtful that this individual project, standing alone, could result in significant climate change effects, the PA/FEIS considers the “incremental impact” of BSPP emissions as a possible contributor, together with the incremental impacts of other past, present, and reasonably foreseeable actions, to cause global climate change, which intrinsically is a cumulative issue. Mitigation measures are considered. Additionally, as discussed in Section 3.3, *Global Climate Change*, agencies under the U.S. Department of the Interior are required to consider potential impact areas associated with climate change, including potential changes in flood risk, water supply, sea level rise, wildlife habitat and migratory patterns, invasion of exotic species, and potential increases in wildfires.

Analysis of Cumulative Impacts

Construction, operation, maintenance and decommissioning of the BSPP and alternatives would emit GHGs that, together with emissions of past, present, and reasonably foreseeable future actions, could contribute to climate change. BSPP-specific GHG emissions are considered in the context of this cumulative impacts analysis. However, because electricity from the BSPP is expected to displace electricity generated from fossil fuels, the BSPP would result in a net reduction in GHG emissions. Although the cumulative scenario described in Section 4.1 generally includes activities in the California desert and highlights projects along the I-10 corridor, the geographic scope of the cumulative effects analysis for climate change is much broader: it is both regional and global. Potential cumulative effects, whether adverse or beneficial, on climate change could be short-term (i.e., limited to the BSPP’s proposed 69-month construction period) or long-term (i.e., occur during the projected 30-40 year lifespan of the proposed action).

Existing conditions within the cumulative impacts area reflect a combination of the natural condition and the effects of past actions. Recent years have seen record-high average global surface temperatures; in fact, the past 20 years include the 18 warmest years on record since 1850 (Pew, 2008). This warming trend could result from several factors that influence the earth's climate, including natural factors, such as changes in solar radiation and volcanic activity, and anthropogenic (or human-caused) factors, such as the release of GHGs to the atmosphere and land-cover changes (Pew, 2008). Though climate science is complex, compelling evidence exists demonstrating that human activities associated with fossil fuel burning and land use are primarily responsible for the changing global climate.

The US Supreme Court has held that climate change impacts are reasonably foreseeable, are caused in part by human activities, and should be regulated as pollutants under the Clean Air Act. *Massachusetts et al. v. Environmental Protection Agency*, 549 U.S. 497 (2007). Additionally, several states have enacted legislation establishing reduction targets for GHG emissions. For example, the California legislature adopted Assembly Bill 32, the Global Warming Solutions Act of 2006 (AB 32), which requires the California Air Resources Board to develop regulations that will reduce greenhouse gas emissions to 1990 levels by 2020 (Health and Safety Code Section 38500 et seq., 17 CCR 95100 et seq.). Additionally, State regulations prohibit utilities from entering into long-term contracts with any base load facility that does not meet a greenhouse gas emission standard of 0.5 metric tonnes carbon dioxide per megawatt-hour (0.5 MTCO2/MWh) or 1,100 pounds carbon dioxide per megawatt-hour (1,100 lbs CO2/MWh) (20 CCR 2900 et seq.). Although AB 32 and similar state laws and regulations do not apply to federal agencies, NEPA does require that environmental documents consider the relationship between proposed federal actions and state environmental protection legislation. California's state-specific policies, including GHG goals, are discouraging or prohibiting new contracts and new investments in high GHG-emitting facilities such as coal-fired generation, generation that relies on water for once-through cooling, and aging power plants (CEC 2007). Some existing plants are likely to require substantial capital investments in order to continue operating in light of these policies and may instead be retired or be replaced. For additional discussion of relevant federal level regulations and requirements for assessing the potential impacts of climate change, please refer to Section 3.3. The BSPP could provide 2,100 GWh per year of renewable energy to partially offset the resulting loss in supply.

4.3.2 Direct and Indirect Impacts of the Proposed Action on Climate Change

Although the system to deliver adequate and reliable electricity supply is complex and variable, it operates as an integrated whole to meet demand, such that the dispatch of a new source of generation generally curtails or displaces one or more less efficient or less competitive existing sources. The BSPP would provide a new, utility-scale source of solar energy to complement existing and proposed sources of renewable energy. When the sun shines and electricity is generated by the BSPP, the real-time output required from fossil fuel plants would be reduced by the amount of renewable generation going into the electrical grid to maintain the balance between the supply and demand for electricity. As analyzed below, construction of the BSPP would involve the use of construction equipment and operation of motor vehicles and operation of the BSPP would involve the generation of electricity using fossil fuels, at least to the extent required to operate any back-up generators at the thermal solar plant. Thus, construction and operation of the BSPP would produce GHGs.

Construction of the BSPP

Construction of industrial facilities such as power plants requires coordination of numerous equipment and personnel. The estimated 69-month construction period for the BSPP would require on-site construction activities that would result in short-term, unavoidable increases in vehicle and equipment emissions, including GHGs. The GHG emissions estimate, for the entire construction period, provided by the Applicant is provided in Table 4.3-1.

TABLE 4.3-1
BSPP CONSTRUCTION-RELATED GREENHOUSE GAS EMISSIONS

Construction Element	CO_2-Equivalent (MTCO2E)[a,b,c]
On-Site Construction Equipment	70,700
On-Site Motor Vehicles	1,800
Off-Site Motor Vehicles	31,400
Construction Total	***103,900***

NOTES:
a One metric tonne (MT) equals 1.1 short tons or 2,204.6 pounds or 1,000 kilograms
b The vast majority of the CO2E emissions, over 99 percent, is CO_2 from these combustion sources.
c This does not include the revised construction description that now includes an onsite concrete batch plant and on-site fuel depot. On balance staff believes that these changes will not significantly impact the totals, which might be estimated to be higher or lower depending the balance of how concrete and fuel deliveries would have been handled versus the deliveries of the materials to make concrete (sand, aggregate, cement, water) and daily fueling of equipment by fuel/lube truck(s).

SOURCE: Solar Millennium 2010x, Table DR-AIR-6-1.

In addition to direct emission of GHGs, construction of this 5,950-acre proposed action also would cause the clearing of land and complete removal of vegetation over most of the project site. This would reduce the ongoing natural carbon uptake by vegetation. A study of the Mojave Desert indicated that the desert may uptake carbon in amounts as high as 100 grams per square meter per year (Wohlfahrt et. al. 2008). This would equate to a maximum reduction in carbon uptake, calculated as CO_2, of 1.48 MT of CO_2 per acre per year for areas with complete vegetation removal. The maximum equivalent loss in carbon uptake for the BSPP would be about 8,806 MT of CO_2 per year, which would correspond to 0.004 MT of CO_2 per MWh generated. Compared to the CO_2 emissions that would be associated with the generation of fossil fuel in amounts comparable to energy to be supplied by the proposed action (fossil fuel energy generation-related GHG emissions can range from 0.35 to 1.0 MT of CO_2 per MWh depending on the fuel and technology), the natural carbon uptake loss caused by construction of the BSPP would be negligible.

Operation and Maintenance of the BSPP

Electricity generation GHG emissions are generally dominated by CO_2 emissions from the carbon-based fuels; other sources of GHG are typically small and also are more likely to be easily controlled or reused/recycled. For this solar project, the primary fuel (solar energy) is GHG-free; however, natural gas would be used in the two auxiliary boilers used for HTF freeze protection, and gasoline and diesel fuel would be used in the maintenance vehicles, offsite delivery vehicles, staff and employee vehicles, the four emergency fire water pump engines, and four emergency generator engines. Sulfur hexafluoride emissions also could result from electrical equipment leakage. Anticipated annual operations-related GHG emissions of the BSPP are shown in Table 4.3-2. All emissions are converted to CO_2-equivalent and totaled.

TABLE 4.3-2
BSPP OPERATING GREENHOUSE GAS EMISSIONS

	Annual CO2-Equivalent (MTCO2E)[a]
Auxiliary Boilers[b]	12,847
Emergency Generators b	289
Fire Pumps b	31
Maintenance Vehicles b	226
Delivery Vehicles b	164
Employee Vehicles b	1,208
Equipment Leakage (SF6)	24
Total Project GHG Emissions – MTCO2E b	**14,789**
Facility MWh per year	2,100,000
Facility GHG Emission Rate (MTCO2E/MWh)	0.0070

NOTES:
[a] One metric tonne (MT) equals 1.1 short tons or 2,204.6 pounds or 1,000 kilograms.
[b] The vast majority of the CO2E emissions, over 99 percent, is CO2 from these emission sources.

SOURCE: Solar Millennium 2009a; AECOM 2010a, Attachment DR-Air-2 and DR-AIR-20; Galati & Blek 2010f; and employee vehicle emissions have been estimated by CEC staff.

The proposed action is estimated to emit, directly from primary and secondary emission sources nearly 17,700 metric tons of CO_2-equivalent GHG emissions per year. BSPP, as a renewable energy generation facility, is determined by rule to comply with the Greenhouse Gas Emission Performance Standard requirements of SB 1368 (Chapter 11, Greenhouse Gases Emission Performance Standard, Article 1, Section 2903 [b][1]). Regardless, BSPP has an estimated GHG emission rate of 0.0070 MTCO2E/MWh, which is well-below the Greenhouse Gas Emission Performance Standard of 0.500 MTCO2/MWh.

The beneficial energy and GHG impacts of the BSPP also could be measured in terms of the time required to produce an amount of energy as great as what was consumed during production, which, in the context of a solar power plant, includes all of the energy required during construction and operation. Within the realm of life cycle analysis, this amount of time is called the “energy payback time." Tables 4.3-1 and 4.3-2 provide an estimate of the onsite construction and operation emissions, employee transportation emissions, and the final segment of offsite materials and consumables transportation. However, there are additional direct transportation and indirect manufacturing GHG emissions associated with the construction and operation of the proposed action, all of which are considered in the determination of the energy payback time. A document sponsored by Greenpeace estimates that the energy payback time for concentrating solar power plants, such as BSPP, to be on the order of five months (Greenpeace 2005, Page 9); the project life for BSPP is on the order of 30 years. Therefore, the proposed action's GHG emissions reduction potential from energy displacement would be substantial. The GHG displacement for the BSPP would be similar to, but not exactly the same as, the amount of energy produced after energy payback is achieved multiplied by the average GHG emissions per unit of energy displaced.[1]

Closure and Decommissioning of the BSPP

Closure and decommissioning-related activities would emit GHGs when the facility is dismantled and the site is restored. It is anticipated that such emissions would be caused by the operation of construction equipment and motor vehicles; related impacts would be a one-time, limited-duration event. BSPP-specific contributions to global climate change during the closure and decommissioning phase are evaluated using the same methods as initial construction emissions, and are anticipated to be comparable in type and magnitude, but likely to be lower than, the construction emissions as discussed above.

Mitigation Potential of the BSPP on Climate Change

As discussed previously, The BSPP would generate approximately 2,100,000 MWh of power per year, with a GHG emission rate of 0.004 MT of CO_2 per MWh. The power produced by the BSPP would offset power production by fossil-based power plants, which can range from 0.35 to 1.0 MT CO_2 per MWh, as discussed previously. The electric power produced from the BSPP would be imported onto California's power grid, and would be used preferentially to conventional fossil fuel based power generation, including natural gas combined cycle plants, natural gas single cycle peaking plants, and power imported from other states, which may include power from coal-fired plants. Therefore, the Project would provide a direct benefit to climate change – namely the offset of up to approximately 2,100,000 MWh/yr of carbon dioxide-emitting power derived from existing/conventional fossil fuel power plants. Additionally, assuming that reductions in demand for existing fossil power would reduce demands for the natural gas and coal feedstocks used for those power plants, some degree of offset of upstream carbon dioxide, methane, nitrous oxide, and other GHG emissions associated with natural gas and coal extraction and transport, will also be realized. Therefore, implementation of the Project will provide direct and indirect benefits that counter the potential effects of climate change. The Project supports and is part of a transition towards increased in-state, national, and global renewable power production, which is a key component towards the mitigation of climate change.

1 The average GHG emissions for the displaced energy over the project life is not known, but currently fossil fuel fired power plants have GHG emissions that range from 0.35 MT/MWh CO2E for the most efficient combined cycle gas turbine power plants to over 1.0 MT/MWh for coal fired power plants.

4.3.3 Direct and Indirect Impacts of Climate Change on the Proposed Action

In addition to simple warming, climate change also is expected to result in a suite of additional potential changes that could affect the natural environment, in a manner that is relevant to the BSPP. The potential for climate change effects on the proposed action is discussed below.

Hydrologic Resource

In California and much of the U.S. West, climate change is expected to result in several potential effects related to water resources. These include potential sea level rise, potential changes in the frequency of flooding and droughts, and potential reductions in surface water supply.

Sea Level Rise

Sea level rise is expected to occur as a result of increased global temperatures. Increased global temperatures include increases in ocean temperature, as well as air temperature. As water temperature increases, the water contained in the world's oceans would undergo thermal expansion. Increased temperatures could also result in a net melting/reduction in the extent of polar ice sheets. These effects could result in an increase in the level of the world's oceans, and some degree of sea level increase has already been established over the last century. However, these potential effects are not expected to affect the BSPP, which would be located approximately 150 miles from the ocean, and at an elevation of at least 350 feet mean sea level (msl). The proposed action would not be affected by sea level rise.

Snowpack and Snowmelt Period

Changes in snowpack and snowmelt period are anticipated both in California and in the Colorado River watershed as a result of climate change. Specifically, climate change is expected to result in generally warmer temperatures, which, in turn, would result in a greater proportion of total annual precipitation falling as rain. Snowpack in California and the Colorado River watershed serves as a temporary means of water storage, wherein water is released slowly and into the early summer during snowmelt. If a greater proportion of precipitation falls as rain, the snowpack would be lessened, and the potential for water storage within the snowpack also would be lessened. Also, warmer temperatures would cause earlier snowmelt events, potentially reducing the ability of water managers to capture snow melt in reservoirs. However, there is no snowpack in the vicinity of the proposed action, and the BSPP is not dependent on snowmelt water for water supply. Therefore, the BSPP would not affect snowpack, and would not be deleteriously affected by potential changes in snowpack characteristics.

Dilution

Dilution refers to the amount of water that is available in a receiving water body into which wastewater is discharged. Under some circumstances, climate change could result in a change in the volume or timing of water flows that are available in stream for dilution of wastewater. However, the BSPP would not discharge wastewater to surface waters (a septic system is included for on-site wastewater, and process water is controlled on site via an evaporation pond system). Therefore, potential climate-related changes in dilution capacity would not affect the proposed action.

Water Temperature

Water temperature can be critical to fisheries resources in parts of California, in particular, along those waterways that support cold water fisheries. However, the site and its vicinity do not contain any perennial surface waterways that could support fisheries. The BSPP would rely on groundwater for a water supply, and the temperature of the groundwater would not be critical to BSPP operation. Furthermore, the BSPP would not result in a water discharge or other activity that would affect water temperature along the Colorado River. No component of the BSPP would alter reservoir flows or otherwise change water management operations, such that water temperature would be altered. Therefore, potential changes in water temperature would not affect the BSPP, and no further discussion is warranted.

Flooding, Drainage, and Erosion

Climate change is anticipated to affect the frequency and intensity of extreme weather events, including large storm events and droughts, in western watersheds including the Colorado River watershed. Although the degree of change is a subject of substantial debate, most investigations concur that the Colorado River watershed, including the BSPP area, would experience an increase in the frequency and intensity of high rainfall/flood events. This could result in an increase in potential stormwater runoff and flooding, and an increase in erosion and sedimentation on site and downstream from the site. Increases in the intensity or frequency of droughts are discussed in terms of water resources availability, below.

As discussed in Section 4.19, *Water Resources*, the BSPP would include a series of engineered facilities, including rerouted drainage/flood channels, berms, and on-site drainage facilities that would channel, retain, and otherwise manage stormwater and flood flows on site and in the areas immediately surrounding the site. Also discussed in Section 4.19, the BSPP would be designed to account for stormwater drainage and flood flows, and Mitigation Measures WATER-10 through WATER-14 would require revisions to the BSPP's drainage report and plans, completion of a detailed FLO-2D analysis, and implementation of drainage channel design and channel erosion protection measures. These measures originally were drafted based on Conditions of Certification SOIL&WATER-11 through SOIL&WATER-14. However, the mitigation measures WATER-10, WATER-11, and WATER-13 have been updated to include assessment of potential climate change effects on water resources, and incorporation of BSPP design feature recommendations that would serve to offset potential drainage and flooding effects associated with climate change.

Water Resources Availability

As discussed in Section 3.20, *Water Resources*, and Section 4.19, *Impacts to Water Resources*, the site is located within the lower Colorado River watershed, and drainages on site are tributary to the Colorado River. Surface waters in the BSPP area and its immediate vicinity occur only during substantial precipitation events, where surface runoff occurs. There are no perennial streams or other waterways located on site, and the BSPP would not rely on surface water for water supply during construction or operation. Instead, the BSPP would rely on groundwater for water supply during both construction and operation.

Estimates of the potential effects of climate change on the frequency and amount of rainfall in the west vary, however, most studies concur that in the desert southwest, some degree of reduction of precipitation would occur. Seager et al (2007) and Christensen et al (2004) completed extensive reviews and modeling of potential climate change effects on the Colorado River watershed and other southwestern watersheds, including several climate change scenarios. The authors conclude that precipitation and runoff within the watershed could generally decrease, while periods of drought could increase, resulting in an overall reduction in the availability of water along the Colorado River. These scenarios could result in moderate to substantial effects on water supply availability, and could affect the ability of water rights holders along the Colorado River to divert their full entitlements.

In the event that climate change results in reduced precipitation within the BSPP area and its vicinity, some degree of associated reduction in groundwater recharge from rainfall could occur. This situation would not result in increased water requirements by the proposed action, and would not result in additional groundwater pumping during project construction or operations. Additionally, as discussed in Sections 3.20 and 4.19, the rate of groundwater pumping for the Project would be minor in comparison to the total volume of groundwater contained in storage. Therefore, even with potential reductions in total precipitation volume associated with future climate change, the ability of the Project to meet its water needs would not be reduced, and no increase in pumping would be required as a result of the effects of climate change.

If climate change does result in reduced recharge to the underlying groundwater basin, the potential cumulative effects on groundwater levels identified in Section 4.19 could be exacerbated. Mitigation measures WATER-1 through WATER-5 and WATER-15 would offset these effects in part. However, as discussed in the cumulative effects analysis discussion of Section 4.19, the combined operation of all of the foreseeable projects will have an impact on groundwater levels, and this effect could be exacerbated by anticipated reductions in groundwater recharge due to climate change.

Biological Resources

Biological resources could be affected as a result of climate change in California. Distribution patterns of species are generally expected to shift according to regional changes in temperature and precipitation, while the location of wildlife migration corridors and the extent of invasive species also could be altered.

Fisheries

The BSPP does not contain any perennial or other surface waters that contain fisheries resources, and would not affect or be affected by changes in fisheries characteristics. Therefore, no further discussion is warranted.

Habitat Values of Mitigation Lands

As discussed in Section 4.17, *Impacts to Vegetation Resources*, and Section 4.21, *Impacts to Wildlife Resources*, implementation of the BSPP would require mitigation for biological resources values that would be lost as a result of implementation of the BSPP. As discussed in these sections, the proposed mitigation lands would be required to be equivalent in terms of habitat value, and at a replacement ratio of at least 1:1 (typically greater than 1:1, as specified in Sections 4.17 and 4.21) for direct impacts. Unfortunately, climate change could result in adverse effects on biological resources located on these mitigation lands. However, given that mitigation lands must be similar in biological resources value as compared to lost resources on site, it is anticipated that climate-related effects for the mitigation lands would be similar to those located at the BSPP site, if the BSPP were never built. Therefore, potential reductions in the biological resources values of mitigation land values resulting from climate change are expected to be similar to on-site conditions in the absence of the BSPP, and no further discussion is warranted.

Hazards

Heat related hazards, including potential increases in wildfire and heat waves, could be exacerbated by climate change.

Wildfire Risks

Potential risks associated with fire are discussed in Section 3.12, *Public Health and Safety*. Section 4.12, *Impacts to Public Health and Safety*, provides a discussion of potential fire-related risks, and also ensures that adequate fire control personnel, infrastructure, and associated planning would be completed and/or available to the BSPP, to ensure compliance with federal, state, and local regulations, and to ensure worker safety.

Climate change would result in a small but general increase in temperature, and could also result in an increase in the frequency of extreme weather events that could generate wildfires, such as increased frequency of drought and heat waves, during operation of the BSPP. In compliance with applicable regulations and mitigation proposed in Section 4.12, the Applicant would be required install a fire protection/control system on site in including a fire water supply system and associated infrastructure, and to comply with state and federal regulations regarding worker safety and training. Additionally, under Mitigation Measure WORKER SAFETY-7 (see Appendix G), the Applicant would be required to provide funding to the Riverside County Fire Department to ensure available resources to fight potential fires on site. Although the risk of wildfire that could affect the site could increase as a result of climate change, these potential increases in risk are expected to be offset by ongoing compliance with the worker safety and fire protection regulations and mitigation measures specified in Section 4.12. Therefore, no additional mitigation is warranted.

Heat Waves

The frequency of occurrence and the severity of heat waves could increase as a result of climate change. Heat waves could result in increased potential risk to BSPP employees. However, Mitigation Measure WORKER SAFETY-2 (see Appendix G) would require implementation of an operation period heat stress protection plan that is based on and expands on Cal OSHA requirements. This plan would provide measures to protect workers against the effect of heat-related hazards, whether or not those hazards are caused by climate change. Although the frequency and/or intensity of heat wave events could increase as a result of future climate change, the heat stress protection plan would meet state requirements for worker safety. Therefore, no further discussion or mitigation is warranted.

Other Issues

In addition to the issues discussed above, potential climate change related impacts associated with soil moisture and fugitive dust concentrations also warrant discussion.

Soil Moisture

As discussed in Section 3.15, *Soil Resources*, and 4.14, *Impacts to Soil Resources*, almost all rainfall that occurs in this region of California is lost through evaporation and evapotranspiration, and soil moisture in the BSPP area and its vicinity is characteristically low. As discussed previously, although precise changes are impossible to predict, climate change could result in increases in extreme weather events, including droughts and heat waves, and an overall reduction in precipitation. These conditions could result in a concurrent reduction in soil moisture content at the site and regionally. However, reductions in soil moisture content would not affect BSPP-related operations, and would not require any change in water resources usage. Additionally, the proposed facilities would in no way support additional drying of soils on site, or otherwise exacerbate potential changes in soil moisture associated with climate change. Therefore, no additional change would occur, and no further discussion is warranted.

Fugitive Dust

As discussed in Section 3.2, *Air Resources*, and Section 4.2, *Impacts to Air Resources*, fugitive dust emissions would require mitigation during operation of the BSPP. Mitigation Measure AQ-SC7 (see Appendix G) would mitigate operation period fugitive dust emissions to ensure compliance with state and local regulations and requirements. Although climate change could result in some degree of reduction of soil moisture, as discussed above, soil moisture is already very low under current conditions. Any further reductions in soil moisture would be minimal in terms of the absolute amount of water contained in on-site soils. Therefore, any potential further reductions in soil moisture associated with climate change are not anticipated result in a substantial increase in fugitive dust emissions, and the proposed Mitigation Measure would be sufficient to meet federal, state, and local requirements regarding fugitive dust.

Direct and Indirect Impacts of BSPP Alternatives

Reconfigured Alternative

The Reconfigured Alternative essentially would require the same amount of total construction and have the same operation and maintenance-related emissions sources, and decommissioning requirements as the proposed action. Therefore, the GHG emissions from construction and operation would be similar to those of the proposed action. See Tables 4.3-1 and 4.3-2. The Reconfigured Alternative would minimize the placement of facilities within state waters, and minimize potential impacts to desert dry wash woodlands. Other aspects of the Reconfigured Alternative would be similar to or the same as the proposed action.

If the Reconfigured Alternative were selected, the same direct GHG emission impacts of the proposed action and the same indirect benefits of the proposed action from displacing fossil fuel fired generation and reducing associated GHG emissions from gas-fired generation would occur. Potential impacts to desert dry wash woodlands and associated state waters would be minimized under the Reconfigured Alternative, as would requirements for mitigation lands. However, the Reconfigured Alternative would not alter the potential effects of climate change on mitigation lands or drainage and flooding. Additionally, all other potential climate change related impacts would be the same as for the proposed action.

Reduced Acreage Alternative:

The Reduced Acreage Alternative essentially would reduce the total construction-, operation- and decommissioning-related GHG emissions of the proposed action by 25 percent because of the elimination of one of the four power blocks. Therefore, the total GHG emissions could be determined by multiplying the proposed action's GHG emissions provided in Tables 4.3-1 and 4.3-2 by 0.75. The benefits of the proposed action in displacing fossil fuel fired generation and reducing associated GHG emissions from gas-fired generation would be slightly reduced. The extent of effects to biological resources and hydrologic resources would also be reduced, due to the reduced intensity of construction activities and reduced water requirements. However, the Reduced Acreage Alternative would not alter the potential effects of climate change on mitigation lands, drainage and flooding, or water resources availability. All other potential climate change related impacts would be the same as for the proposed action.

If the Reduced Acreage Alternative were selected, other renewable projects could be developed that would compensate for the loss of generation compared to the proposed action on other sites in the Riverside County, the Colorado Desert, or in adjacent states as developers strive to provide renewable power that complies with utility requirements and Federal and state mandates.

No Action Alternative A

None of the anticipated impacts, beneficial or adverse, of the proposed action would occur. Instead, the land on which the BSPP is proposed would become available to other uses consistent with BLM's land use plan, potentially including another renewable energy project.

If the proposed action is not approved, renewable projects would likely be developed on other sites in Riverside County, the Colorado Desert, or in adjacent states as developers strive to provide renewable power that complies with utility requirements and Federal and state mandates. In terms of potential impacts due to climate change, under No Action Alternative A, the proposed action would not be implemented, and, therefore, would not be affected by climate change. However, renewable projects developed on other sites in Riverside County, the Colorado Desert, or in adjacent sites would likely be subject to similar climate change effects as compared to the proposed action.

No Action Alternative B

Because the CDCA Plan would be amended under this alternative to make the site unavailable for future solar development, it is expected that the site would remain in its existing condition, with no new structures or facilities constructed or operated on the site. As a result, GHG emissions associated with the development of renewable energy projects would occur elsewhere and the carbon uptake potential of the site would not be expected to change noticeably from existing conditions. Consequently, this No Project/No Action Alternative would not result in GHG benefits on this site, but could occur in connection with other renewable energy projects developed elsewhere to meet State and Federal mandates. Such projects would likely have similar impacts on climate change as the proposed action, and climate change related impacts would likely affect such projects similarly to the proposed action, although in other locations.

No Action Alternative C

Because the CDCA would be amended under this alternative, it is possible that the site would be developed with the same or a different solar technology. As a result, GHG emissions and carbon sequestration potential similar to that of the proposed action could result. Different solar technologies require different amounts of construction and operations maintenance, and different volumes of water during operations; however, it is expected that all the technologies would provide the more significant benefit, like the proposed action, of displacing fossil fuel fired generation and reducing associated GHG emissions. As such, No Action Alternative C could result in GHG benefits similar to those of the proposed action. In terms of potential climate change impacts on No Action Alternative C, these impacts would likely be similar to the proposed action, although metrics related to project size and water use could vary somewhat based on the selected power generation technology.

4.3.4 Summary of BSPP-Specific Mitigation Measures

The implementation of mitigation measures imposed by the Energy Commission as Conditions of Certification for the BSPP also would avoid or reduce impacts on the quality of the human environment. These mitigation measures are set forth in Appendix G. The following mitigation measures would avoid or minimize impacts on global climate change:

AQ-SC5, AQ-SC6

AQ-1, AQ-2, AQ-3, AQ-4, AQ-5, AQ-6, AQ-7, AQ-9, AQ-10, AQ-11, AQ-12, AQ-13, AQ-14, AQ-15. AQ-16, AQ-17, AQ-19, AQ-20, AQ-21, AQ-22, AQ-23, AQ-24, AQ-25, AQ-26, AQ-27, AQ-33, AQ-34, AQ-39, AQ-40, AQ-41, AQ-42, AQ-43, AQ-44, AQ-45, AQ-46, AQ-47, AQ-48, AQ-49, AQ-50, AQ-51, AQ-52, AQ-53, AQ-54, AQ-55, AQ-56, AQ-57, AQ-58, AQ-59, AQ-60, AQ-61, AQ-62, AQ-63, AQ-64

The following mitigation measures would avoid or minimize potential impacts of global climate change on the proposed action:

AQ-SC7

WATER-1, WATER-2, WATER-3, WATER-4, WATER-5, WATER-10, WATER-11, WATER-12, WATER-13, WATER-14, WATER-15

WORKER SAFETY-2, WORKER SAFETY-7

4.3.5 Residual Incremental, BSPP-specific Impacts after Mitigation Measures Were Implemented

The residual GHGs emitted from construction were estimated to be 103,900 metric tons of C CO2 equivalent for construction and 14,789 metric tons/year CO2 equivalent for a total of 443,670 tons CO2 equivalent over the life of the BSPP.

4.3.6 GHG Emissions Associated with Past, Present and Reasonably Foreseeable Future Actions

GHG Emissions from Past, Present and Reasonably Foreseeable Actions

As stated above, human activities are widely-recognized as being primarily responsible for the changing (warming) global climate. Such activities result in emissions of carbon dioxide and other GHGs from industrial processes, fossil fuel combustion, and changes in land use, such as deforestation. For example, in 1990, industrial processes and electric power generation caused the majority of human-generated global GHG emissions, contributing 32 percent and 20 percent, respectively (Pew, 2010). Within the United States, which emitted over seven billion metric tons of CO2E in 2004; in that year, industry emitted 30 percent of the total, transportation emitted 28 percent, the commercial sector emitted 17 percent, the residential sector emitted 17 percent, and agriculture emitted 8 percent (Pew, 2010a). Industrial processes, power generation, land use changes and other actions contributing to climate change are expected to continue in the foreseeable future, subject to increasingly stringent requirements.

The proposed BSPP and other present and reasonably foreseeable future actions, including those identified in Section 4.1, would contribute construction-, operation and maintenance-, and closure and decommissioning-related GHG emissions impacts and benefits in the existing international, national, State-wide and regional context. Internationally, this context includes, among many other efforts, the Bali Roadmap, which was adopted in 2007 to launch negotiations toward a new global climate agreement; and the Copenhagen Accord, which was reached at the 2009 U.N. Climate Change Conference and provides for explicit national GHG emissions reduction pledges. The international context also includes urbanization by developing countries, deforestation and development-related conversion of agricultural lands.

The national context includes GHG-related activity by all branches of government, including the GHG Emissions Reduction Target for Federal Operations set by President Obama in January 2010; proposed legislation including the American Clean Energy and Security Act of 2009 (H.R.2454), the Clean Energy Jobs and American Power Act of 2009 (S.1733), and the American Clean Energy Leadership Act of 2009 (S.1462); and attention to climate change issues by the nation's highest court. *Massachusetts et al. v. Environmental Protection Agency*, 549 U.S. 497 (2007).

Recent State-level GHG-related actions include the California Air Resources Board's February 25, 2010, adoption of a regulation to limit and monitor sulfur hexafluoride (SF6) emissions from electric power sector equipment; the California Building Standards Commission's January 14, 2010, approval of the most environmentally stringent building code in the United States, which will go into effect in January 2011 and which the California Air Resources Board (CARB) anticipates will reduce GHG emissions by 3 million metric tons in 2020; and CARB's September 24, 2009, adoption of a revised Forest Project Protocol that allows private landowners, public lands, and out-of-state projects to participate in the State's voluntary forestry offsets market – it is the first state-approved carbon accounting standard that is applicable to projects nationwide. Additionally, the adoption of Senate Bill 375 (SB 375) in 2008 enhances California's ability to reach its AB 32 goals by providing regional planning-related GHG emissions-reduction goals.

Regionally, based on SB 375, the Southern California Association of Governments' six-county area (including Riverside, San Bernardino, Orange, Los Angeles, Imperial and Ventura counties) must reduce its annual GHG emissions by 2.5 million metric tons by 2020. Local governments are considering GHG and related emissions reductions in their planning efforts. For example, the Riverside County Transportation Demand Management Program (Riverside County Code Ch. 10.36) is intended in part to reduce motor vehicle emissions, which include GHGs. In turn, San Bernardino County, which has been a focal point in conflicts over local climate regulation, has updated its General Plan and otherwise incorporates GHG emissions reduction considerations into its local planning decision-making process (OPR, 2010).

Overall, it is expected that the BSPP would enhance the attainment of international, national, Statewide and regional GHG reduction efforts.

Environmental Consequences of Climate Change

Beneficial and adverse impacts of GHG emissions caused by the proposed action, together with GHG emissions-related impacts of past, present and reasonably foreseeable future actions, would contribute to cumulative global climate change impacts on the various elements of human society and the environment that are sensitive to climate variability. For example, human health, agriculture, natural ecosystems, coastal areas, and heating and cooling requirements are examples of climate-sensitive systems. Globally, rising average temperatures are believed to have caused glaciers to shrink, permafrost to thaw, ice on rivers and lakes to freeze later and break up earlier, growing seasons to lengthen, and animal and wildlife ranges to shift. In North America, warming in western mountains is expected to cause decreased snowpack, more winter flooding, and reduced summer flows, thereby exacerbating competition for over-allocated water resources.

Extended periods of high fire risk and large increases in areas burned – each a risk of global warming – would increase impacts on forests from pests, diseases and wildfire. Areas that currently experience periods of extreme heat are expected to be further challenged by an increased number, intensity and duration of heat waves during the course of the century, with potential for adverse health impacts particularly for elderly populations. (IPCC, 2007). For a review of how climate change could affect the proposed action and alternatives, please see the previous subsection, "Direct and Indirect Impacts of Climate Change on the Proposed Action."

Mitigation Measures to Reduce Impacts on Global Climate Change

As stated above, implementation of mitigation measures imposed by the BLM under this FEIS and the Energy Commission as Conditions of Certification for the BSPP also would avoid or reduce incremental, BSPP-specific impacts on the quality of the human environment. These mitigation measures are set forth in the FEIS, Appendix G, and are summarized above. Additionally, it is expected that each of the projects that comprise the cumulative scenario, other federal projects, and other projects within the State of California would likely be subject to similar types of mitigation measures to address contributions to climate change impacts. Additional voluntary and obligatory measures could apply to projects at the local or international level.

4.4 Impacts on Cultural Resources

4.4.1 Impact Assessment Methodology

The basic regulatory process for assessing impacts on cultural resources consists of the following five steps:

1. Determining the appropriate geographic extent of the analysis for the proposed action and for each alternative action under consideration;

2. Identifying cultural resources within each such geographic area;

3. Determining the historical significance of the cultural resources in the inventory for each geographic area, unless the construction, operation and maintenance, and decommissioning and closure of the proposed or alternative actions will avoid particular resources;

4. Assessing the character and the severity of the effects of the proposed and alternative actions on the historically significant cultural resources in each respective inventory that cannot be avoided; and

5. Developing measures that would resolve those effects that are found to be significant.

Further details of each of these phases follow below and help provide the parameters of the present analysis.

The Area of Potential Effects

The regulations implementing Section 106 of the NHPA define the Area of Potential Effects (APE) as the geographic area or areas within which an undertaking may directly or indirectly cause changes in the character or use of historic properties, if such properties exist. The APE is influenced by the scale and nature of the undertaking and may be different for different kinds of effects caused by the undertaking (36 CFR 800.16(d)). In addition, the APE may be buffered for purposes of cultural resources inventory to facilitate the identification of resources that may be located in proximity to the APE and indirectly affected by a proposed project or to allow for redesign of project components to avoid direct effects to cultural resources. For purposes of complying with Section 106, the APE for the BSPP generally consists of the following:

1. For archaeological resources, the APE is defined as the area included within the right-of-way grant for the solar energy generating plant and associated facilities, roads, and transmission lines. For proposed linear facilities routes, the right-of-way was buffered to 50 feet to either side of the rights-of way to establish the survey corridor for these routes.

2. For ethnographic and built-environment resources, the APEs are the proposed footprints (plant site and linear facilities corridor) plus a 0.5-mile buffer from the plant site, and from any above-ground linear facilities, to take into consideration resources whose settings could be adversely affected by industrial development.

Assessing Effects

The core of a cultural resources analysis under NEPA and Section 106 is the assessment of the character of the effects that a proposed or alternative action may have on historically significant cultural resources. The analysis takes into account direct, indirect, and cumulative effects.

In accordance with 36 CFR Section 800.5 of the ACHP's implementing regulations, which describes criteria for adverse effects, impacts on cultural resources are considered significant if one or more of the following conditions would result from implementation of the proposed action:

1. An undertaking has an effect on a historic property when the undertaking may alter characteristics of the property that may qualify the property for inclusion in the National Register of Historic Places (NRHP). For the purpose of determining the type of effect, alteration to features of a property's location, setting, or use may be relevant, depending on the property's significant characteristics, and should be considered.

2. An undertaking is considered to have an adverse effect when the effect on a historic property may diminish the integrity of the property's location, design, setting, materials, workmanship, feeling, or association. Adverse effects on historic properties include, but are not limited to:

    a. Physical destruction, damage, or alteration of all or part of the property

    b. Isolation of the property from or alteration of the character of the property's setting when that character contributes to the property's qualification for the NRHP

    c. Introduction of visual, audible, or atmospheric elements that are out of character with the property or that alter its setting

    d. Neglect of the property, resulting in its deterioration or destruction

    e. Transfer, lease, or sale of the property

Consideration is given to all qualifying characteristics of a historic property, including those that may have been identified subsequent to the original evaluation of the property's eligibility for the National Register. Adverse effects may include reasonably foreseeable effects caused by the undertaking that may occur later in time, be farther removed in distance or be cumulative. A formal effect finding under Section 106 relates to the proposed or alternative action as a whole rather than relating to individual resources.

4.4.2 Discussion of Direct and Indirect Impacts

Proposed Action

Direct and indirect effects are those that are more clearly and immediately attributable to the implementation of proposed or alternative actions. Direct effects are those "which are caused by the [proposed or alternative] action and [which] occur at the same time and place" (40 CFR 1508.8(a)). Indirect effects are those "which are caused by the [proposed or alternative] action and are later in time or farther removed in distance, but are still reasonably foreseeable" (40 CFR 1508.8(b)).

The Section 106 regulations narrow the range of direct effects and broaden the range of indirect effects relative to the definitions of the same terms under NEPA. The regulatory definition of "effect," pursuant to 36 CFR Section 800.16(i), is that the term "means alteration to the characteristics of a historic property qualifying it for inclusion in or eligibility for the National Register." In practice, a "direct effect" under Section 106 is limited to the direct physical disturbance of a historic property. Effects that are immediate but not physical in character, such as visual intrusion, and reasonably foreseeable effects that may occur at some point subsequent to the implementation of the proposed undertaking are referred to in the Section 106 process as "indirect effects."

Ground-disturbing construction activities associated with the BSPP could directly impact cultural resources by damaging and displacing artifacts, diminishing site integrity and altering the characteristics that make the resources significant. In addition, in the case of historic architectural resources and places of traditional cultural importance, impacts could occur to the setting of a resource even if the resource is not physically damaged.

Based on graphical representations showing the anticipated disturbance below ground and the anticipated above-ground intrusion into the flat landscape (Solar Millennium 2009b, figs. DR-CR-120a and b), impacts associated with the BSPP potentially affecting cultural resources include:

1. General cutting and filling would disturb the overall BSPP plant site to a maximum depth of seven feet.

2. In the solar array fields, BSPP collector foundation excavations would cause ground disturbance down to a maximum depth of 16 feet, and the collectors would intrude into the flat landscape to a maximum height of 24 feet.

3. In the power blocks, BSPP equipment foundation excavations would cause ground disturbance down to a maximum depth of seven feet, and the equipment would intrude into the flat landscape to a maximum height of 80 feet.

4. Along the linear facilities corridor, BSPP natural gas pipeline trench excavations would cause ground disturbance down to a maximum depth of 10 feet, and the transmission line supports would create an intrusion into the flat landscape to a maximum height of 140 feet.

Based on this information, archaeological resources consisting of a total of 210 known sites (30 prehistoric and 180 historic), and possibly additional resources yet to be discovered during construction, located within the full extent of the proposed action's below-grade impacts (inclusive of foundations and trenches) and above-grade impacts (inclusive of above-ground facilities), would be adversely affected by the BSPP. The integrity of setting and integrity of feeling of the two known built-environment resources located within this area would also be adversely affected by the BSPP.

No additional impacts to cultural resources are anticipated from BSPP operation or from BSPP closure and decommissioning.

4.4.3 Differences Among Alternatives

Reconfigured Alternative

This alternative includes Units 1, 2, and 4 as proposed for the BSPP as well as a relocated Unit 3. The setting for Units 1, 2, and 4 would not change from that for the proposed action. Relocated Unit 3 would be located partially on land that was previously surveyed for cultural resources in connection with the proposed action, but 480 acres of BLM-managed land for Unit 3 has not been surveyed for cultural resources. Consequently, at this time, how many and what kinds of additional cultural resources the Reconfigured Alternative would impact, beyond those already identified for the proposed action have not been identified.

The record search and field survey for the proposed BSPP identified 210 sites. Of those, 20 would be within Unit 1, 38 would be within Unit 2, 22 would be located within Unit 4, and 9 would be within the previously surveyed part of the relocated Unit 3. The additional field survey of the previously unsurveyed 480 acres of the Reconfigured Alternative identified 77 new sites. So the cultural resources inventory for the Reconfigured Alternative would therefore total 166 archaeological sites.

Reduced Acreage Alternative

The Reduced Acreage Alternative would essentially be Units 1, 2, and 4 of the proposed action and would be a 750-MW solar facility located entirely within the boundaries of the proposed action. It would eliminate the southwestern 250-MW solar field (1,200 acres), consisting of about 25 percent of the proposed action area. As a result, the environmental setting consists of the northern and eastern portions of the proposed action, as well as the area affected by the linear facilities corridor. This alternative would be located entirely within the previously evaluated APE boundaries.

The record search and field survey for the proposed BSPP identified 210 sites. With the elimination of the 38 sites that are within the proposed action’s Unit 3, the cultural resources inventory for the Reduced Acreage Alternative would be reduced to a total of 178 archaeological sites.

No Action Alternative A

Under this alternative, the proposed BSPP would not be approved by the BLM, and BLM would not amend the CDCA Plan. As a result, no solar energy project would be constructed on the proposed site, and BLM would continue to manage the site in a manner consistent with the existing land use designation in the CDCA Land Use Plan of 1980, as amended.

Because the CDCA Plan would not be amended and no solar project approved for the site under this alternative, it is expected that the site would continue to remain in its existing condition, with no new structures or facilities constructed or operated on the site and no new ground disturbance. As a result, no loss or degradations to cultural resources from construction or operation of the proposed action would occur. However, the land on which the BSPP is proposed would become available to other uses that are consistent with BLM's land use plan, including another solar project requiring a land use plan amendment.

No Action Alternative B

Under this alternative, the proposed BSPP would not be approved by the BLM and the BLM would amend the CDCA Plan to make the proposed site unavailable for future solar development. As a result, no solar energy project would be constructed on the site and BLM would continue to manage the site consistent with the existing land use designation in the CDCA Land Use Plan of 1980, as amended.

Because the proposed BSPP would not be approved, and the CDCA Plan would be amended to make the area unavailable for future solar development, it is expected that the site would continue to remain in its existing condition, with no new structures or facilities constructed or operated on the site. As a result, the condition of the site is not expected to change noticeably from the existing condition and, as such, No Action Alternative B would not result in impacts to cultural resources.

No Action Alternative C

Under this alternative, the proposed BSPP would not be approved by the BLM and BLM would amend the CDCA Land Use Plan of 1980, as amended, to allow for other solar projects on the site. As a result, it is possible that another solar energy project could be constructed on the site.

Because the CDCA Plan would be amended, it is possible that the site would be developed with the same or a different solar technology. As a result, impacts on cultural resources would result from the construction and operation of the solar technology and would likely be similar to the impacts from the proposed action. Different solar technologies require different amounts of grading and maintenance; however, it is expected that all the technologies would require some grading and maintenance. As such, No Action Alternative C could result in impacts on cultural resources similar to the impacts under the proposed action.

4.4.4 Discussion of Cumulative Impacts

The regulations implementing Section 106 of the NHPA contemplate close coordination between the NEPA and NHPA processes (36 CFR 800.8), and expressly integrate consideration of cumulative concerns within the analysis of a proposed action's potential direct and indirect effects by defining "adverse effect" to include "reasonably foreseeable effects caused by the undertaking that may occur later in time, be farther removed in distance or be cumulative" (36 CFR 800.5(a)(1)). Consequently, the geographic scope of the cumulative effects analysis could be limited to the area defined above. However, to provide for a more conservative cumulative analysis, the cumulative analysis impact area for cultural resources is broader, and includes the cultural sites, traditional use areas, and cultural landscapes on the site and in the general vicinity of the site, including along the I-10 corridor. The proposed action could cause impacts on cultural resources during the proposed 69-month construction period or as a result of operation and maintenance or closure and decommissioning activities. Right-of-way (ROW) applications have been submitted for projects encompassing approximately 100,000 acres along the I-10 corridor, although the projects themselves will affect considerably less acreage. Almost all of these projects are on BLM or other federal land and, for this reason, are or would be subject to NEPA and the NHPA, which contain cultural resource-protective requirements related to investigations, impact assessment, avoidance and mitigation. It is anticipated that projects in the general vicinity of the site that are not on Federal land would be subject to CEQA; therefore, any related impacts on cultural resources would be subject to cultural-resource-protective requirements based on State law to avoid or minimize such impacts. Nonetheless, even with project-specific impacts on cultural resources avoided or minimized, historic properties on a substantial amount of land still would be affected. Cumulative impacts would vary by alternative only to the degree to which direct and indirect impacts would vary by alternative.

4.4.5 Summary of Mitigation Measures

Adverse effects that the proposed or alternative actions may have on cultural resources will be resolved through compliance with the terms of the BLM's Programmatic Agreement (PA) under Section 106. Analysis of impacts in this document and implementation of the terms of the PA would evidence BLM's compliance with Section 106 and NEPA.

In accordance with 36 CFR Section 800.14(b), PAs are used for the resolution of adverse effects for complex project situations and when effects on historic properties, resources eligible for or listed in the NRHP cannot be fully determined prior to approval of an undertaking. The BLM is currently preparing a PA in consultation with the State Historic Preservation Officer, Indian tribes, and other interested parties. The PA would govern the conclusion of the identification and evaluation of historic properties (eligible for the NRHP), as well as the resolution of any adverse effects that may result from the proposed or alternative actions. See Appendix D for the Draft PA.

Treatment plans regarding historic properties that cannot be avoided by proposed construction would be developed in consultation with stakeholders as stipulated in the PA. When the PA is executed and fully implemented, the BSPP would have fulfilled the requirements of NEPA and Section 106 of the NHPA. The PA would be executed prior to BLM's approval of the Record of Decision for the ROW grant for the action.

To mitigate impacts to significant cultural resources, the mitigation measures imposed by the Energy Commission as Conditions of certification for the BSPP also would avoid or reduce impacts on the quality of the human environment. These mitigation measures are set forth in Appendix G. To the extent that the following mitigation measures are consistent with the PA developed by the BLM to comply with Section 106 of the NHPA, they also would be implemented to avoid or minimize impacts pursuant to NEPA:

To mitigate impacts to significant cultural resources, per CUL-19 from the Energy Commission's Conditions of Certification, to the extent the following mitigation measures imposed by the CEC for the BSPP are consistent with BLM's Programmatic Agreement developed to comply with

Section 106 of the NHPA, they would avoid or reduce impacts on the quality of the human environment. These mitigation measures are set forth in Appendix G as follows:

CUL-1, CUL-2, CUL-3, CUL-4, CUL-5, CUL-6, CUL-7, CUL-8, CUL-9, CUL-10, CUL-11, CUL-12, CUL-13, CUL-14, CUL-15, CUL-16, CUL-17, CUL-18, CUL-19

The BLM would also require the following mitigation measures be implemented to the extent they are consistent with BLM's Programmatic Agreement:

BLM-CUL-1: The Applicant shall contribute to a program to document three cultural landscapes described in Chapter 3.4 that will, in part, be impacted by the BSPP. These areas: (1) a Prehistoric Trails Network Cultural Landscape (PTNCL), (2) a Desert Training Center California-Arizona Maneuver Area Cultural Landscape (DTCCL), and (3) a Prehistoric Quarries Archaeological District (PQAD). The Applicant will follow the documentation program by contributing to the preparation of National Register of Historic Places (NRHP) nominations for the PTNCL, DTCCL and PQAD if the BLM determines, after reviewing the documentation, that they are eligible for the NRHP.

BLM-CUL-2: If significant or potentially significant cultural resources cannot be avoided, the Applicant will retain a qualified Cultural Resources Specialist to prepare and implement a Historic Property Treatment Plan (HPTP) for the affected resources. The HPTP may include protocols for affected resources including data recovery, research design, and treatment measures. The Principal Investigator for the HPTP program will meet the minimum Principal Investigator qualifications under the Secretary of Interior’s Standards for Archaeology.

BLM-CUL-3: A designated Cultural Resources Specialist will provide input to construction and operation training programs for employees to enhance awareness regarding the protection of cultural resources. The designated specialist or a qualified cultural resources monitor will be available during construction to inspect and evaluate any finds of potentially significant buried cultural material. The Cultural Resources Specialist will coordinate with the Applicant’s construction manager and environmental compliance manager to stop all work in the vicinity of the find until it can be assessed. The Cultural Resources Specialist will also contact the BLM. If the discovery is determined to be not significant through consultation with the BLM, work will be allowed to continue.

BLM-CUL-4: All discoveries will be documented on Department of Parks and Recreation forms (Form DPR 523) and filed with the California Historical Resources Information System (CHRIS) Eastern Information Center housed at the University of California, Riverside.

BLM-CUL-5: If, in consultation with the BLM, a discovery is determined to be significant, a mitigation plan will be prepared and carried out in accordance with the Programmatic Agreement. If the resources cannot be avoided, a data recovery plan will be developed to ensure collection of sufficient information to address archaeological or historical research questions.

BLM-CUL-6: A professional technical report will be prepared documenting assessment and data recovery investigations. The report will describe the methods and materials collected and will provide conclusions regarding the results of the investigations. The report will be submitted to the curatorial facility housing the collected archaeological materials, as well as the appropriate California Historical Resources Information System center and BLM Palm Springs-South Coast Field Office.

BLM-CUL-7: Cultural material collected as part of an assessment or data recovery mitigation will be curated at a qualified curation facility. Field notes and other pertinent materials will be curated along with the archaeological collection. Curation costs shall be the responsibility of the Applicant.

BLM-CUL-8: If human remains are encountered during construction, potentially destructive activities in the vicinity of the find will be stopped. The Cultural Resources Specialist will immediately notify the Principal Investigator, who will contact the BLM. The Applicant will ensure that any such remains are treated in a respectful manner and that applicable state and federal laws are followed. If human remains of Native American origin, associated funerary objects, sacred objects or objects of cultural patrimony are discovered on federal land, the provisions of the Native American Graves Protection and Repatriation Act will be followed.

BLM-CUL-9: The Applicant will provide worker environmental awareness program (WEAP) training during construction to assist in worker compliance with cultural resource protection procedures. The training will include photographs of a variety of historic and prehistoric artifacts and will include a description of the specific steps to be taken in the event of an unanticipated discovery of cultural material, including human remains.

4.4.6 Residual Impacts after Mitigation Measures were Implemented

Residual impacts on cultural resources would exist after mitigation measures were implemented. Cultural resources damaged or destroyed by construction of the proposed action, even if subjected to mitigation, would be permanently lost from the archaeological record. This would make the cultural resources unavailable for future study to address future research needs when more advanced investigative techniques and methods of analysis might be available.

4.4.7 Unavoidable Adverse Impacts

The ground disturbance that would occur from the BSPP would result in unavoidable adverse impacts on cultural resources through damage and displacement of artifacts, loss of integrity of cultural resources, and changes in the settings of cultural resources inconsistent with their historic or traditional cultural values.

4.5 Impacts on Environmental Justice

4.5.1 Impact Assessment Methodology

In considering environmental justice in energy siting cases, this PA/FEIS uses a demographic screening analysis to determine whether a low-income and/or minority population exists within the potentially affected area. The potentially affected area consists of a six-mile radius beyond the site boundary and is consistent with air quality modeling of the range of a proposed action's air quality impacts.

Executive Order 12898, "Federal Actions to Address Environmental Justice in Minority Populations and Low-Income Populations," directs Federal agencies to assess whether their actions have disproportionately high and adverse human health or environmental effects on minority and low-income populations. The Presidential memorandum accompanying the executive order states that "each Federal agency shall analyze the environmental effects, including human health, economic and social effects, of Federal actions, including effects on minority communities and low-income communities, when such analysis is required by NEPA." The demographic screening to determine the presence of minority and low income populations is based on information contained in two documents: *Environmental Justice: Guidance Under the National Environmental Policy Act* (Council on Environmental Quality, December, 1997) and *Guidance for Incorporating Environmental Justice Concerns in EPA's Compliance Analyses* (U.S. Environmental Protection Agency, April, 1998). The screening process relies on Year 2000 U.S. Census data to determine the presence of minority and below-poverty-level populations.

In addition to the demographic screening analysis, this EIS follows the steps recommended by the U.S. EPA's guidance documents, which recommend outreach and involvement, and, if warranted, a detailed examination of the distribution of impacts on segments of the population.

The environmental justice analysis has reviewed the findings and analysis for the following 11 sections in the PA/FEIS: Air Quality, Hazardous Materials, Land Use, Noise, Public Health, Social and Economics, Soils and Water, Traffic and Transportation, Transmission Line Safety/Nuisance, Visual Resources, and Waste Management. In its review of each PA/FEIS section, the environmental justice analysis considered potential impacts and mitigation measures, significance, and whether there would result in a disproportionately high and adverse impact on an environmental justice population.

4.5.2 Discussion of Direct and Indirect Impacts

Proposed Action

The minority population within both Census Block 458.00.6 and the City of Blythe as the whole are more than 50 percent and therefore both represent a community of concern for the purpose of environmental justice analysis. Census Block 458.00.6 also has a proportion of low-income residents living below the poverty level (28.3 percent), which is nearly twice that for Riverside

County as a whole. Consequently, it is conservatively judged that the Census Block Group 458.00.6 is also identified as a low income population that represents a community of concern for the environmental justice analysis.

In the context of the siting of a fossil-fired power plant, the primary environmental justice issues typically would be potential air or water issues that could adversely affect the health of nearby populations. Other issues could be any potential residential or business displacements, and noise impacts on populations near the power plant or ancillary facilities.

The BSPP would not result in significant air quality impacts or impacts to surrounding communities from emissions of toxic air contaminants. The proposed action would not involve wastewater discharges that could affect drinking water supplies or other water bodies. As a result of the proposed design, mitigation measures, and the absence of sensitive receptors nearby, there would be no significant noise impacts. The proposed action would not displace any homes or businesses. For these reasons, the rural and remote character of the area, and the low population concentration near the site, the BSPP would not result in disproportionate adverse impacts on low-income and minority populations. Therefore, no environmental justice impacts would be associated with the proposed action.

Alternatives

Under all three action alternatives (proposed action, Reconfigured Alternative and Reduced Acreage Alternative), the only difference with regard to direct and indirect impacts would be directly related to the total acreage of land disturbed within the site under each action alternative. Generally, resource impacts relating to any potential environmental justice impacts would be decreases based on the reduced acreage of the parcels for the reduced acreage alternatives. Therefore, no environmental justice impacts would be associated with the reduced acreage alternatives.

No Action Alternative A

No impacts on environmental justice would occur since the BSPP would not be constructed and operated.

No Action Alternative B

No impacts on environmental justice would occur since the BSPP would not be constructed and operated. Furthermore, no impacts could occur from future solar development; however, impacts on environmental justice could result from the development of other renewable energy projects (i.e., wind) or other uses allowable under Multiple Use Class L.

No Action Alternative C

No impacts on environmental justice would occur since the BSPP would not be constructed and operated. Future impacts would be possible should another application be received. Any impacts would be analyzed as a part of the permitting process. Impacts could be comparable to, greater or less than dependent on the nature and intensity of the proposed use.

4.5.3 Discussion of Cumulative Impacts

No direct or indirect environmental justice impacts are expected to be associated with the proposed action and alternatives. Therefore, since there would be no direct or indirect environmental justice impacts, no cumulative environmental justice impacts would result.

4.5.4 Summary of Mitigation Measures

Given the absence of environmental justice impacts, no environmental justice mitigation measures are proposed.

4.5.5 Residual Impacts after Mitigation Measures were Implemented

No residual environmental justice impacts would occur.

4.5.6 Unavoidable Adverse Impacts

No unavoidable adverse environmental justice impacts would occur.

4.6 Impacts on Lands and Realty

4.6.1 Impact Assessment Methodology

The BLM Master Title Plats (MTPs) and Land & Mineral Legacy Rehost 2000 System (LR2000), which is an automated record system, were reviewed to obtain information related to pending and authorized uses on the lands potentially affected by the BSPP and its ancillary facilities. See Figure 43. The BLM Washington Office and California State Office web sites provided additional information relating to corridor designations and solar study areas potentially affected by the proposed BSPP.

Impact assessment is based on known impacts relative to construction, operation, maintenance and decommissioning of rights-of-way and land use permits of all types on BLM-administered land.

4.6.2 Discussion of Direct and Indirect Impacts

Proposed Action

Although there are numerous existing rights-of-way (ROWs) of record within and adjacent to the designated corridors, only a few would be affected by the BSPP. Any existing authorization that would be affected by the BSPP has “standing” in the sense that any new authorization(s) would be issued “subject to” the rights of the existing ROW holders. Therefore, the Applicant would be required to mitigate any potential impact to the existing users at Applicant’s expense. This would mean bearing all costs for relocating or modifying any facilities such as power poles or conductor that might necessary to accommodate the new use and by boring beneath any existing buried facilities to avoid impacts. This priority right attaches when a ROW is granted; subsequent grants of ROW would be issued subject to the rights of prior grants. Here, if and after the proposed ROW is granted for the BSPP, subsequent applicants would have to mitigate any impact of their proposals to the BSPP.

The fiber optic cable would either be attached to the gen-tie line or buried in a shallow trench along the same alignment as the road and gen-tie and gas lines and would either cross over or bore under any existing authorized use.

Impacts to Designated Corridors

Potential impacts to the designated corridors could occur as a result of the overhead gen-tie power line and underground pipeline crossing the corridors on a nearly perpendicular alignment rather than following along the corridor path. Impacts to the corridors from the fiber optic line would be the same as either the power line or gas pipeline, depending on whether the cable is strung on the gen-tie line or buried in a shallow ditch. However, with today’s technology, the impacts would be expected to be minimal, easily mitigated and would not preclude continued and future use of either designated corridor. Future use would be slightly constrained by placement of additional facilities within the corridors.

Impacts from the access road exiting the frontage road and heading north to the BSPP would be minimal because future transmission lines, both gas and electric, could easily bore under or span across the road, respectively. Future use would be slightly constrained by placement of additional facilities within the corridors.

Impacts to Interstate 10

Potential impacts to Interstate 10 from the overhead gen-tie line (and fiber optic cable if strung on gen-tie line) would be mitigated by abiding by the requirements of the California Department of Transportation (CalTrans) and industry standards (SOPs) and best management practices (BMPs) for crossing highways. Potential impacts to I-10 from the underground pipeline (and fiber optic cable, if buried) would also be mitigated by implementing the requirements of the Federal Highway Administration (FHA), CalTrans and SOPs and BMPs for crossing under highways.

Impacts to Other Authorized Uses

There would be no impacts to existing uses from the proposed solar generating facility.

As proposed, the gen-tie line would cross multiple existing uses both north and south of I-10. Once across the highway, the line would turn to the west and parallel the highway and existing power lines to the point of interconnection with the planned Colorado River substation.

The gas pipeline, as proposed, would connect directly into an existing east-west running Southern California Gas (SCG) gas pipeline causing a direct impact. The pipeline could indirectly impact other buried utilities that the pipeline would cross north and south of I-10. However, the pipeline would follow SOPs and BMPs for connection of one gas line to another and would be buried at a depth that would avoid all existing buried gas lines, therefore mitigating potential negative impacts to existing authorized users.

Potential impacts from the fiber optic cable would be the same as either the overhead power line or buried gas line, depending on whether the cable is strung on the gen-tie line or buried in a shallow trench beside the access road.

Potential impacts from the new access road that would exit the frontage road and head north to the BSPP boundary would be mitigated by following requirements of the FHA, CalTrans and SOPs/BMPs for encroachment of state highways.

Alternatives

Reconfigured Alternative

The Reconfigured Alternative would be a 1,000 MW solar facility like the proposed BSPP. Three of the proposed solar fields (Units 1, 2, and 4) would remain at their proposed locations. These include the two northern solar fields and the southeastern solar field. Unit 3 (the southwestern solar field) would be relocated approximately 0.8 mile south of its proposed location.

The transmission line, road access, fiber optic cable and gas pipeline would remain approximately the same length as for the proposed BSPP. The required linear facility routes could require minor adjustments.

Reduced Acreage Alternative

The Reduced Acreage Alternative would retain only Units 1, 2 and 4 of the proposed BSPP, with the ability to generate 750 MW. Unit 3 (250 MW) would not be constructed.

The transmission line, fiber optic cable, and road access would remain approximately the same length as for the proposed BSPP. The gas pipeline would also remain approximately the same length as for the proposed BSPP. The required linear facilities routes could require minor adjustment to accommodate the smaller configuration.

No Action Alternative A

Under this No Action alternative, the ROW application would be denied, and the ROW grant would not be authorized. The CDCA (1980, as amended) would not be amended.

Impacts associated with the BSPP would likely only be delayed by selecting No Action Alternative A since this region of the United States has extremely positive characteristics for solar power generation. If the BSPP were not approved, another application for a different solar generating facility, or a different type of solar generating facility, would likely be filed at some time in the near future. The various solar energy technologies require the use of different amounts of land. Depending on the type of facility, the amount of acreage needed could be less, approximately the same or larger than the proposed BSPP. Additionally, an application could also be filed for a wind energy facility or any other kind of use, and impacts would result based on the size and specific use requested.

No Action Alternative B

Under this No Action alternative, the ROW application would be denied, and the ROW grant would not be authorized. The BLM would amend the CDCA Plan to make the proposed site unavailable for future solar energy development. As a result, no solar energy project would be constructed on the site.

Impacts resulting from the proposed BSPP would not occur under No Action Alternative B. However, the land would remain open to other types of rights-of-way and/or land use authorizations, resulting in impacts specific to a future use other than solar energy generation.

No Action Alternative C

Under this No Action alternative, the ROW application would be denied, and the ROW grant would not be authorized. The CDCA (1980, as amended) would be amended to identify the BSPP application area as suitable for any type of solar energy development.

Impacts associated with the proposed action would likely only be delayed by selecting No Action Alternative C since this region of the United States has extremely positive characteristics for solar power generation. If the BSPP were not approved, another application for a different solar generating facility or a different type of facility would likely be filed at some time in the near future. The various solar energy technologies require the use of different amounts of land. Depending on the type of facility, the amount of acreage needed could be less, approximately the same or larger than the proposed BSPP. This No Project/No Action Alternative potentially could result in the conversion of acreage upwards to the amount of the proposed BSPP or possibly even a larger amount of land.

4.6.3 Discussion of Cumulative Impacts

Impacts resulting from construction, operation, maintenance and decommissioning of the BSPP could result in a cumulative effect on lands and reality with other past, present, or reasonably foreseeable future actions. The geographic scope of the cumulative effects analysis for lands and realty consists of eastern Riverside County, based on the jurisdictional boundaries within which the impacts of land use decisions of the proposed action and other projects could be additive, countervailing or synergistic. Potential cumulative effects on lands and realty could occur during the BSPP's proposed 69-month construction period if, for example, it would be necessary to relocate or modify existing facilities within a ROW; during the projected 30-40 year lifespan of the proposed action if, for example, future projects were constrained by the placement of BSPP-related facilities are located within designated corridors; or pursuant to closure and decommissioning activities.

Existing conditions within the cumulative impacts area reflect a combination of the natural condition and the effects of past actions and are described in PA/FEIS Chapter 3. Direct and indirect effects of the construction, operation and maintenance, and closure and decommissioning of the BSPP are analyzed above. Past, present and reasonably foreseeable future actions making up the cumulative scenario are identified in Section 4.1. Among them, other ROW applications for linear and non-linear projects that could be developed in eastern Riverside County include other utility-scale solar projects and the proposed Eagle Crest Pump Storage project and associated Gen-tie transmission lines. Additional actions that could have cumulative impacts include, among others, substation projects, and activities in OHV areas and LTVAs. ROW grants and other land use decisions associated with these actions and projects would affect the nature, type, and intensity of uses authorized on the lands potentially affected by the BSPP and its ancillary facilities. Permitting the Proposed action and other projects within the cumulative impact area could affect the amount of land that would be available for permitting by the BLM for other uses consistent with the CDCA. Permitting the BSPP and other projects for the single use proposed (e.g., solar energy development, pump storage, etc.) would restrict the use of the lands during the life of those projects reducing the number of acres of lands available to be managed by the BLM for other multiple uses. Upon decommissioning of the BSPP and other single use projects, affected acreage would become available for multiple use management by the BLM.

Multiple ROW applications are pending in the vicinity of the BSPP and no applicant has yet attained priority. Based on the interconnection applications for the transition cluster participants, the Applicant would build a double-circuit 230 kV line carrying 1,000 MW from the BSPP site; NextEra and Solar Reserve would build a double-circuit 230 kV line to carry NextEra's Genesis-McCoy 250 MW project on one circuit and Solar Reserve's 150 MW on the second circuit; and enXco would build a double-circuit 230 kV transmission path through the BSPP site to support its McCoy development efforts north of the Genesis-McCoy site.

BLM's general policy is to review ROWs in the order in which they are received, which would result in consideration and possible approval of a ROW grant for the BSPP before the consideration and possible award of ROWS for projects to the north. However, each of the pending applications would be for a project on BLM land and it is in BLM's interest to have utilities on its property co-located in common utility corridors. Accordingly, BLM has asked the Applicant to provide connectivity around the BSPP site for use by the other proposed projects.

Two sets of policies bear on this issue. (Solar Millennium 2010). First, it is the policy of the Western Electricity Coordinating Council (WECC) to separate adjacent transmission lines with a distance that is equal to or greater than the longest span length of the transmission lines in question, which in this case is approximately 900 feet. WECC is a regional entity responsible for promoting and coordinating bulk electric system reliability in the western United States. (WECC 2010). Second, California Independent System Operator (CAISO) policies specify the maximum amount of power that can be interrupted (to avoid exceeding the single largest risk to the ISO controlled system) as follows:

1. 1,150 MW of capacity can be interrupted under a single contingency (i.e. one transmission line or circuit, one transformer bank, etc.)

2. 1,400 MW of capacity can be interrupted under a double contingency (i.e. two transmission lines or circuits (including two circuits on a single tower), two transformer banks, etc.)

The CAISO operates the energy grid, provides fair and open transmission access, and promotes environmental stewardship and infrastructure development. (CAISO 2010). Of these two sets of policies, the WECC transmission line separation criterion appears most likely to constrain efforts to accommodate connectivity of the other proposed actions.

Based on the WECC separation criterion (and other considerations, including visual impacts), any proposed connection should minimize line crossings. Given the routing of the existing generator tie line routings in the area, this could be accomplished if the transmission line were to be located on the far east or west side of the BSPP site, rather than though it. The eastern routing would disturb less biologically-sensitive area, but would necessitate a line crossing under the BSPP transmission lines. This possible routing could accommodate one double-circuit 230 kV transmission line. If a line crossing were to be determined necessary, then such a crossing south of the solar fields would be preferred because more space would be available to accommodate the crossing and provide the necessary clearances. The western routing would not necessitate any line crossings along the route to the Colorado River Substation. The other pending projects could achieve connectivity via either of these routes.

The connectivity of future applicants also could be accommodated consistent with BLM interests by using an existing an existing two-mile wide utility corridor (designed in the CDCA Plan as "Planned Utility Corridor J") that is located east of the BSPP site and along California's eastern border, from the Arizona-California-Mexico border to its end, just west of Parker, Nevada. There remains sufficient capacity within Corridor J to accommodate up to 50 new transmission or gas lines and/or expansion of existing uses.

Cumulative impacts would vary by alternative only to the degree to which direct and indirect impacts vary by alternative.

4.6.4 Summary of Mitigation Measures

Compliance with industry SOPs and BMPs would avoid or mitigate potential safety and land use inconsistency issues related to the type of facilities proposed. SOPs and BMPs designed and adopted by the power industry would be followed to reduce or eliminate potential problems that might result from the gen-tie line crossing I-10 and existing power lines north and south of the highway. Additionally, SOPs and BMPs developed and adopted by the gas industry would be followed to ensure the public safety and continued safe operations of any underground power or gas lines the four inch gas line would cross. The SOPs and BMPs designed and adopted by the FHA and Caltrans provide for utilities to cross highways safely to protect the traveling public. Likewise, the SOPs and BMPs that would be tied to an encroachment permit from Caltrans for access from Black Rock Road to the site would ensure that the public safety would be protected during and after construction.

4.6.5 Residual Impacts after Mitigation Measures were Implemented

There would be no known residual impacts to existing authorized uses.

4.6.6 Unavoidable Adverse Impacts

Approval of a solar energy generation project would result in the land not being available for other uses during the life of the BSPP. However, once the BSPP is no longer viable and is decommissioned, the land would be available for other uses in the future, depending on the condition of the land and the use proposed.

4.7 Impacts on Mineral Resources

4.7.1 Impact Assessment Methodology

Applicable geologic maps and reports for this area (CDC 2000; CDC 2001; CDMG 1967; CDMG 1968; CDMG 1990; CDMG 1994a; CDMG 1998; CDMG 1999; McCleod, 2009; Kleinfelder 2009; USGS 2006; and USGS 2009b) were reviewed. The proposed BSPP is currently not used for mineral production, nor is it under claim, lease, or permit for the production of locatable, leasable, or salable minerals/mineral materials. Sand and gravel resources are present at the site and could potentially be a source of salable resources; however, such materials are present throughout the regional area. The BSPP should not have a significant impact on the availability of such resources.

The proposed BSPP site is mapped as Mineral Resource Zone (MRZ)-4 (CDMG 1994a). The designation MRZ-4 refers to “areas of no known mineral occurrences where geologic information does not rule out either the presence or absence of industrial mineral resources.” The carbonate bedrock outcrop of Little Maria Mountains and metasediments of the northern McCoy Mountains about 10 miles north and northwest of BSPP site are designated as MRZ-3a, which is defined as “areas containing known mineral occurrences of undetermined mineral resource significance.” The Big Maria Mountains to the northeast also cover a significant area that has been designated as MRZ-3a (CDMG 1994a).

There are a variety of active and past mining operations in the general area (within an approximate 10-mile radius) near the proposed site, but no active operations or mining claims occur within the proposed boundaries or along the offsite linear features.

4.7.2 Direct and Indirect Impacts

As discussed above, there are currently no mining claims, mineral leases or mineral materials disposal permits within the BSPP area or on the site.

There would be no direct or indirect impacts to locatable or leasable minerals. Mineral materials are present on the site, however there are suitable materials throughout the area; therefore, there would be no direct or indirect impacts to the availability and development of mineral materials resources within or near the BSPP area.

4.7.3 Alternatives

There would be no difference in the direct or indirect impacts of the proposed action, or any of the proposed alternatives.

4.7.4 Cumulative Impacts

Because the proposed action and alternatives would have no direct or indirect effects on mineral resources, no cumulative effects analysis is required or provided for this resource.

4.8 Impacts on Multiple Use Classes

4.8.1 Impact Assessment Methodology

The Multiple Use Class (MUC) Guidelines in Table 1 of the CDCA (1980, as amended) provide that solar electrical generation facilities may be allowed in MUC Limited (L), Moderate (M), and Intensive (I) areas after NEPA requirements are met.

4.8.2 Discussion of Direct and Indirect Impacts

Proposed Action

The proposed action would be developed entirely within MUC-L. The total acreage of the Limited MUC that would be affected by construction of the solar facility under the proposed action would be 5,952 acres. No changes in the MUC classification would be required prior to approving the ROW grant. Nonetheless, approval of the ROW grant would restrict multiple use opportunities on the BSPP site to a single dominate use for the anticipated 30-40 year lifespan of the proposed action. This restriction would be lifted upon closure and decommissioning of the proposed action; thereafter, use opportunities on the site would return to the pre-BSPP conditions discussed in FEIS Chapter 3.

Alternatives

Reconfigured Alternative

Like the Proposed Action, the Reconfigured Alternative would be developed entirely within MUC-L. Potential direct and indirect impacts on lands designated MUC-L would be the same as for the proposed action. The total acreage of the Limited MUC that would be affected by construction of the Reconfigured Alternative would be 6,102 acres.

Reduced Acreage Alternative

Like the Proposed Action, the Reduced Acreage Alternative would be developed entirely within MUC-L. Potential direct and indirect impacts on lands designated MUC-L would be the same as for the proposed action. The total acreage of the Limited MUC that would be affected by construction of the Reduced Acreage Alternative would be 4,752 acres

No Action Alternative A

If the No Action Alternative A were selected, impacts associated with the proposed action would not occur because no use opportunities would be foreclosed. However, other utility-scale solar power facilities could be built, which would result in the same impact on MUC L by this alternative that the proposed action would cause.

No Action Alternative B

If the No Action Alternative B were selected, the proposed BSPP would not be approved by the BLM, and the BLM would amend the CDCA Plan to make the proposed site unavailable for future solar development. As a result, no solar energy project would be constructed on the site and BLM would continue to manage the site consistent with the existing land use designation in the CDCA Plan. No use opportunities otherwise allowable on MUC-L designated land would be foreclosed.

No Action Alternative C

If the No Action Alternative C were selected, the proposed BSPP would not be approved by the BLM, and BLM would amend the CDCA Plan to allow for other solar projects on the site. The development of another solar energy project on the site would result in the same foreclosure of use opportunities that would result from the proposed action.

4.8.3 Discussion of Cumulative Impacts

The geographic scope of the cumulative effects analysis for multiple use classes would include CDCA Plan area lands designated MUC-L. This geographic scope was established based on the boundaries of the affected resource. Potential cumulative impacts could result from construction of the proposed action and, to the extent they exist, would continue until closure and decommissioning is complete, because this is the period of time during which the existence of the proposed action would preclude the development of other uses on the site and, thereby, affect the type of use opportunities on MUC-L lands throughout the CDCA Plan area.

Existing conditions within the cumulative impacts area reflect a combination of the natural condition; MUC-L use opportunities presently being exercised; and, where such opportunities are not currently are being exercised, the flexibility to elect to pursue one or more among them at some point in the future. The effects of past actions are reflected in the discussion in FEIS Chapter 3. Effects of the BSPP on MUCs, as analyzed above, essentially relate to opportunity cost: if the BSPP or an alternative is developed on the site, the site cannot be used for use opportunities that otherwise would be available on the site. Past, present and reasonably foreseeable future actions making up the cumulative scenario are identified in Section 4.1. Among them, any projects that also would be developed on lands designated for MUC-L uses would similarly restrict available use opportunities within that classification for the duration of those projects. Any cumulative impact on multiple uses classes that could be caused by any of the action alternatives, No Action Alternative A or No Action Alternative C would be the same as for the proposed action. By contrast, because No Action Alternative B would not limit the multiple use opportunities that presently area available on the site, No Action Alternative B would not contribute to any cumulative impact on multiple use classes.

4.8.4 Summary of Mitigation Measures

No mitigation measures are required.

4.8.5 Residual Impacts after Mitigation Measures were Implemented

There would be no known residual impacts to existing authorized uses.

4.8.6 Unavoidable Adverse Impacts

Approval of the ROW grant would have the effect of limiting current multiple use opportunities of the facility footprint area to a single dominate use for the life of the project.

4.8.7 Land Use Plan Amendment Consistency Analysis

The proposed land use plan amendment to be made by the BLM is a site identification decision only. The proposed action and all of its alternatives are located within Multiple Use Class L. The classification designations govern the type and degree of land-use action allowed within the classification area. All land use actions and resource-management activities on public lands within a multiple-use class delineation must meet the guidelines for that class. Multiple use class L allows electric generation plants for solar facilities after NEPA requirements are met. These guidelines are listed on Table 1, Multiple Use Class Guidelines, to the CDCA Plan of 1980 (at page 15). The specific application of the multiple use class designations and resource management guidelines for a specific resource or activity are further discussed in the plan elements section of the CDCA Plan. In Class L designations, the authorized officer is directed to use his judgment in allowing for consumptive uses by taking into consideration the sensitive natural and cultural values that might be degraded.

The proposed site location for the BSPP meets the Multiple Use Class Guidelines (as applicable to the particular project/alternatives/site locations) as noted in the CDCA Plan for the following reasons:

1. **Agriculture:** Agricultural uses of Class L lands are not allowed, with the exception of livestock grazing. The site is not currently used for agriculture, and neither the proposed action nor alternatives would involve use of the site for agriculture. Therefore, all alternatives would be in conformance with this guideline.

2. **Air Quality:** Class L lands, including the proposed site location and the alternatives, are to be managed to protect their air quality and visibility in accordance with Class II objectives of the Federal Clean Air Act. The worst-case long-term emissions that would be associated with the proposed action are provided in Table 4.2-5. These values have been compared to emissions objectives for air quality and visibility associated with Class II areas in 40 CFR 52.51, and are all well below the limitations required for Class II areas. The emissions associated with the alternatives would be approximately the same or lower than those of the proposed action. Therefore, all of the alternatives would conform to the Class II objectives referenced in the CDCA Plan guidelines.

3. **Water Quality:** Class L designations are to be managed to provide for the protection and enhancement of surface and groundwater resources, and BMPs are to be used to avoid degradation and to comply with Executive Order 12088. Section 4.19 of this PA/FEIS

evaluated the proposed action and alternatives for groundwater use conflicts, the potential to impact groundwater quality, and the potential to impact surface water resources including drainage and water quality. Development and operation of the BSPP facility on an active alluvial fan raises concerns associated with changing stormwater surface flows across the project site. The incorporation of engineered drainages and waterways, sized to meet relevant stormwater flow rates and drainage requirements were developed by the applicant, in coordination with the BLM and the CEC, to reduce these potential impacts. Although BLM has not established BMPs for solar projects, the agency has reviewed, and agrees with the implementation of the BMPs that would be associated with the BSPP and its alternatives. These BMPs have been derived from a variety of sources, including those proposed by the applicant as part of the project design, those required by the CEC through its Conditions of Certification, and those required for compliance with other state and Federal laws designed to protect water resources. Implementation of these BMPs, and BLM's standard term and condition requiring compliance with other Federal, state, and local regulations, would constitute compliance with Executive Order 12088. The measures would be applicable to all project alternatives, and would therefore conform to the guidelines in Table 1 of the CDCA Plan.

4. **Cultural and Paleontological Resources:** Cultural and paleontological resources will be preserved and protected. Procedures described in 36 CFR 800 will be observed where applicable. As described in detail in Sections 4.4 and 4.10, impacts on cultural and paleontological resources resulting from the development and operation of the proposed project, Reconfigured Alternative, and Reduced Acreage Alternative would be mitigated, and therefore all three alternatives would conform to the MUC Guidelines. Adverse effects on cultural resources determined eligible for the National Register of Historic Places will be resolved in accordance with a Programmatic Agreement being prepared for the project in consultation with the California State Historic Preservation Officer, Indian tribes and other interested parties in accordance with Section 106 of the National Historic Preservation Act. Identification of the site location for the proposed action or any of the alternatives is subject to the MUC Guidelines for cultural and paleontological resource protection as is evidenced by the applicability of the guidelines to the specific facility proposal. As such, all of the site locations and the site location alternatives are within the MUC Guidelines for cultural and paleontological resource protection established by the CDCA Plan.

5. **Native American Values:** Native American cultural and religious values will be protected and preserved with appropriate Native American groups consulted. Consultation with Indian tribes was initiated at the earliest stages of project planning and will continue during the NEPA compliance process. Opportunities have been provided to allow Indian tribes to identify places and resources of importance to them and to express concerns regarding cultural and religious values that could be impacted by the proposed action and alternatives. Adverse effects on any places of traditional cultural or religious importance that are identified by tribes will be resolved in accordance with the Programmatic Agreement being developed for the project with tribal participation. Therefore, cultural guidelines with respect to requirements for consultation have been met. In addition, the protection of cultural resources as discussed in Section 4.4 ensures that preservation and protection of Native American cultural and religious values associated with cultural resources is accomplished in accordance with the CDCA Plan MUC Guidelines.

6. **Electrical Generation Facilities:** Solar generation may be allowed after NEPA requirements are met. The analysis contained in the PA/FEIS, which addresses the proposed action and its alternatives, comprise the NEPA compliance required for this MUC guideline.

7. **Transmission Facilities:** Class L guidelines allow electric transmission to occur in designated ROW corridors. The proposed action and/or its alternatives would include transmission not within a designated ROW corridor. The CDCA Plan, while recognizing the potential compatibility of solar generation facilities on public lands, requires that all sites associated with power generation or transmission not identified in the Plan be considered through the Plan Amendment process. Therefore, the BLM would undertake a project-specific CDCA Plan amendment along with the ROW grant for the BSPP. Upon BLM's amendment of the CDCA plan for the BSPP, the BSPP project would be fully compliant with the CDCA Plan. This PA/FEIS acts as the mechanism for meeting NEPA requirements, and also provides the analysis required to support a Plan Amendment identifying the facility within the Plan.

8. **Communication Sites:** The proposed action and/or its alternatives would not involve the installation of communications sites.

9. **Fire Suppression:** Measures in Class L areas will be taken in accordance with specific fire management plans, subject to such conditions as the authorized officer deems necessary. The project area is within the area covered by the Fire Management Activity Plan (FMAP) 1996 for the California Desert developed by the National Park Service and BLM. The FMAP brings together fire management goals for biological resources, wilderness, and other sources and establishes fire management standards and prevention and protection programs. The FMAP includes limitations on fire suppression methods in critical habitat and other tortoise habitat; the limitations are designed to limit habitat disturbance while keeping fires small. While the FMAP addresses management and suppression of wildfires, it does not address incidents on specific facilities such as power plants. The applicant has developed fire suppression measures that would be used for the proposed BSPP, Reconfigured Alternative, or the Reduced Acreage Alternative, and these measures are discussed in Section 4-23. The Project applicant would be required to install a fire protection/control system on site in including a fire water supply system and associated infrastructure, and to comply with state and federal regulations regarding worker safety and training. Additionally, under Mitigation Measure WORKER SAFETY-7, the applicant would be required to provide funding to the Riverside County Fire Department to ensure available resources to fight potential fires on site. However, the specific fire management plan is not relevant to the types of fires that would be addressed by the applicant. Should a fire occur in the area that is not specific to the facility, it would be addressed by BLM, not by the applicant, and it would be addressed in conformance with the Fire Management Plan, and therefore, would conform to the guideline for Fire Management for this multiple use class.

10. **Vegetation:** Table 1 of the CDCA Plan includes a variety of guidelines associated with vegetation. These are addressed in the EIS as follows:

    Native Plants – Removal of native plants in Class L areas is only allowed by permit after NEPA requirements are met, and after development of necessary stipulation. Approval of the ROW grant for the proposed BSPP, Reconfigured Alternative, or the

Reduced Acreage Alternative would constitute the permit for such removal. The mitigation measures in the FEIS and conditions of approval to be required in the Record of Decision would constitute the stipulations to avoid or minimize impacts from the removal.

Harvesting of plants by mechanical means – Harvesting by mechanical means is also allowed by permit only. Although the proposed project and its alternatives would include the collection of succulents and seeds to assist with reclamation, the removal of these items would not be done for distribution to the public. Also, the guidelines for vegetation harvesting include encouragement of such harvesting in areas where the vegetation would be destroyed by other actions, which would be the case with the proposed project and its alternatives. Therefore, the proposed project and its alternatives would be in conformance with this MUC guideline.

Rare, Threatened, and Endangered Species, State and Federal – In all MUC areas, all state and federally listed species will be fully protected. In addition, actions which may jeopardize the continued existence of federally listed species will require consultation with the U.S. Fish and Wildlife Service. As evaluated in Section 4-17, Vegetation Resources, no federally or state listed plants would be impacted by proposed BSPP, Reconfigured Alternative, or the Reduced Acreage Alternative.

Sensitive Plant Species – Identified sensitive plant species would be given protection in management decisions consistent with BLM’s policy for sensitive species management, BLM Manual 6840. The objective of this policy is to conserve and/or recover listed species, and to initiate conservation measures to reduce or eliminate threats to BLM sensitive species to minimize the likelihood of and need for listing. One BLM sensitive plant, Harwood’s eriastrum (= Harwood’s woollystar), was identified in the BSPP area, and impacts and mitigation associated with this species were discussed in Section 4-17. In an effort to protect this species, BLM worked with the applicant and the Energy Commission to develop mitigation (see Mitigation Measure BIO-19 in Appendix F) to reduce the number of individuals of the species that would be affected. Because these measures are intended to reduce threats to this species to minimize the likelihood of listing, these measures are in conformance with the MUC guidance in the CDCA Plan.

Unusual Plant Assemblages (UPAs) – No UPAs have been identified on the site of the proposed BSPP, Reconfigured Alternative, or the Reduced Acreage Alternative.

Vegetation Manipulation – Manipulation of vegetation in Class L areas by mechanical control or aerial broadcasting is not permitted. Vegetation manipulation is defined in the CDCA Plan as removing noxious or poisonous plants from rangelands; increasing forage production; creating open areas within dense brush communities to favor certain wildlife species; or eliminating introduced plant species. A weed control plan would be developed under mitigation measure BIO-14, a site-specific weed management plan. Such actions would be conducted as part of the proposed BSPP, Reconfigured Alternative, or the Reduced Acreage Alternative. Weed management under the weed management plan would conform to Federal, State, and local regulations, so would be allowed. Therefore, each alternative would conform to the guidelines.

11. **Land Tenure Adjustment:** Class L land will not be sold. The proposed action and/or its alternatives would not involve any sale of public lands.

12. **Livestock Grazing:** The proposed action and/or its alternatives would not involve the addition of livestock grazing to a Class l area where it does not already occur.

13. **Minerals:** The proposed action and/or its alternatives would not involve the development of minerals on Class L lands.

14. **Motorized Vehicle Access/Transportation:** Pursuant to the CDCA LUP guidelines in Class L areas, new roads may be developed under ROW grants or approved plans of operations. In areas designated as limited use area for OHV use, such as the site locations under consideration in this FEIS, changes to the transportation network (new routes, re-routes, or closures) in “limited” areas may be made through activity-level planning or with site-specific NEPA analysis (IM 2008-014). Modifications to area OHV designations (open, closed, or limited) require amendment to the RMP. There are no area OHV designations that are being made or modified through the proposed action or any of the alternatives. With the proposed action and/or its alternatives, existing routes are being closed, and a new routes may be required to be created in limited OHV areas per mitigation measure BLM-OHV-2. As such, these changes may be made with site-specific NEPA analysis. This analysis is provided in Section 4.16. The access needs for the BSPP do not substantially differ among the various site location alternatives presented in the PA/FEIS. For any of the site location alternatives, road ROW grants would be approved to allow access to the BSPP site. This activity falls within the CDCA LUP guideline noted above.

15. **Recreation:** The proposed action and/or its alternatives would not involve the use of the proposed action or alternative sites for recreational uses.

16. **Waste Disposal:** The proposed action and/or its alternatives would not involve the development of waste disposal sites on the proposed project or alternative sites

17. **Wildlife Species and Habitat:** Table 1 of the CDCA Plan includes a variety of guidelines associated with wildlife. These are addressed in the EIS as follows:

    Rare, Threatened, and Endangered Species, State and Federal – In all MUC areas, all state and federally listed species and their critical habitat will be fully protected. In addition, actions which may jeopardize the continued existence of federally listed species will require consultation with the U.S. Fish and Wildlife Service. As discussed in Section 4-21, Wildlife Resources, the desert tortoise, which is listed as federally and state threatened, would be affected by the proposed BSPP, Reconfigured Alternative, or the Reduced Acreage Alternative. All of the action alternatives would affect a small portion of critical habitat. As specified in the guideline, BLM has initiated formal consultation with the U.S. Fish and Wildlife Service in accordance with Section 7 of the Endangered Species Act. BLM has worked with the Energy Commission, USFWS, CDFG, and applicant to develop protection and compensation measures for the desert tortoise, which include stringent avoidance measures, the full level of compensation required by USFWS for this category of tortoise habitat, and enhancement and protection measures in other areas. Therefore, the proposed project and its alternatives would comply with the guideline to provide full protection to the species.

Sensitive Species – Identified species would be given protection in management decisions consistent with BLM's policy for sensitive species management, BLM Manual 6840. The objective of this policy is to conserve and/or recovered listed species, and to initiate conservation measures to reduce or eliminate threats to BLM sensitive species to minimize the likelihood of and need for listing. Several BLM sensitive wildlife species (other than the desert tortoise, identified and discussed in the previous paragraph) are present or likely to occur on habitat associated with the proposed BSPP and its alternatives include Couch's spadefoot toad, Mojave fringe-toed lizard, western burrowing owl, golden eagle, ferruginous hawk, mountain plover, Bendire's thrasher, LeConte's thrasher, several species of bats, and Nelson's bighorn sheep. Those species that are likely to occur on the BSPP would be protected under a number of mitigating measures meant to avoid, minimize, or compensate for impacts from the project. These mitigating measures include: BIO-1, BIO-2, BIO-3, BIO-4, BIO-5, BIO-6, BIO-7, BIO-8, BIO-9, BIO-10, BIO-11, BIO-12, BIO-13, BIO-15, BIO-16, BIO-17, BIO-18, BIO-20, BIO-21, BIO-23, BIO-24, BIO-25, BIO-26, BIO-27, BIO-28; discussed in detail in Appendix G of this FEIS.

The proposed BSPP, Reconfigured Alternative, or the Reduced Acreage Alternative, including the mitigation measures associated with these actions, would involve habitat manipulation to improve habitat (such as tortoise fencing along roads and project boundaries and placement of a water source in big horn sheep habitat) and introduction of native species (through the translocation of tortoises). Introduction of native species is permitted in Class L areas, and habitat manipulation is allowed subject to environmental assessment, as is done within this EIS. Therefore, the proposed project and its alternatives would be in conformance with these guidelines.

The proposed BSPP, Reconfigured Alternative, or the Reduced Acreage Alternative, including the translocation associated with these actions, may involve the control of depredation of ravens. Therefore, this guideline is applicable to these actions but is allowed subject to conformance with state and federal laws in MUC L.

18. **Wetland/Riparian Areas:** Wetland/riparian areas will be considered in all proposed land use actions. These issues were considered in the analysis of the site location for the proposed project and its alternatives. However, no wetlands or riparian areas are present in the BSPP.

19. **Wild Horses and Burros:** Under the CDCA Plan guidelines, populations of wild and free-roaming horses and burros will be maintained in healthy, stable herds, but will be subject to controls to protect sensitive resources. As discussed in Section 3.22, there are no Wild Horse and Burro Herd Areas (HAs) or Herd Management Areas (HMAs) that would be affected by the proposed action and/or its alternative. Therefore, the proposed action and/or its alternatives would conform with the requirements of the guidelines in the CDCA Plan.

4.9 Impacts on Noise

4.9.1 Impact Assessment Methodology

The Applicant presented the results of an ambient noise survey in the CEC RSA. Ambient noise levels were measured at the boundary of the BSPP site and nearest residence on June 2 to June 4, 2009. One long-term measurement was taken at the nearest residence over a 25-hour period between 2:00 p.m., June 2, and 1:00 p.m., June 4, 2009. The survey was performed using acceptable equipment and techniques. The Applicant also predicted the operational noise level at the nearest sensitive receptor.

One sensitive noise receptor, mobile home located approximately 725 feet east and 775 feet south of the BSPP site, was identified within the vicinity of the proposed action.

4.9.2 Discussion of Direct and Indirect Impacts

Proposed Action

Noise impacts associated with the proposed action could be created by short-term construction activities, long-term operation of the BSPP, and short-term closure and decommissioning activities.

Construction

Construction noise is usually a temporary phenomenon. Construction of the BSPP would be expected to be typical of similar projects in terms of equipment used and other types of activities (Solar Millennium 2009a, AFC § 5.8.3.1). Construction of an industrial facility, such as a power plant, is typically noisier than permissible under usual noise ordinances. In order to allow the construction of new facilities, construction noise during certain hours of the day is commonly exempt from enforcement by local ordinances (See County of Riverside, 2007 Ordinance 847.1 Section 2h).

Since construction noise typically varies with time, it is most appropriately measured by, and compared with, the L_{eq} (energy average) metric. Typical Environmental and Industry Sound Levels are provided in Table 4.9-1. For the BSPP, construction noise would elevate the existing ambient noise level at the nearest residential receptor (LT) by 16 dBA, a considerable increase. See Table 4.9-2. Even though the overall construction period for the BSPP is expected to require 69 months, the duration of construction activities in an area that could have a considerable impact at LT would be limited to several months.

Typically, “high pressure steam blow” is the loudest noise encountered during construction of a project incorporating a steam turbine. After erection and assembly of the feed water and steam systems, the piping and tubing that comprise the steam path have accumulated dirt, rust, scale, and construction debris such as weld spatter, dropped welding rods, and the like. If the plant were started up without thoroughly cleaning out these systems, all this debris would find its way into

TABLE 4.9-1
TYPICAL ENVIRONMENTAL AND INDUSTRY SOUND LEVELS

Noise Source (at distance)	A-Weighted Sound Level in Decibels (dBA)	Noise Environment	Subjective Impression
Civil Defense Siren (100')	140-130		Pain Threshold
Jet Takeoff (200')	120		Very Loud
Very Loud Music	110	Rock Music Concert	
Pile Driver (50')	100		
Ambulance Siren (100')	90	Boiler Room	
Freight Cars (50')	85		
Pneumatic Drill (50')	80	Printing Press Kitchen with Garbage Disposal Running	Loud
Freeway (100')	70		Moderately Loud
Vacuum Cleaner (100')	60	Data Processing Center Department Store/Office	
Light Traffic (100')	50	Private Business Office	
Large Transformer (200')	40		Quiet
Soft Whisper (5')	30	Quiet Bedroom	
	20	Recording Studio	
	10		Threshold of Hearing

SOURCE: Handbook of Noise Measurement, Arnold P.G. Peterson, 1980.

TABLE 4.9-2
PREDICTED CONSTRUCTION NOISE LEVEL

Receptor	Highest Construction Noise Level L_{eq} (dBA)[a]	Measured Existing Ambient, Average Daytime L_{eq} (dBA)[b]	Cumulative, Using Highest Noise Level of 48 dBA	Change
LT	61	45	61	+16

SOURCES: [a] Solar Millennium 2009a, AFC Section 5.8.3.1.
[b] Table 3.10-1

the steam turbine, quickly destroying the machine. In order to prevent this, before the steam system is connected to the turbine, the steam line temporarily is routed to the atmosphere. Traditionally, high pressure steam is then raised in the boiler or a temporary boiler and allowed to escape to the atmosphere through the steam piping. This flushing action, referred to as a *high pressure steam blow*, is quite effective at cleaning out the steam system. A series of short steam blows, lasting two or three minutes each, are performed several times daily over a period of two or three weeks. At the end of this procedure, the steam lines are connected to the steam turbine, which is then ready for operation. Alternatively, high pressure compressed air can be substituted for steam. High pressure steam blows, if unsilenced, can produce noise levels as high as 129 dBA at a distance of 50 feet; this would amount to roughly 100 dBA at LT. Unsilenced steam blows could be disturbing at the nearest noise-sensitive receptors, depending on the frequency, duration, and noise intensity of venting. With a silencer installed on the steam blow piping, noise levels are commonly attenuated to 89 dBA at 50 feet.

Operation and Maintenance

During operation, the primary noise source of the BSPP would be the power block, where the steam turbine generator, air-cooled condenser, electric transformer, and various pumps and fans would be located. The four power blocks of the BSPP (one for each 250 MW unit) would be located in each of the four quadrants in the middle of the solar arrays. In addition, there would be diesel-powered emergency generators, which would be enclosed by a noise-reducing structure that would reduce noise levels to approximately 70 dBA at 50 feet. The overall noise generated by these various noise sources would be based on the configuration of the sources, the number and power rating of the equipment, and any noise-reducing measures incorporated. Noise measurement locations are shown in Figure 44.

The Applicant performed noise modeling to determine anticipated noise impacts on sensitive receptors (Solar Millennium 2009a, AFC § 5.8.3.2). The Applicant has predicted the operational noise level at the nearest sensitive receptor as shown in Table 4.9-3.

TABLE 4.9-3
PREDICTED OPERATIONAL NOISE LEVEL AT THE IDENTIFIED SENSITIVE RESIDENTIAL RECEPTOR

Receptor	Project Alone Operational Noise Level (dBA)[a]	Measured Existing Ambient, Daytime Leq (dBA)[b]	Cumulative Leq (dBA)[b]	Increase in Existing Ambient (dBA)
LT	40	45	46	+1

SOURCES: [a] Solar Millennium 2009a, AFC § 5.8.3.2.
[b] Table 4.9-2, above

The Riverside County Noise Ordinance allows for different levels of acceptable noise depending upon land use. Section 4 of Ordinance No. 847 (Regulating Noise) limits noise on any property that causes the exterior noise level on any other occupied property to 55 dBA during the daytime hours and 45 dBA during the nighttime hours, for noise-sensitive receptors within a very low density rural area, such as the area surrounding the site. The Applicant predicts the proposed action’s operational noise level at receptor LT to be 40 dBA Leq (Solar Millennium 2009a, AFC § 5.8.3.2). This level would be acceptable under the County Code.

Adverse impacts on residential receptors can also be identified by comparing predicted power plant noise levels with the nighttime ambient background noise levels at the nearest sensitive residential receptors. The proposed action could have limited nighttime activities related to maintenance. The Applicant’s projection of the noise level from these activities at LT is 20 dBA

(Solar Millennium 2009a, AFC § 5.8.3.2). This is significantly lower than the average nighttime ambient noise level of 36 dBA at LT.

All water pipes and gas pipes would be underground and therefore silent during plant operation. Noise effects from electrical interconnection lines typically do not extend beyond the lines' right-of-way easements and would be inaudible to receptors.

Vibration from an operating power plant could be transmitted through two primary means: ground (ground-borne vibration) and air (airborne vibration). The operating components of the BSPP plant would consist of high-speed steam turbine generators and various pumps and fans. All of these pieces of equipment must be carefully balanced in order to operate; permanent vibration sensors would be attached to the turbines and generators. Based on experience with numerous previous projects employing similar equipment, ground-borne vibration from the BSPP would be undetectable by any likely receptor. Airborne vibration (low frequency noise) can rattle windows and objects on shelves and can rattle the walls of lightweight structures. However, none of the proposed equipment is likely to produce noticeable low frequency noise beyond the site boundaries. This makes it highly unlikely that the BSPP would cause perceptible airborne vibration effects at any offsite noise-sensitive receptor.

Closure and Decommissioning Impacts

The anticipated lifespan of the BSPP is estimated to be 30-40 years. Closure and decommissioning-related noise impacts could result from the operation of construction equipment that would be required to dismantle and restore the site. Such impacts would be a one-time, limited-duration event. Anticipated noise levels would be less than expected for construction, since no high pressure steam blows would be required, but in other respects are anticipated to be comparable to construction noise levels.

Worker Effects

The Applicant acknowledges the need to protect plant operating and maintenance workers from noise hazards and commits to compliance with all applicable LORS (Solar Millennium 2009a, AFC Section 5.8.4). Signs would be posted in areas of the plant with noise levels exceeding 85 dBA (the level that OSHA recognizes as a threat to workers' hearing), and hearing protection would be required and provided.

4.9.3 Alternatives

Reconfigured Alternative

The Reconfigured Alternative would an incrementally longer construction period due to the increased footprint of 150 acres, the same types of construction activity, and substantially similar operation and maintenance-related and closure and decommission-related requirements as the proposed action. Therefore, the noise that would result from such activities associated with the Reconfigured Alternative would be slightly greater, but still substantially similar to that of the proposed action.

Reduced Acreage Alternative

The Reduced Acreage Alternative essentially would reduce the total construction-, operation- and decommissioning-related activity on the site by roughly 25 percent because of the elimination of one of the four power blocks. However, peak construction impacts could be same as the proposed action, since construction activity levels would likely be similar. Operations-related noise levels would be reduced since only three of the four proposed units would be operated and maintained. Given the reduced amount of equipment to dismantle and reduction in acreage to be restored, closure and decommission-relating impacts would be reduced. Therefore, overall, noise generated by implementation of this alternative would be less than that expected to be generated by the proposed action. However, if the Reduced Acreage Alternative were selected, other renewable projects could be developed on other sites in Riverside County, the Colorado Desert, or in adjacent states as developers strive to provide renewable power that complies with utility requirements and Federal and state mandates in order to compensate for the loss of generation compared to the proposed action.

No Action Alternative A

If this alternative were selected, of the anticipated noise impacts of the proposed action would occur. Instead, the land on which the BSPP is proposed would become available to other uses consistent with the CDCA Plan, potentially including another renewable energy project. If the proposed action is not approved, renewable projects would likely be developed on other sites in Riverside County, the Colorado Desert, or in adjacent states as developers strive to provide renewable power that complies with utility requirements and Federal and state mandates. Noise impacts would be expected to result from such projects, but perhaps not within hearing of the sensitive receptors that could be affected by the proposed action.

No Action Alternative B

Because the CDCA Plan would be amended under this alternative to make the site unavailable for future solar development, it is expected that the site could remain in its existing condition, without new sources of noise. Any noise impacts associated with the development of renewable energy projects in other locations are anticipated to be comparable to those generated by the proposed action, but would affect different sensitive receptors.

No Action Alternative C

Because the CDCA would be amended under this alternative, it is possible that the site would be developed with the same or a different solar technology. Comparable noise levels could be expected from the construction and decommissioning of such projects; operations-phase noises could vary depending on the type, arrangement and location on the site of necessary equipment.

4.9.4 Discussion of Cumulative Impacts

Noise impacts resulting from construction, operation, maintenance and decommissioning of the BSPP and alternatives could result in a cumulative effect with other past, present, or reasonably foreseeable future actions. The geographic scope of the cumulative effects analysis for noise is limited to the distance over which sounds generated by the proposed action could be heard, as shown in Figure 44, *Noise Measurement Locations and Noise Contours*. This geographic scope of cumulative impacts analysis was established based on the natural boundaries of the affected resource. Potential cumulative effects on visual resources could occur during the BSPP's proposed 69-month construction period, during the projected 30-40 year lifespan of the proposed action, or result from closure and decommissioning, i.e., if other noise-generating activities were to occur within these timeframes and within the cumulative impacts area. Existing conditions within the cumulative impacts area reflect a combination of the natural condition and the effects of past actions and are described in FEIS chapter 3. Direct and indirect effects of the BSPP are analyzed above. Past, present and reasonably foreseeable future actions making up the cumulative scenario are identified in Section 4.1. However, none of these projects would be developed in the cumulative impacts area for noise impacts. Consequently, the incremental noise impacts of the proposed action and alternatives would not combine with impacts of other projects in a way that would be additive, countervailing or synergistic.

4.9.5 Summary of Mitigation Measures

The mitigation measures imposed by the Energy Commission as Conditions of Certification for the BSPP would avoid or reduce impacts on the quality of the human environment. These mitigation measures are set forth in **Appendix G**. The following mitigation measures would avoid or minimize impacts on noise resources:

NOISE-1, NOISE-2, NOISE-3, NOISE-4, NOISE-5, NOISE-6, NOISE-7.

4.9.6 Residual Impacts after Mitigation Measures were Implemented

Residual impact would be associated with construction where the noise would exceed the Riverside County Regulations. The exceedance would be an increase of 16 dBA for the 69 month construction period.

4.9.7 Unavoidable Adverse Impacts

Same as described in Residual Impacts.

4.10 Impacts on Paleontological Resources

4.10.1 Impact Assessment Methodology

A paleontological resources assessment (Solar Millennium 2009a; SWCA 2009) was prepared. A paleontological literature and records search was conducted by the Natural History Museum of Los Angeles County (McCleod 2009). Records from the University of California Berkeley online database for the site area were searched (UCMP 2009). Site-specific information was also generated by the Applicant for the BSPP. All research was conducted in accordance with accepted assessment protocol (Society of Vertebrate Paleontology (SVP 1995)) to determine whether any known paleontological resources exist in the general area and how they might be impacted by the proposed action and alternatives.

4.10.2 Discussion of Direct and Indirect Impacts

Proposed Action

There is a high probability that paleontological resources would be encountered during grading and excavation in the alluvial deposits of the McCoy Wash area located in the northeastern and southern portions of the BSPP site; older alluvium deposits; and in the central portion of the BSPP site. Further, deeper excavations in the younger alluvium that will encounter the underlying older alluvium soils also would have a high probability to encounter paleontological resources.

Since the depth to Pleistocene age sediments beneath Holocene deposits in the central portion of the site is unknown, all sediments beneath disturbed ground initially would be treated as highly sensitive. After monitoring of grading and trenching activities during construction at the site, the project paleontological resource specialist (PRS) may determine the appropriate depth above which the coarse and fine grained soils are Holocene in age, have a low sensitivity and low potential for adverse impacts on paleontological resources.

Construction of the proposed action would include grading, foundation excavation, utility trenching and possibly drilled shafts. These activities could damage or destroy paleontological resources. The probability of encountering paleontological resources is considered to be generally high on portions of the site based on the soils profile, SVP assessment criteria, and the near surface occurrence of the sensitive geologic units. The potential for encountering fossils hosted in Quaternary alluvium would increase with the depth of cut. Excavations for ancillary facilities and new pipelines and on-site excavations that penetrate surficial Holocene age alluvium would have a higher probability of encountering potentially high sensitivity materials, although sensitive materials could occur nearer the surface. Mitigation measures could not avoid or reduce fossil disturbance associated with drilled shaft foundations; however, the volume of disturbance and probability of encountering fossil resources would be low in comparison to the grading and excavation activities.

As the value of paleontological resources is predicated on their discovery within a specific geological host unit, construction of the BSPP could result in a net gain to the science of paleontology by allowing fossils that would not otherwise have been found to be recovered, identified, studied, and preserved.

Operation, future decommissioning and closure of the proposed new solar energy generating facility would not adversely impact paleontological resources because the ground disturbed during these activities would have been already disturbed, and impacts mitigated as required, during construction of the proposed action.

4.10.3 Alternatives

Reconfigured Alternative

Because the geologic units that would be disturbed by the Reconfigured Alternative are the same as those that would be disturbed by the proposed action, potential impacts to paleontological resources would be the same as for the proposed action.

Reduced Acreage Alternative

Because the ground disturbance from the Reduced Acreage Alternative would be less than that associated with the proposed action, potential impacts to paleontological resources would be correspondingly reduced.

No Action Alternative A

If this No Action Alternative were selected, the construction and operational impacts of the BSPP would not occur. There would be no grading of the site, no installation of power generation and transmission equipment, and no potential impacts to paleontological resources.

In the absence of the BSPP, however, other power plants, both renewable and non-renewable, would have to be constructed to serve the demand for electricity and to meet Renewable Portfolio Standards (RPS). If No Action Alternative A were chosen, other utility-scale solar power facilities could be built, and the impacts to the environment could be similar to those of the proposed action because these technologies require large amounts of land like that required for the BSPP. No Action Alternative A also could lead to the siting of other non-solar renewable energy facilities to help achieve the California RPS.

Paleontological resources have been documented in the general area of the site. As the value of paleontological resources is predicated on their discovery within a specific geologic host unit, construction of the BSPP could result in a net gain to the science of paleontology by allowing fossils that would not otherwise have been found to be recovered, identified, studied, and preserved. No Action Alternative A would preclude this potential net gain.

No Action Alternative B

Under this alternative, the proposed BSPP would not be approved by the CEC and BLM and the BLM would amend the CDCA Plan to make the proposed site unavailable for future solar development. As a result, no solar energy project would be constructed on the site and BLM would continue to manage the site consistent with the existing land use designation in the CDCA Plan.

Because the proposed BSPP would not be approved, and the CDCA Plan would be amended to make the area unavailable for future solar development, it is expected that the site would continue to remain in its existing condition, with no new structures or facilities constructed or operated on the site. As a result, the geologic conditions of the site would not be expected to change noticeably from existing conditions and, as such, this No Action Alternative would not result in impacts to paleontological resources, nor would it result in the potential benefits of additional knowledge about local paleontological resources that could result from construction of the proposed action. However, in the absence of this project, other renewable energy projects could be constructed elsewhere to meet State and Federal mandates; such projects would be expected to have similar impacts to the proposed action, but in other locations.

No Action Alternative C

Under this alternative, the proposed BSPP would not be approved by the BLM and BLM would amend the CDCA Plan to allow for other solar projects on the site. As a result, it is possible that another solar energy project could be constructed on the site.

Because the CDCA Plan would be amended, it is possible that the site would be developed with the same or a different solar technology. As a result, impacts related to paleontology would result from the construction and operation of the solar technology and would likely be similar to the impacts from the proposed action. Different solar technologies require different amounts of grading and maintenance; however, it is expected that all the technologies would require some grading and maintenance. As such, No Action Alternative C could result in impacts and benefits related to paleontology similar to the impacts under the proposed action.

4.10.4 Discussion of Cumulative Impacts

Impacts on paleontological resources, both beneficial and adverse, resulting from construction, operation, maintenance and decommissioning of the BSPP could result in a cumulative effect with other past, present, or reasonably foreseeable future actions. The geographic scope of the cumulative effects analysis for paleontological resources consists of eastern Riverside County. This geographic scope of cumulative impacts analysis was established based on a conservative estimate of the natural boundaries of the affected resource. It is expected that potential cumulative effects on these resources would be limited to ground disturbing activities associated with construction, and with closure and decommissioning. Operation and maintenance of the BSPP and action alternatives would not be expected to impact paleontological resources. Paleontological resources have been documented in the general area of the site.

Existing conditions within the cumulative impacts area reflect a combination of the natural condition and the effects of past actions and are described in FEIS Chapter 3. Direct and indirect effects of the BSPP and alternatives are analyzed above. Past, present and reasonably foreseeable future actions making up the cumulative scenario are identified in Section 4.1. As the value of paleontological resources is associated with their discovery within a specific geologic host unit, the potential impacts to paleontological resources due to construction activities would be mitigated as required by measures PAL-1 through PAL-7. Implementation of these mitigation measures should result in a net gain to the science of paleontology by allowing fossils that would not otherwise have been found to be recovered, identified, studied, and preserved. Consequently, cumulative impacts, in consideration with other projects that comprise the cumulative scenario within the paleontological cumulative impacts area, should be either neutral (no fossils encountered) or positive (fossils encountered, preserved, and identified). Construction and other ground-disturbing activities associated with past and present projects could add to fossil discoveries which would enhance our common understanding of the prehistoric climate, geology, and geographic setting of the region for the benefit of current and future generations. Cumulative impacts would vary by alternative only to the degree to which direct and indirect impacts would vary by alternative.

4.10.5 Summary of Mitigation Measures

The mitigation measures imposed by the Energy Commission as Conditions of certification for the BSPP would avoid or reduce impacts on the quality of the human environment. These mitigation measures are set forth in Appendix G. To mitigate impacts to paleontological resources, the following measures will be implemented:

PAL-1, PAL-2, PAL-3, PAL-4, PAL-5, PAL-6, PAL-7

4.10.6 Residual Impacts after Mitigation Measures were Implemented

No residual impacts on paleontological resources would exist after mitigation measures were implemented. Implementation of mitigation should result in a net gain to the science of paleontology by allowing fossils that would not otherwise have been found to be recovered, identified, studied, and preserved.

4.10.7 Unavoidable Adverse Impacts

No unavoidable adverse impacts would be expected to occur. Construction and ground-disturbing activities associated with closure and decommissioning, including site restoration, could add to fossil discoveries which would enhance understanding of the prehistoric climate, geology, and geographic setting of the region for the benefit of current and future generations.

4.11 Impacts on Public Health and Safety

4.11.1 Impact Assessment Methodology

To complete this analysis of environmental consequences associated with impacts on public health and safety, the BLM considered potential impacts on the following issue areas: hazardous materials/hazardous waste, waste management, unexploded ordnance (UXO), abandoned mined lands (AML) undocumented immigrants (UDI), transmission line safety and nuisance, traffic and transportation safety, worker safety and fire protection, public and private air strips/airfields, and geologic hazards. The approach for each of these issues is described below.

4.11.2 Hazardous Materials

4.11.2.1 Impact Assessment Methodology

Risk of Accidents and Spills

This analysis includes a review and assessment of the potential for the transportation, handling, and use of hazardous materials to impact the surrounding community. All chemicals were evaluated. This analysis addresses the potential impacts on all members of the population including the young, the elderly, and people with existing medical conditions that may make them more sensitive to the adverse effects of hazardous materials. In order to accomplish this goal, analysis uses the most current public health exposure levels (both acute and chronic) that are established to protect the public from the effects of an accidental chemical release.

In order to assess the potential for released hazardous materials to travel off site and affect the public, this analysis includes several aspects of the proposed use of these materials at the facility. It is recognized that some hazardous materials must be used at power plants. Therefore, this analysis was conducted by examining the choice and amount of chemicals to be used, the manner in which the Applicant would use the chemicals, the manner by which they would be transported to the facility and transferred to facility storage tanks, and the way in which the Applicant plans to store the materials on site.

Engineering and administrative controls concerning hazardous materials use are included as part of the proposed action. Engineering controls are the physical or mechanical systems, such as storage tanks or automatic shut-off valves, that can prevent the spill of hazardous material from occurring, or that can either limit the spill to a small amount or confine it to a small area. Administrative controls are the rules and procedures that workers at the facility must follow that would help to prevent accidents or to keep them small if they do occur. Both engineering and administrative controls can act as methods of prevention or as methods of response and minimization. In both cases, the goal is to prevent a spill from moving off-site and causing harm to the public.

This analysis includes a review and evaluation of the Applicant's proposed use of hazardous materials as described by the Applicant (Solar Millennium 2009a, Section 5.6). To conduct this analysis, the BLM followed these five steps:

Step 1: Review of the chemicals and the amounts proposed for on-site use as listed in Table 5.6-3 of the AFC (Solar Millennium 2009a) and determine the need for and appropriateness of their use.

Step 2: Removed from further assessment those chemicals proposed for use in small amounts or whose physical state is such that there is virtually no chance that a spill would migrate off-site and impact the public.

Step 3: Review and evaluate measures proposed by the Applicant to prevent spills, including engineering controls, such as automatic shut-off valves and different-sized transfer-hose couplings, and administrative controls, such as worker training and safety management programs.

Step 4: Review and evaluate measures proposed by the Applicant to respond to accidents. These measures also included engineering controls such as catchment basins and methods to keep vapors from spreading and administrative controls such as training emergency response crews.

Step 5: Analyze the theoretical impacts on the public of a worst-case spill of hazardous materials, as reduced by the mitigation measures proposed by the Applicant. When mitigation methods proposed by the Applicant would be sufficient, no further mitigation is recommended. If additional mitigation measures would improve the proposed action, additional prevention and response controls are proposed.

Health Risk Assessment

A screening level risk assessment has been performed using simplified assumptions that are intentionally biased toward protection of public health. That is, an analysis was designed that overestimated public health impacts from exposure to the emissions of the proposed action. In reality, it is likely that the actual risks from the proposed action would be much lower than the risks as estimated by the screening level assessment. The risks for screening purposes are based on examining conditions that would lead to the highest, or worst-case, risks and then using those conditions in the study. Such conditions include:

1. using the highest levels of pollutants that could be emitted from the plant;
2. assuming weather conditions that would lead to the maximum ambient concentration of pollutants;
3. using the type of air quality computer model that predicts the greatest plausible impacts;
4. calculating health risks at the location where the pollutant concentrations are estimated to be the highest;
5. assuming that an individual’s exposure to cancer-causing agents occurs continuously for 70 years; and
6. using health-based standards designed to protect the most sensitive members of the population (i.e., the young, elderly, and those with respiratory illnesses).

A screening level risk assessment, at a minimum, would include the potential health effects from inhaling hazardous substances. Some facilities may also emit certain substances that could present a health hazard from non-inhalation pathways of exposure (OEHHA 2003, Tables 5.1, 6.3, 7.1). When these substances are present in facility emissions, the screening level analysis includes the following additional exposure pathways: soil ingestion, dermal exposure, and mother's milk (OEHHA 2003, p. 5-3).

The risk assessment process for the proposed BSPP addresses two categories of health impacts: chronic (long-term) non-cancer effects, and cancer risk (also long-term). Since the only toxic air contaminant (TAC) emitted from this proposed action would be diesel particulate from diesel-fueled, emergency engines, and since only long-term health effects have been established for diesel particulate, no acute (short-term) health effects are calculated for this proposed action.

Chronic health effects are those that arise as a result of long-term exposure to lower concentrations of pollutants. The exposure period is considered to be approximately from 12 percent to 100 percent of a lifetime, or from eight to 70 years (OEHHA 2003, p. 6-5). Chronic health effects include diseases such as reduced lung function and heart disease.

The analysis for non-cancer health effects compares the maximum BSPP contaminant levels to safe levels called *Reference Exposure Levels*, or RELs. These are amounts of toxic substances to which even sensitive people can be exposed and suffer no adverse health effects (OEHHA 2003, p. 6-2). These exposure levels are designed to protect the most sensitive individuals in the population, such as infants, the aged, and people suffering from illness or disease which makes them more sensitive to the effects of toxic substance exposure. The RELs are based on the most sensitive adverse health effect reported in the medical and toxicological literature and include margins of safety. The margin of safety addresses uncertainties associated with inconclusive scientific and technical information available at the time of standard setting and is meant to provide a reasonable degree of protection against hazards that research has not yet identified. The margin of safety is designed to prevent pollution levels that have been demonstrated to be harmful, as well as to prevent lower pollutant levels that may pose an unacceptable risk of harm, even if the risk is not precisely identified as to nature or degree. Health protection is achieved if the estimated worst-case exposure is below the relevant REL. In such a case, an adequate margin of safety exists between the predicted exposure and the estimated threshold dose for toxicity.

Exposure to multiple toxic substances may result in health effects that are equal to, less than, or greater than effects resulting from exposure to the individual chemicals. Only a small fraction of the thousands of potential combinations of chemicals have been tested for the health effects of combined exposures. In conformity with the California Air Pollution Control Officers Association (CAPCOA) guidelines, the health risk assessment assumes that the effects of each substance are additive for a given organ system (OEHHA 2003, pp. 1-5, 8-12). Other possible mechanisms due to multiple exposures include those cases where the actions may be synergistic or antagonistic (where the effects are greater or less than the sum, respectively). For these types of substances, the health risk assessment could underestimate or overestimate the risks.

For carcinogenic substances, the health assessment considers the risk of developing cancer and assumes that continuous exposure to the cancer-causing substance occurs over a 70-year lifetime. The risk that is calculated is not meant to project the actual expected incidence of cancer, but rather a theoretical upper-bound number based on worst-case assumptions.

Cancer risk is expressed in chances per million and is a function of the maximum expected pollutant concentration, the probability that a particular pollutant will cause cancer (called *potency factors* and established by OEHHA), and the length of the exposure period. Cancer risks for each carcinogen are added to yield total cancer risk. The conservative nature of the screening assumptions used means that actual cancer risks due to emissions from the proposed action are likely to be considerably lower than those estimated.

The screening analysis is performed to assess worst-case risks to public health associated with the proposed action. If the screening analysis predicts no significant risks, then no further analysis is required. However, if risks are above the significance level, then further analysis, using more realistic site-specific assumptions, would be performed to obtain a more accurate assessment of potential public health risks.

Chronic Non-cancer Health Effects

The assessment of non-cancer health effects is calculated using a *hazard index*. A hazard index is a ratio comparing exposure from facility emissions to the reference (safe) exposure level. A ratio of less than 1.0 signifies that the worst-case exposure is below the safe level. The hazard index for every toxic substance that has the same type of health effect is added to yield a Total Hazard Index. A Total Hazard Index of less than 1.0 indicates that cumulative worst-case exposures are less than the RELs. Under these conditions, health protection from the proposed action is likely to be achieved, even for sensitive members of the population. In such a case, it is presumed that there would be no significant non-cancer project-related public health impacts.

Cancer Risk

Regulations implementing the provisions of Proposition 65, the Safe Drinking Water and Toxic Enforcement Act of 1986 (Health & Safety Code Section 25249.5 et seq.) were used for guidance to determine a cancer risk significance level. Title 22, California Code of Regulations Section 12703(b) states that “the risk level which represents no significant risk shall be one which is calculated to result in one excess case of cancer in an exposed population of 100,000, assuming lifetime exposure.” This level of risk is equivalent to a cancer risk of 10 in one million, which is also written as 10×10^{-6}. An important distinction is that the Proposition 65 significance level applies separately to each cancer-causing substance, whereas this analysis bases significance on the total risk from all cancer-causing chemicals. Thus, the manner in which the significance level is applied in this analysis is more conservative (health-protective) than that applied by Proposition 65.

As noted earlier, the initial risk analysis for a proposed action is typically performed at a screening level, which is designed to overstate actual risks, so that health protection can be ensured. The analysis also addresses potential impacts on all members of the population including the young, the elderly, people with existing medical conditions that may make them more sensitive to the adverse effects of toxic air contaminants and any minority or low-income populations that are likely to be disproportionately affected by impacts. To accomplish this goal, this analysis uses the most current acceptable public health exposure levels set to protect the public from the effects of airborne toxics. When a screening analysis shows cancer risks to be above the significance level, refined assumptions would likely result in a lower, more realistic risk estimate. Based on refined assumptions, if risk posed by the facility exceeds the significance level of 10 in one million, appropriate measures would be required to reduce the risk to less than significant. If, after all risk reduction measures had been considered, a refined analysis identifies a cancer risk greater than 10 in one million, the risk would be deemed to be significant.

4.11.2.2 Discussion of Direct and Indirect Impacts

Impact Assessment Methodology

Accidents and Spills

The types of hazardous materials that would be used during construction and operation of the BSSP are identified in Table 4.11-1, including the material name, the Chemical Abstracts Service (CAS) Number, the application/use of the chemical, the hazard characteristics, the maximum quantity proposed for use on site, and the CERCLA/SARA reportable quantity (RQ). The purpose of this hazardous materials management analysis is to identify the hazardous materials that would be used at the BSSP site and to determine the affects of their transportation to the site, the use, handling, storage, and disposal on the environment.

The affects are determined by the following:

1. identifying the types and amounts of hazardous substances that BSPP could emit to the environment;

2. estimating amounts of pollutants that people could be exposed to through inhalation, ingestion, and dermal contact; and

3. characterizing potential health risks by comparing worst-case exposure to safe standards based on known health effects.

Small Quantity Hazardous Materials

During the construction phase of the proposed action, hazardous materials proposed for use include paint, solvents, gasoline, diesel fuel, motor oil, lubricants, and welding gases (Solar Millennium 2009a, Section 5.6.3.2). The Applicant proposes to add a concrete batch plant to the construction phase that would require the use of some additional hazardous materials, such as fly ash and calcium chloride. In addition, a fuel depot is proposed for the construction phase that would include two 2,000-gallon on-road vehicle diesel tanks, two 8,000-gallon off-road vehicle diesel tanks, and one 500-gallon gasoline tank. The fuel depot would be constructed with secondary containment areas surrounding each tank and the covered maintenance area, and a concrete pad in the vehicle washing area (Galati & Blek 2010f).

TABLE 4.11-1
HAZARDOUS MATERIALS PROPOSED FOR USE

Material	CAS No.	Application	Hazardous Characteristics	Maximum Quantity On Site	CERCLA SARA RQ[a]
Acetylene	74-86-2	Welding gas	Health: moderate toxicity Physical: combustible, flammable	800 cubic feet total	10,000 pounds
Activated Carbon	7440-44-0	Control of VOCs from HTF expansion tank	Health: non-toxic (when unsaturated), low to moderate toxicity when saturated, depending on the absorbed material Physical: combustible solid	4,000 pounds	N/A
Argon	7440-37-1	Welding gas	Health: low toxicity Physical: non-flammable gas	800 cubic feet	N/A
Calcium Hypochlorite 100 percent	7778-54-3	Water treatment	Health: moderate toxicity Physical: corrosive, irritant	Minimal onsite storage for water treatment, not expected to exceed 50 pounds	10 pounds
Carbon Dioxide	124-38-9		Health: low toxicity Physical: nonflammable gas	15 tons	N/A
Diesel Fuel	68476-34-6		Health: low toxicity Physical: combustible liquid	300 gallons	N/A
Herbicide Roundup® or equivalent	38641-94-0		Health: low toxicity Physical: irritant	No onsite storage, brought on site by licensed contractor, used immediately	N/A
Hydraulic Fluid	64741-89-5		Health: low to moderate toxicity Physical: Class IIIB combustible liquid	500 gallons in equipment, maintenance inventory of 110 gallons in 55-gallon steel drums	N/A
Lube Oil	64742-65-0		Health: low toxicity Physical: N/A	10,000 gallons in equipment and piping, additional maintenance inventory of up to 550 gallons in 55-gallons steel drums	N/A
Mineral Insulating Oil	8042-47-5		Health: low toxicity Physical: N/A	32,000 gallons	N/A
Nitrogen	7727-37-9		Health: low toxicity Physical: non-flammable gas	7,500 pounds	N/A
Oxygen	7782-44-7	Welding gas	Health: low toxicity Physical: oxidizer	800 cubic feet	NA

TABLE 4.11-1 (Continued)
HAZARDOUS MATERIALS PROPOSED FOR USE

Material	CAS No.	Application	Hazardous Characteristics	Maximum Quantity On Site	CERCLA SARA RQ[a]
Oxygen Scavenger Reagent Acetic Acid (60 percent) Iodine (20 percent) De-ionized Water (20 percent)	64-19-7 7553-56-2 7732-18-5	Water treatment	Health: moderate toxicity Physical: corrosive, irritant	Minimal onsite storage for water treatment, not expected to exceed 50 pounds	5,000 pounds
Soil Stabilizer Active Ingredient: acrylic or vinyl acetate polymer or equivalent	N/A		Health: non-toxic Physical: N/A	No onsite storage, supplied in 55 gallon drums or 400-gallon totes, used immediately	N/A
Sulfuric Acid (29.5 percent)	7664-93-9	Contained in batteries	Health: high toxicity Physical: corrosive and water reactive	2,000 gallons	1,000 pounds
Therminol VP-1 Biphenyl (26.5 percent) Diphenyl Ether (73.5 percent)	 92-52-4 101-84-8	Heat transfer fluid in solar array	Health: moderate toxicity Physical: irritant; combustible liquid (Class III-B)	1.3 million gallons	100 pounds N/A

NOTE:
[a] Reportable quantities for a pure chemical, per the Comprehensive Environmental Response, Compensation, and Liability Act.

SOURCE: Millennium 2009a, Table 5.6-3.

No acutely toxic hazardous materials would be used on site during construction, and none of these materials would pose a significant potential for off-site impacts as a result of the quantities on site, their relative toxicity, their physical state, and/or their environmental mobility. Any impact of spills or other releases of these materials would be limited to the site because of the small quantities involved, their infrequent use (and therefore reduced chances of release), and/or the temporary containment berms used by contractors. Petroleum hydrocarbon-based motor fuels, mineral oil, lube oil, and diesel fuel are all very low volatility and represent limited off-site hazards even in larger quantities.

During operations, hazardous chemicals would be used such as cleaning agents, water treatment chemicals, welding gasses, oils, activated carbon, and other various chemicals.

Large Quantity Hazardous Materials

The proposed action would require the use of large quantities of natural gas and Therminol VP1. Following are discussions relative to the proposed action's use of these hazardous materials and any associated effects.

Natural gas at the proposed facility only would be used to fuel the auxiliary boilers and HTF heaters. Natural gas poses a fire and/or possible explosion risk because of its flammability. Natural gas is composed of mostly methane, but also contains ethane, propane, nitrogen, butane, isobutene, and isopentane. It is colorless, odorless, tasteless and lighter than air. Natural gas can cause asphyxiation when methane is 90 percent in concentration. Methane is flammable when mixed in air at concentrations of five-14 percent, which is also the detonation range. Natural gas, therefore, poses a risk of fire and/or possible explosion if a release occurs under certain specific conditions. However, due to its tendency to disperse rapidly (Lees 1998 as cited in the CEC RSA June 2010), natural gas is less likely to cause explosions than many other fuel gases such as propane or liquefied petroleum gas, but can explode under certain confined conditions (as demonstrated by the natural gas detonation in Belgium in July 2004). The National Fire Protection Association (NFPA) code 85A requires both the use of double-block and bleed valves for gas shut off and automated combustion controls.

Natural gas pipelines must be designed to meet the appropriate level of California Public Utilities Commission (CPUC) General Order 112 standards and 49 CFR 192 standards. CPUC General Order 112-E, Section 125.1 requires that, at least 30 days prior to the construction of a new pipeline, the owner must file a report with the commission that will include a route map for the pipeline. In addition, natural gas pipelines must be constructed and operated in accordance with the Federal Department of Transportation (DOT) regulations, including Title 49, Code of Federal Regulations (CFR), Parts 190, 191, and 192 (see Table 1-1, *LORS*). Compliance with existing LORS would be sufficient to ensure minimal risks of pipeline failure.

At the BSPP site, natural gas would not be stored on-site but delivered by the Southern California Gas Company (SCG) via a new 10-mile pipeline (shown in Figure 2a) that would connect to an existing main south of I-10. Approximately eight miles of pipeline would be installed within the site boundaries and two miles off-site (Solar Millennium 2009a, Section 2.5.5.1). The risk of a fire and/or explosion on site could be reduced through adherence to applicable codes and the development and implementation of effective safety management practices. The use of double-block and bleed valves for gas shut off and automated combustion controls, as required by NFPA code 85A, would reduce the likelihood of an explosion in gas-fired equipment. The safety management plan proposed by the Applicant would address the handling and use of natural gas, and would reduce the potential for equipment failure because of either improper maintenance or human error.

Therminol VP1™ (a biphenyl) is the heat transfer fluid (HTF) that would be used in the solar panels to collect solar heat and transfer it in order to generate steam to run the steam turbines. Therminol is a mixture of 73.5 percent diphenyl ether and 26.5 percent biphenyl, and is a solid at temperatures below 54 °F. Therminol can therefore be expected to remain liquid if a spill occurs.

Approximately 1,300,000 gallons of HTF would be stored at the BSPP contained in the pipes and heat exchanger. Isolation valves would be placed throughout the HTF piping system designed to automatically block off sections of the piping in which a loss of pressure is detected (Solar Millennium 2009a, Section 5.6.3.3). While the risk of off-site migration is minimal, Therminol is highly flammable and fires have occurred at other solar generating stations that use it.

Construction-related Risks to Public Health

Potential risks to public health during construction could be associated with exposure to toxic substances in contaminated soil disturbed during site preparation, as well as diesel exhaust from heavy equipment operation. Criteria pollutants associated with the operation of heavy equipment and particulate matter from earth moving are discussed in Chapter 3.2 and 4.2 (Air Resources).

The operation of construction equipment would result in air emissions from diesel-fueled engines. Diesel emissions would be generated from sources such as trucks, graders, cranes, welding machines, electric generators, air compressors, and water pumps. Although diesel exhaust contains criteria pollutants such as nitrogen oxides, carbon monoxide, and sulfur oxides, it also includes a complex mixture of thousands of gases and fine particles. These particles are primarily composed of aggregates of spherical carbon particles coated with organic and inorganic substances. Diesel exhaust contains over 40 substances that are listed by the U.S. Environmental Protection Agency (USEPA) as hazardous air pollutants and by the California Air Resources Board (ARB) as toxic air contaminants.

Exposure to diesel exhaust may cause both short- and long-term adverse health effects. Short-term effects can include increased cough, labored breathing, chest tightness, wheezing, and eye and nasal irritation. Long-term effects can include increased coughing, chronic bronchitis, reductions in lung function, and inflammation of the lung. Epidemiological studies also strongly suggest a causal relationship between occupational diesel exhaust exposure and lung cancer.

Based on a number of health effects studies, the Scientific Review Panel (SRP)[1] on Toxic Air Contaminants recommended a chronic REL for diesel exhaust particulate matter of five micrograms per cubic meter ($\mu g/m^3$) and a cancer unit risk factor of $3x10^{-4}$ ($\mu g/m^3$)[1] (SRP 1998, p. 6). [The SRP, established pursuant to California Health and Safety Code Section 39670, evaluates the risk assessments of substances proposed for identification as toxic air contaminants by ARB and the Department of Pesticide Regulation (DPR). The SRP reviews the exposure and health assessment reports and the underlying scientific data upon which the reports are based.] The SRP did not recommend a value for an acute REL, since available data in support of a value was deemed insufficient. On August 27, 1998, ARB listed particulate emissions from diesel-fueled engines as a toxic air contaminant and approved SRP's recommendations regarding health effect levels.

Construction of the BSPP, including site preparation, is anticipated to take place over a period of 69 months (Solar Millennium 2009a, Section 2.5.7). As noted earlier, assessment of chronic (long-term) health effects assumes continuous exposure to toxic substances over a significantly longer time period, typically from eight to 70 years.

In order to model the cancer risk from construction emissions, the Applicant divided the total amount of diesel particulate matter (DPM) by the exposure period of 70 years which is typically used to assess health risks. The Applicant's modeling of worst-case construction emissions (using a 100-meter spacing receptor grid) found that the cancer risk was estimates to be 2.97 in one million at the point of maximum impact (PMI), below the level of significance of 10 in one million. The chronic hazard index was found to be 0.00178 at the PMI, below the level of significance of 1.0. The PMI was located along the eastern site boundary in a remote area that is not frequently accessed by the public (AECOM2010a, DR-PH-157).

Emissions Sources

The emissions sources at the proposed BSPP site would include four auxiliary boilers, four HTF heaters, four two-cell cooling towers, four diesel-fueled emergency generators, four diesel-fueled emergency fire pumps, four HTF expansion/ullage systems, and DPM from maintenance vehicles (mirror washing, weed abatement, soil stabilizer applicators, and water trucks).

As noted earlier, the first step in a health risk assessment is to identify potentially toxic compounds that may be emitted from the facility. Table 5.10-4 of the AFC lists toxic air contaminants that may be emitted by the proposed action along with the toxicity values used to calculate their health effects. Toxicity values include RELs which are used to calculate short-term and long-term non-cancer health effects, and cancer unit risks, which are used to calculate the lifetime risk of developing cancer, as published in the OEHHA Guidelines (OEHHA 2003).

[1] The SRP, established pursuant to California Health and Safety Code Section 39670, evaluates the risk assessments of substances proposed for identification as Toxic Air Contaminants by ARB and the Department of Pesticide Regulation (DPR). The SRP reviews the exposure and health assessment reports and the underlying scientific data upon which the reports are based.

Table 4.11-2 lists toxic emissions and shows how each contributes to the health risk analysis. For example, the first row shows that oral exposure to benzene is not of concern, but if inhaled, benzene could have cancer, chronic (long-term) non-cancer health effects, and acute (short-term) effects.

TABLE 4.11-2
TYPES OF HEALTH IMPACTS AND EXPOSURE ROUTES ATTRIBUTED TO TOXIC EMISSIONS*

Substance	Oral Cancer	Oral Non-cancer	Inhalation Cancer	Non-cancer (Chronic)	Non-cancer (Acute)
Benzene			X	X	X
Biphenyl					
Chloroform		X	X	X	
Chromium (Hexavalent)			X	X	X
Copper					X
Dichlorobenzene			X	X	
Diesel Exhaust			X	X	
Formaldehyde			X	X	X
Hexane				X	
Naphthalene		X	X	X	
Polycyclic Aromatic Hydrocarbons (PAHs)	X	X	X	X	
Vanadium				X	X
Toluene				X	X

SOURCE: OEHHA 2003 Appendix L and Solar Millennium 2009a, Table 5.10-3 and Table DR-PH-163-1 (AECOM2010a).

Appendix E.3 and Tables 5.10-5 through 5.10-8 of the Palo Verde Solar I AFC (August 2009) list non-criteria pollutants and their emission factors that may be emitted from the sources listed above. Emission factors for most plant components were obtained from the USEPA emission factors database (AP-42) and the California Air Toxics Emission Factors (CATEF II) database. Data from existing solar plants was used to estimate emissions from the HTF expansion tanks, which consist of benzene (calculated as 99.99 percent) and biphenyl (calculated as 0.01 percent). Since biphenyl has not been assigned a health risk factor, it was not included in the HRA calculations (Solar Millennium 2009a, Section 5.10.3.2).

In response to CEC Data Request 161, the Applicant stated that volatile organic compound (VOC) emissions from the HTF expansion tank are estimated to be 137 pounds per MW per year, based on comparable thermal solar projects and on an operational mass balance for the ullage system developed by the Applicant's solar design engineer. In regards to the composition of VOC emissions from the HTF expansion tank, the Applicant notes that HTF breakdown products may include benzene, toluene, xylene, phenol, naphthalene, methane, ethane, benzenol, and biphenyl. In the health risk assessment conducted for this action, the Applicant modeled the entire amount of HTF emissions as benzene since it is the compound with the highest health risk factors for cancer and non-cancer effects (AECOM2010a).

In response to CEC Data Requests 158 and 160, the Applicant provided total daily and yearly DPM emissions from maintenance vehicles and total cumulative daily and yearly emissions of particulate matter down to 2.5 micrometers in diameter (PM2.5), including both fugitive dust and DPM. The total DPM emissions from maintenance vehicles were estimated to be 8.04 pounds per year and the total PM2.5 emissions were estimated to be 8,555 pounds per year. DPM emissions are therefore negligible when compared to non-exhaust emissions, the majority of which (over 80 percent) is attributed to mirror washing trucks. The estimated DPM emissions from maintenance vehicles were added to the Applicant's revised health risk assessment.

Since the BSPP intends to use groundwater for cooling, the potential exists for TACs present in the water to disperse into the air via cooling tower drift. In response to Data request 163, the Applicant conducted water sampling and analysis of the on-site well water for VOCs, petroleum hydrocarbons, pesticides, herbicides, minerals and metals. The results are presented in Table DR-PH-163-1, showing that four metals considered as TACs are present in the well water. Emissions calculations for the health risk assessment were revised to include the metals detected in the groundwater samples (AECOM2010a).

Emissions Levels

Once potential emissions are identified, the next step is to quantify them by conducting a "worst case" analysis. Maximum hourly emissions are required to calculate acute (one-hour) non-cancer health effects, while estimates of maximum emissions on an annual basis are required to calculate cancer and chronic (long-term) non-cancer health effects.

The next step in the health risk assessment process is to estimate the ambient concentrations of toxic substances that may result from the proposed action. This is accomplished by using a screening air dispersion model and assuming conditions that result in maximum impacts. The Applicant's screening analysis was performed using the ARB/OEHHA Hotspots Analysis and Reporting Program (HARP) modeling program. Finally, ambient concentrations were used in conjunction with RELs and cancer unit risk factors to estimate health effects which might occur from exposure to facility emissions. Exposure pathways, or ways in which people might come into contact with toxic substances, include inhalation, dermal (through the skin) absorption, soil ingestion, consumption of locally grown plant foods, and mother's milk.

The above method of assessing health effects is consistent with OEHHA's Air Toxics Hot Spots Program Risk Assessment Guidelines (OEHHA 2003) referred to earlier, and results in the following health risk estimates.

Proposed Action

The Applicant's revised screening health risk assessment, including all sources as presented in DR-PH-159, resulted in a maximum acute hazard index of 0.089 and a maximum chronic hazard index of 0.00053 at the PMI. The worst-case cancer risk was found to be 1.11 at the PMI. As Table 4.11-3 shows, both acute and chronic hazard indices are under the significance level of 1.0, and cancer risk is below the significance level of 10 in 1,000,000, indicating that no short- or long-term adverse health effects are expected.

TABLE 4.11-3
OPERATION HAZARD/RISK AT POINT OF MAXIMUM IMPACT

Type of Hazard/Risk	Hazard Index/Risk	Significance Level	Significant?
Acute Noncancer	0.089	1.0	No
Chronic Noncancer	0.00053	1.0	No
Individual Cancer	1.11 in one million	10 in one million	No

SOURCE: Table DR-PH-159-1 of applicant's data response set 1 (AECOM2010a).

Thorough evaluation of the risk assessment was conducted and the results are presented in the BSPP AFC (09-AFC-6) and in the "Responses to CEC Staff Public Health Data Requests 157-164" (January 2010) in order to determine if the Applicant's modeling results are transparent, verifiable, and accurate. Modeling files provided by the Applicant also were reviewed. It has been determined that standard procedures were followed and appropriate assumptions were made in the Applicant's analysis of potential health risks and, therefore, that the conclusions of impacts on public health being less than significant are based on a verifiable and appropriate Human Health Risk Assessment.

Construction Phase Analysis

For the construction phase analysis, atmospheric dispersion modeling of DPM emissions from construction equipment and vehicles was conducted by the Applicant using the OFFROAD2007 Model. Total estimated on-site PM emissions from diesel construction equipment exhaust over the estimated six-year construction period was provided in the January 2010 data responses and is 33,513 pounds. The corresponding annual DPM emission rate for exhaust emissions from onsite construction equipment and vehicles is expected to be 479 pounds per year (lb/yr) for residential exposure over a 70 year lifetime.

The maximum predicted offsite cancer risk due to diesel exhaust emissions was reported by the Applicant to be 2.97 in a million, based on the diesel cancer inhalation unit risk of 0.0003 $(ug/m^3)^{-1}$. Chronic HI was determined to be 0.0018 (non-cancer chronic REL is 5 ug/m^3). The maximum impacted receptor is located on the eastern fenceline of the site.

Operations-related Risks to Public Health

For the operations-phase analysis, atmospheric dispersion modeling of facility emissions was conducted by the Applicant using AERMOD. Local meteorological data were used, building downwash effects were included for 27 buildings, and 1,837 grid receptors were modeled.

A total of 36 emitting units were modeled by the Applicant for facility operations including:

a. 4 auxiliary boilers

b. 8 cooling tower stacks

c. 4 HTF (heat transfer fluid) heaters

d. 4 ullage system vents

e. 4 diesel emergency generators

f. 4 diesel firewater pumps

g. Mobile sources involved in routine operations (e.g., mirror washing trucks, trucks used in weed abatement, trucks used in application of soil stabilizer, water trucks)

h. Total of 36 emitting sources evaluated at the proposed facility.

The HTF (heat transfer fluid) would be circulated through the solar field where it would be heated by sunlight concentrated on the receiver tube elements of the solar collectors. HTF is comprised biphenyl/diphenyl oxide. Thermal decomposition of HTF results in decomposition products that can include benzene, phenol and toluene. In modeling HTF fugitive loss emissions, the Applicant assumed that 99 percent of the emissions would be comprised of benzene.

The HARP On-Ramp program was used to load the Applicant's AERMOD results into the CARB/OEHHA Hotspots Analysis and Reporting Program (HARP), Version 1.4a for the risk analysis. Exposure pathways assessed include inhalation, ingestion of home-grown produce, dermal absorption, soil ingestion and mother's milk. Emission factors obtained from the Applicant's modeling files and used in this analysis are listed in Table 4.11-4. For risk calculations using the HARP model, the "Derived (Adjusted) Method" was used for cancer risk and the "Derived (OEHHA) Method" was used for chronic non-cancer hazard.

Cancer risk and chronic and acute hazard index values are compared to results reported by the Applicant in the January 2010 response to CEC data requests in Table 4.11-5. Risk and hazard were determined at the PMI under the 70 year residential scenario, located on the eastern fenceline. There is a residential development approximately 2.1 miles south of the site and a mobile home is located approximately 725 feet east of the site, although specific modeling of this neighborhood and mobile home was not presented by the Applicant. No sensitive receptors were identified within three miles of the site.

Table 4.11-6 presents substance- and source-specific cancer risks at the PMI. Analysis of this table indicates that 91 percent of the cancer risk at the PMI is attributed to emissions from two sources: 81 percent due to emissions from the HTF ullage system and 10 percent due to emissions from the emergency diesel generator. Additional analysis indicates that 98 percent of cancer risk at the PMI is attributed to emissions of two substances: 81 percent due to benzene emissions (from the auxiliary boiler, the HTF heater and ullage system) and 17 percent due to DPM emissions (from onsite mobile sources as well as the two diesel engines).

Cooling Towers

One small wet cooling tower for each power block is proposed by the Applicant to cool ancillary equipment. In addition to being a source of potential TACs, the possibility exists for bacterial growth to occur in the cooling towers, including Legionella. Legionella is a bacterium that is ubiquitous in natural aquatic environments and is also widely distributed in man-made water systems. It is the principal cause of legionellosis, otherwise known as Legionnaires' Disease, which is similar to pneumonia. Transmission to people results mainly from inhalation or

TABLE 4.11-4
OPERATION-PHASE EMISSION RATES

Substance	Annual Average Emissions (lbs/year)	Maximum 1-Hour Emissions (lbs/hour)
Emission Rates from Each of 4 Auxiliary Boilers		
Benzene	1.14E-01	7.00E-05
DiClBenzenes	6.50E-02	4.00E-05
Formaldehyde	4.06E+00	2.50E-02
Hexane	9.75E+01	6.00E-02
Naphthalene	3.30E-02	2.00E-05
Toluene	1.84E-01	1.13E-04
PAHs-w/o	3.23E-03	2.00E-06
Emission Rates from Each of 8 Cooling Tower Cells		
Chloroform	5.60E+01	1.50E-02
Hex Chrome	2.47E-05	6.68E-09
Copper	2.46E-04	6.65E-08
Vanadium	1.33E-04	3.60E-08
Zinc	6.05E-03	1.64E-06
Emission Rates from Each of 4 HTF Heaters		
Benzene	3.50E-02	7.00E-05
DiClBenzenes	2.00E-02	4.00E-05
Formaldehyde	1.25E+00	2.50E-02
Hexane	3.00E+01	6.00E-02
Naphthalene	1.00E-02	2.00E-05
Toluene	5.70E-02	1.13E-04
PAHs-w/o	9.93E-04	2.00E-06
Emission Rates from Each of 4 Ullage System Vents		
Benzene	3.00E+02	7.50E-01
Biphenyl	3.00E-02	7.50E-05
Emission Rates from Operation of each of 4 Emergency Generators		
Diesel PM	48.3	-
Emission Rates from Operation of Each of 4 Emergency Fire Pumps		
Diesel PM	4.96	-
Emission Rates from On-Site Maintenance Vehicles		
Diesel PM	0.64 – 1.16	-

SOURCE: CEC RSA (June 2010) Public Health Table 5.

TABLE 4.11-5
CANCER RISK AND CHRONIC HAZARD DUE TO OPERATION PHASE EMISSIONS

	EIS Analysis			Applicant's Analysis		
	Cancer Risk (per million)	Acute HI	Chronic HI	Cancer Risk (per million)	Acute HI	Chronic HI
PMI (for cancer risk and chronic HI, Rec#1342)	1.12	0.082	0.00053	1.11	-	0.00053
PMI (acute HI, Rec#1730)	0.94	0.089	0.00038	-	0.089	-
MEIR (Rec #89)	0.35	0.044	0.00013	0.35	0.044	0.00013

Cancer PMI (point of maximum impact, Rec. #1342) is located on the eastern fenceline.

SOURCE: CEC RSA June 2010 Public Health Table 6.

TABLE 4.11-6
RESULTS OF ANALYSIS: CONTRIBUTION TO TOTAL CANCER RISK BY INDIVIDUAL SUBSTANCES FROM ALL SOURCES AT THE POINT OF MAXIMUM IMPACT (PMI)

Substance	Auxiliary Boilers (4 units)	Cooling Tower (8 stacks)	Diesel Generator (4 units)	Diesel Firewater Pump (4 units)
DieselExhPM			1.13E-07	3.50E-08
Benzene	5.09E-11			
Chloroform		1.06E-08		
Cr(VI)		1.25E-10		
Formaldehyde	3.80E-10			
Naphthalene	1.76E-11			
PAHs-w/o	8.11E-09			
Total	***8.56E-09***	***1.07E-08***	***1.13E-07***	***3.50E-08***

Substance	HTF Heater (4 units)	Ullage System (4 sources))	On-site Mobile Sources (8 sources)	Total Cancer Risk
DieselExhPM			4.34E-08	1.91E-07
Benzene	1.57E-11	9.07E-07		9.07E-07
Chloroform				1.06E-08
Cr(VI)				1.25E-10
Formaldehyde	1.18E-10			4.98E-10
Naphthalene	5.37E-12			2.30E-11
PAHs-w/o	2.50E-09			1.06E-08
Total	***2.64E-09***	***9.07E-07***	***4.34E-08***	***1.12E-06***

SOURCE: CEC RSA June 2010 Public Health Table 7.

aspiration of aerosolized contaminated water. Untreated or inadequately treated cooling systems, such as industrial cooling towers and building heating, ventilating, and air conditioning systems, have been correlated with outbreaks of legionellosis.

Legionella can grow symbiotically with other bacteria and can infect protozoan hosts. This provides Legionella with protection from adverse environmental conditions, including making it more resistant to water treatment with chlorine, biocides, and other disinfectants. Thus, if not properly maintained, cooling water systems and their components can amplify and disseminate aerosols containing Legionella.

The State of California regulates recycled water for use in cooling towers in Title 22, Section 60303 of the California Code of Regulations. This section requires that, in order to protect workers and the public who may come into contact with cooling tower mists, chlorine or another biocide must be used to treat the cooling system water to minimize the growth of Legionella and other micro-organisms. This regulation does not apply to the BSPP since the proposed action intends to use groundwater supplied from on-site wells; however, the potential remains for Legionella growth in cooling water at the BSPP due to nutrients found in groundwater.

The USEPA published an extensive review of Legionella in a human health criteria document (USEPA 1999). The USEPA noted that Legionella may propagate in biofilms (collections of microorganisms surrounded by slime they secrete, attached to either inert or living surfaces) and that aerosol-generating systems such as cooling towers can aid in the transmission of Legionella from water to air. The USEPA has inadequate quantitative data on the infectivity of Legionella in humans to prepare a dose-response evaluation. Therefore, sufficient information is not available to support a quantitative characterization of the threshold infective dose of Legionella. Thus, the presence of even small numbers of Legionella bacteria presents a risk - however small - of disease in humans.

In February of 2000 the Cooling Technology Institute (CTI) issued its own report and guidelines for the best practices for control of Legionella (CTI 2000). The CTI found that 40-60 percent of industrial cooling towers tested were found to contain Legionella. More recently, a 2005 report of testing in cooling towers in Australia that found the rate of Legionella presence in cooling tower waters to be extremely low, approximately three to six percent. The cooling towers all had implemented aggressive water treatment and biocide application programs.

To minimize the risk from Legionella, the CTI noted that consensus recommendations included minimization of water stagnation, minimization of process leads into the cooling system that provide nutrients for bacteria, maintenance of overall system cleanliness, the application of scale and corrosion inhibitors as appropriate, the use of high-efficiency mist eliminators on cooling towers, and the overall general control of microbiological populations.

Good preventive maintenance is very important in the efficient operation of cooling towers and other evaporative equipment (ASHRAE 1998). Preventive maintenance includes having effective drift eliminators, periodically cleaning the system if appropriate, maintaining mechanical components in working order, and maintaining an effective water treatment program with appropriate biocide concentrations. Most water treatment programs are designed to minimize scale, corrosion, and biofouling and not to control Legionella.

The efficacy of any biocide in ensuring that bacterial and in particular Legionella growth, is kept to a minimum is contingent upon a number of factors including but not limited to proper dosage amounts, appropriate application procedures and effective monitoring.

Alternatives

Reconfigured Alternative

If the Reconfigured Alternative were selected, a utility-scale solar energy generating facility would be developed on the site that would have the same generating capacity as the proposed action. Types and amounts of hazardous materials would be substantially similar to the proposed action. Compliance with applicable LORS and implementation of standard engineering and administrative controls to prevent and control accidental releases of hazardous materials would be expected. Consequently, attendant public health and safety risks would be comparable.

Reduced Acreage Alternative

If the Reduced Acreage Alternative were selected, a utility-scale solar energy generating facility would be developed on the site that would have approximately 25 percent less generating capacity as the proposed action (because of the development of three, instead of four, Units). Types of hazardous materials would be substantially similar to the proposed action, although the amounts required would be less, commensurate with the reduction by one Unit. As a result, attendant public health and safety risks would be slightly reduced.

No Action Alternative A

If No Action Alternative A were selected, there would be no direct or indirect impacts on public health and safety relating to hazardous materials, because the requested ROW application would be denied, no ROW grant authorized, and no amendment of the CDCA Plan would be approved to associate the site with solar energy development at this time. In this case, no cumulative impacts presently would be caused or contributed to under this alternative.

However, No Action Alternative A leaves open the possibility that a subsequent renewable energy facility application could be submitted that would be similar to, greater or less than, the proposed action. Depending on the technology proposed, different hazardous materials impacts could result. For example, if “power tower” or PV were proposed for a solar project instead of solar trough technology, no impacts relating the proposed HTF would result because no HTF would be required. Risks and hazards relating to accidents and spills, human health, small quantity hazardous materials, natural gas, construction risks and emissions could be similar to the proposed action.

No Action Alternative B

If No Action Alternative B were selected, there would be no direct or indirect impacts on public health and safety relating to hazardous materials, because the requested ROW application would be denied, no ROW grant authorized, and the CDCA Plan would be amended to identify the site as unsuitable for any type of solar energy development. No cumulative impacts would be caused or contributed to under this alternative.

No Action Alternative C

If No Action Alternative C were selected, there would be no direct or indirect impacts on public health and safety relating to hazardous materials, because the requested ROW application would be denied, no ROW grant authorized. In this case, no cumulative impacts presently would be caused or contributed to under this alternative.

However, under No Action Alternative C, the CDCA Plan would be amended to identify the site as suitable for any type of solar energy development. Accordingly, hazardous materials impacts associated with No Action Alternative C would depend on the solar technology proposed, size of the project and other variables. Impacts similar in nature to those of the proposed action could be expected to result from risks and hazards relating to accidents and spills, human health, small quantity hazardous materials, large quantity hazardous materials, construction and emissions. Such impacts could be similar to, greater or less than those of the proposed action.

4.11.2.3 Discussion of Cumulative Impacts

Impacts resulting from construction, operation, maintenance and decommissioning of the BSPP could result in a cumulative impact relating to hazardous materials, including the use, storage, and transport of hazardous materials, with other past, present, or reasonably foreseeable future actions. For example, cumulative impacts would exist or could result from the interaction of one or more controlled or uncontrolled release of hazardous materials, e.g., airborne or subsurface plumes, within the same geographic area, and during the same timeframe. The geographic area of the cumulative impacts analysis area for hazardous materials management is the general project area, including the sites and the vicinity of the sites. BLM has identified this geographic area as large enough to provide a reasonable basis for evaluating cumulative hazardous materials-related impacts. The relevant timeframe within which incremental impacts could be additive, synergistic or otherwise combine includes the construction period for the proposed action, its anticipated 30-40 year lifespan and the period of time required for closure and decommissioning of the BSPP and alternatives.

Existing conditions within the cumulative impacts area reflect a combination of the natural condition and the effects of past actions and are described in the PA/FEIS Chapter 3. Direct and indirect effects of the BSPP are analyzed above. Past, present and reasonably foreseeable future actions making up the cumulative scenario are identified in Section 4.1.

Relevant past actions include one existing combined-cycle natural gas power plant (i.e., the Blythe Energy Project), two prisons, and other facilities that would continue to manage hazardous materials in the cumulative impacts area during the relevant timeframe. It is expected that these facilities use, store, and/or transport hazardous materials, including aqueous ammonia to control the emissions of NOx in the case of the Blythe Energy Project. However, these facilities are not expected to contribute incremental hazardous materials management-related impacts that could overlap with those of the proposed action within the cumulative impacts area during the relevant timeframe, thereby causing or contributing to a cumulative effect, because they are subject to myriad safeguards, including the laws, ordinances, regulations, and standards (LORS) summarized in Table 1-1, which are intended to prevent uncontrolled releases and to control such releases in the event they occur.

In addition to the proposed action, other future foreseeable actions include 12 solar power plants planned along I-10, including the proposed Palen and Genesis solar projects, a combined-cycle natural gas power plant (i.e., Blythe Energy Project II), a communication tower, Eagle Mountain Pumped Storage Project, Eagle Mountain Landfill, a raceway, and several electric transmission infrastructure projects. Five of the 12 solar plants would be thermal and seven would be photovoltaic. Construction of the proposed thermal power plants would cause increases similar to the proposed action in the volume of heat transfer fluid and other hazardous materials required for the operation of such plants within the cumulative impacts area. These facilities would require the use, storage, and transport of various types of hazardous materials. Additional hazardous materials management is expected to occur at these facilities; however, these facilities are not expected to contribute incremental hazardous materials management-related impacts that could overlap with those of the proposed action within the cumulative impacts area during the relevant timeframe, thereby causing or contributing to a cumulative effect, because each such facility would be subject to the LORS and other safeguards that would prevent uncontrolled releases and to control such releases in the event they occur.

Collectively, the impacts associated with the construction, operation and maintenance, and closure and decommissioning of the BSPP and alternatives is not expected to cause or contribute to cumulative effects relating to hazardous materials management because of the nature of the materials used, compliance with applicable LORS and the engineering and administrative controls that would be implemented to prevent and control accidental releases of hazardous materials. Accordingly, it is unlikely that that a vapor or groundwater plume would mingle (combine) to produce an airborne or waterborne risk to the human environment should an accidental release occur.

4.11.2.4 Summary of Mitigation Measures

The implementation of the mitigation measures imposed by the Energy Commission as Conditions of Certification for the BSPP also would avoid or reduce impacts on the quality of the human environment. These mitigation measures are set forth in Appendix G. The following address impacts on public health and safety:

HAZ-1, HAZ-2, HAZ-3, HAZ-4, HAZ-5, HAZ-6

Public Health-1

SOIL&WATER-18

4.11.2.5 Residual Impacts after Mitigation Measures were Implemented

Although unlikely, it is possible that even after the implementation of the Mitigation Measures identified above, an accidental release could occur and could cause an airborne or waterborne risk to the human environment.

4.11.2.6 Unavoidable Adverse Impacts

Unavoidable adverse impacts would be the same as the residual impacts described above.

4.11.3 Non-hazardous Waste Management

This section presents an analysis of issues associated with wastes generated from the construction, operation and closure/decommissioning of the proposed action. The technical scope of this analysis encompasses solid and liquid wastes existing on site and wastes that would likely be generated during facility construction, operation and closure/decommissioning. Management and discharge of wastewater is addressed in the *Water Resources* section of this document. Additional information related to waste management may also be covered in the *Worker Safety* and *Hazardous Materials Management* sections of this document.

4.11.3.1 Impact Assessment Methodology

Projected wastes were evaluated in terms of landfill capacity and LORS compliance. The federal, state, and local environmental LORS listed in Table 1-1 have been established to ensure the safe and proper management of both solid and hazardous wastes in order to protect human health and the environment.

4.11.3.2 Discussion of Direct and Indirect Impacts

Proposed Action

Construction activities would generate an estimated 70 cubic yards per week of non-hazardous solid wastes, consisting of scrap wood, concrete, steel, glass, plastic, paper, insulating materials, aluminum, and food waste. For all construction waste, recyclable materials would be separated and removed to recycling facilities; non-recyclable materials would be disposed of at a Class III landfill.

Non-hazardous liquid wastes would be generated during construction, and would include storm water runoff, sanitary waste, dust suppression drainage, and equipment wash water. Storm water runoff would be managed in accordance with appropriate LORS. Sanitary wastes would be pumped to tanker trucks by licensed contractors for transport to a sanitary water treatment plant. Potentially contaminated equipment wash water would be contained at designated wash areas and transported to a wastewater treatment facility via a licensed hauler. Please see the *Water Resources* section of this document for more information on the management of project wastewater.

Site preparation and construction of all four phases of the BSPP would last approximately 69 months and generate non-hazardous, universal, and hazardous wastes in solid and liquid forms. Before construction begins, the Applicant would develop and implement a Construction Waste Management Plan to ensure that waste is recycled when possible and properly landfilled as necessary. Mitigation Measure WASTE-4 would require the project owner to submit the Construction Waste Management Plan to the BLM and Energy Commission at least 30 days prior to the start of construction activities.

Anticipated universal waste generated during construction would include spent batteries (e.g., alkaline dry cell, nickel-cadmium, and lithium ion) and empty or nonempty aerosol cans. Estimated quantities are 70 spent batteries (in 69 months) and eight drums of aerosol cans (per year). Spent batteries and aerosol cans would be recycled by licensed universal waste handlers.

Alternatives

Reconfigured Alternative

If the Reconfigured Alternative were selected, a utility-scale solar energy generating facility would be developed on the site that would have the same generating capacity as the proposed action. Types and amounts of non-hazardous solid and liquid wastes would be substantially similar to the proposed action. Compliance with applicable LORS would be expected. Consequently, attendant public health and safety risks would be comparable to the proposed action.

Reduced Acreage Alternative

If the Reduced Acreage Alternative were selected, a solar energy generating facility would be developed on the site that would generate non-hazardous solid and liquid waste similar to, but approximately 25 percent less than, the proposed action. Consequently, public health and safety risks would be similar to, but slightly less than, the proposed action.

No Action Alternative A

If No Action Alternative A were selected, there would be no direct or indirect impacts on public health and safety relating to non-hazardous waste, because the requested ROW application would be denied, no ROW grant authorized, and no amendment of the CDCA Plan would be approved to associate the site with solar energy development at this time. In this case, no cumulative impacts presently would be caused or contributed to under this alternative.

However, No Action Alternative A leaves open the possibility that a subsequent renewable energy facility application could be submitted that would be similar to, greater or less than, the proposed action. Solid and liquid wastes of such a project could be similar to, greater or less than, the proposed action.

No Action Alternative B

If No Action Alternative B were selected, there would be no direct or indirect impacts on public health and safety relating to non-hazardous solid and liquid waste, because the requested ROW application would be denied, no ROW grant authorized, and the CDCA Plan would be amended to identify the site as unsuitable for any type of solar energy development. No cumulative impacts would be caused or contributed to under this alternative.

No Action Alternative C

If No Action Alternative C were selected, there would be no direct or indirect impacts on public health and safety relating to non-hazardous waste. No cumulative impacts presently would be caused or contributed to under this alternative. However, under No Action Alternative C, the CDCA Plan would be amended to identify the site as suitable for any type of solar energy development. Accordingly, solid and liquid waste-related impacts associated with No Action Alternative C would depend on the solar technology proposed, size of the project and other variables. Resulting impacts could be similar to, greater or less than those of the proposed action.

4.11.3.3 Discussion of Cumulative Impacts

Cumulative impacts can occur within 1-10/Eastern Riverside County area if implementation of the BSPP could combine with those of other local or regional projects. Cumulative impacts could also occur as a result of development of some of the many proposed solar and wind development projects and other non-energy projects that have been or are expected to be under consideration by the BLM, the Energy Commission and Riverside County during the life of the proposed action, from construction to decommissioning. Many of these projects are located within the California Desert Conservation Area, as well as on BLM land.

The geographic extent for the analysis of the cumulative impacts associated with the BSPP project is Riverside County, the location of the closest large Class III landfills. This geographic scope is appropriate because waste disposal facilities in Riverside County are the ones most likely to be used for disposal of waste generated by the BSPP considering regulatory acceptability and transport costs.

Existing waste management-related conditions within the cumulative impacts area reflect a combination of the natural condition and the effects of past actions and are described in PA/FEIS Chapter 3. Direct and indirect effects of the BSPP, including those associated with the generation of non-hazardous solid waste that would add to the total waste generated in Riverside County, are analyzed above. Past, present and reasonably foreseeable future actions making up the cumulative scenario are identified in Section 4.1. Non-hazardous solid waste generated by past, present, and reasonably foreseeable projects in the cumulative impacts area during the relevant timeframe is summarized in Table 4.11-7, below, and Table 4.1-4, Existing Projects Along the I-10 Corridor (Eastern Riverside County) and also would be disposed of within Riverside County. Most of the reasonably foreseeable projects identified Table 4.1-4 would generate smaller volumes of non-hazardous waste than the BSPP.

4.11.3.4 Cumulative Impacts in the Project Area

A value of 100 cubic yards/MW was used as a rough guide for determining total volume of non-hazardous solid wastes that could result from implementation of all the projects listed in the two tables. Solar projects dominate the list and would generate the most waste. The 100 cubic yards/MW value is based on the 1,000-MW BSPP project total lifetime value of 115,000 cubic yards of non-hazardous solid waste and factors in the lesser amounts of waste likely to be generated by solar photovoltaic projects. Similar to the proposed projects, these quantities do not include closure or decommissioning wastes; disposal at landfills with adequate capacity would be a

TABLE 4.11-7
SUMMARY OF OPERATION WASTE STREAMS AND MANAGEMENT METHODS

Waste Stream and Classification[a]	Origin and Composition	Estimated Amount	Estimated Frequency of Generation	Waste Management Method	
				Onsite	Offsite
Used hydraulic fluid, oils and grease – Non-RCRA hazardous	HTF system, turbine, and other hydraulic equipment	200,000 gallons per year	Intermittent	Accumulated for < 90 days	Recycle
Effluent from oily water separation system – Non-RCRA hazardous	Plant wash down area/oily water separation system	12,000 gallons per year	Intermittent	None	Recycle
Oil absorbent, and oil filters – Non-RCRA hazardous	Various	20 55-gallon drums per month	Intermittent	Accumulated for < 90 days	Sent offsite for recovery or disposal at Class I landfill
Dirty shop rags – Recyclable material	Maintenance cleaning operations	200 pounds per month	Routine	None	Send to commercial laundry for cleaning and recycling
Spent carbon – RCRA hazardous	Spent activated carbon from air pollution control of HTF vent	182,000 pounds per year	Intermittent	Contained in engineered process vessel, no accumulation outside of process	Sent off site for regeneration at a permitted management facility
Soil contaminated with HTF (< 10,000 mg/kg) – Non-hazardous	Solar array	3,000 cy/year	Intermittent	Bioremediation or land farming at LTU	Disposal at permitted waste management facility
Spent batteries – Universal waste	Batteries containing heavy metals such as alkaline dry cell, nickel-cadmium, or lithium ion.	<40/month	Continuous	Accumulate for <one year	Recycle
Spent batteries – Hazardous (exempt if managed as prescribed by Title 22 CCR Chapter 16).	Lead acid	80 every two years	Intermittent	Accumulated for <180 days	Recycle
Spent fluorescent bulbs or high-intensity discharge lamps – Universal waste	Facility lighting	< 200 per year	Intermittent	Accumulate for <one year	Recycle
Spent demineralizer resin – Non-hazardous	Demineralizer	1,000 cubic feet (ft^3)	Once every three years	None	Recycle
Reverse Osmosis (RO) Membrane Cleaning Waste – Non-hazardous	Acidic and/or caustic chemicals	12,000 to 24,000 gallons per cleaning	Up to four times per year	Evaporation ponds	Evaporation Pond solids disposal at permitted waste management facility
RO system concentrate – Inert or liquid designated waste – Non-hazardous	Auxiliary cooling tower and boiler blowdown	TBD	Routine	Evaporation ponds	Evaporation Pond solids disposal at permitted waste management facility
Auxiliary cooling tower basin sludge – Non-hazardous	Auxiliary cooling tower	4,000 pounds/ year	Annually	Evaporation ponds	Evaporation Pond solids disposal at permitted waste management facility
Spent softener resin – Non hazardous	Softener	2,000 ft^3	Once every 3 years	None	Recycle
Damaged parabolic mirrors – Non-hazardous	Metals and other materials	TBD	Variable	None	Recycle for metal content and/or other materials or send for landfill disposal
Sanitary wastewater – Non-hazardous	Toilets, washrooms	11,000 gallons/ day	Continuous	Septic leach field	None

NOTE:
[a] Classification under Title 22 CCR Division 4.5, Chapters 11, 12, and 23.

condition in facility closure plans. The approximately 450,000 cubic yards generated from projects in the cumulative scenario within the cumulative impacts area compares to the 150,000,000 cubic yards of Riverside County Class III landfill capacity available to these generators as indentified in AFC Table 5.16-4 (Solar Millennium 2009a, page 5.16-10, 11). The non-hazardous waste generated by the BSPP would not result in cumulatively significant adverse effects to waste management.

As stated above, the non-recyclable component of the 3,500 cubic yards of total lifetime hazardous waste from the BSPP would not impact the capacity or remaining life of the Class I waste facilities. Using a similar conversion factor as that noted above, it was estimated that approximately 16,000 cubic yards of lifetime hazardous waste would be generated by the projects in the cumulative scenario within the cumulative impacts area. This compares to the almost 10,000,000 cubic yards of Class I landfill capacity available to these generators as indentified in AFC Table 5.16-4 (Solar Millennium 2009a, page 5.16-10, 11).

4.11.3.5 Cumulative Impacts in the California Desert

Implementation of the multiple solar and wind projects proposed to be developed in the California Desert, and other planned non-energy projects, would result in an increase in generation of hazardous and non-hazardous solid and liquid waste and would add to the total quantity of waste generated in throughout the desert. However, BSPP-specific wastes would be recycled wherever practical and sufficient capacity is available throughout the area, especially with the addition of the Mesquite Regional Landfill with a capacity of 600 million tons and scheduled to be fully operational in 2011/2012 (Mesquite Regional Landfill 2010). Therefore, impacts of the BSPP, when combined with impacts of the future solar and wind, and other development projects currently proposed within the California desert would not result in significant adverse and unavoidable cumulative impacts with regard to waste management.

In sum, incremental impacts of the BSPP could combine with impacts of past, present, and reasonably foreseeable projects to result in a contribution to local and regional cumulative impacts related to waste management. The amount of non-hazardous and hazardous wastes generated during construction, operation and closure/decommissioning of the BSPP project would add to the total quantity of hazardous and non-hazardous waste generated in Riverside County. However, sufficient capacity is available at treatment and disposal facilities to handle the volumes of wastes that would be generated by the combined projects. The impacts for the alternatives would vary, and be proportional to the size of the project.

4.11.3.6 Summary of Mitigation Measures

Implementation of the mitigation measures imposed by the Energy Commission as Conditions of Certification for the BSPP also would avoid or reduce impacts on the quality of the human environment. These mitigation measures are set forth in Appendix G. The following address impacts on hazardous waste:

> WASTE-1, WASTE-2, WASTE-3, WASTE-4, WASTE-5, WASTE-6, WASTE-7, WASTE-8, WASTE-9, WASTE-10

4.11.3.7 Residual Impacts after Mitigation Measures were Implemented

None are expected.

4.11.3.8 Unavoidable Adverse Impacts

None are expected.

4.11.4 Unexploded Ordnance (UXO)

UXO presents an immediate risk of acute physical injury from fire or explosion resulting from accidental or unintentional detonation. As discussed in Section 3.12, unidentified UXO could be present on the site or along the access routes or the existing or proposed corridors of the power lines or natural gas lines.

4.11.4.1 Impact Assessment Methodology

Review of historical uses of the site, generally-accepted risk information that is widely-available from a multitude of internet sources, and analysis included in the Energy Commission's Revised Staff Assessment all contributed to the analysis of potential UXO-related impacts associated with development of the proposed action.

4.11.4.2 Discussion of Direct and Indirect Impacts

Proposed Action

During construction, maintenance, and closure and decommissioning activities associated with the Proposed Action, land disturbance activities could unearth unexploded World War II-era and more recent vintage munitions, including conventional and unconventional land mines, personnel mines, and bullets, the detonation of which would pose a safety risk to the construction workers. For example, surface and shallow sub-surface UXO could be disturbed by vehicles, walkers and excavation using shovels or similar hand tools, and deeper sub-surface UXO could be disturbed by the earth movement and excavation processes that would be required for development of the proposed action and action alternatives.

Alternatives

Action Alternatives and No Action Alternatives A and C

Risks associated with accidental or unintentional detonation of UXO would be equally applicable for all of the alternatives pursuant to which ground disturbance could occur consistent with the CDCA Plan, including No Action Alternatives A and C, regardless of whether such disturbance related to the development of a renewable energy project.

No Action Alternative B

Because the selection of Alternative B would not be expected to result in ground disturbance, no UXO-related risks are anticipated to be associated with this alternative.

4.11.4.3 Discussion of Cumulative Impacts

Although accidental or unintentional detonation of UXO in the vicinity of the proposed action constitutes a continuing risk of immediate, acute physical injury from fire or explosion, the incremental UXO-related risks of projects in the cumulative scenario could not combine in a way that would be additive, countervailing or synergistic. Consequently, there would be no significant UXO-related cumulative impacts associated with the proposed action.

4.11.4.4 Summary of Mitigation Measures

BLM-PHS-1: To protect against UXO-related hazards, the potential presence of UXO should be investigated in geophysical surveys performed by a company with specific expertise in UXO identification, and remnants of munitions or bullets identified during development of the subject property should be removed and disposed of in accordance with applicable LORS (AECOM, 2009).

4.11.4.5 Residual Impacts after Mitigation Measures were Implemented

Even with the implementation of the Mitigation Measure identified above, a risk of accidental or unintentional detonation of UXO would remain, resulting in a continuing risk of immediate, acute physical injury from fire or explosion.

4.11.4.6 Unavoidable Adverse Impacts

Unavoidable adverse impacts would be the same as the residual impacts discussed above.

4.11.5 Abandoned Mined Lands (AML)

As discussed in Section 3.12, there are three AMLs in the vicinity of the site: two are located onsite, on public land, near the northwest corner of the BSPP area; the third is located on private land off-site, but near the southeast corner.

4.11.5.1 Impact Assessment Methodology

Review of United States Department of Labor, Mine Safety and Health Administration data, BLM's Abandoned Mine Land Program Policy Handbook (H-3720-1), and the Energy Commission's Revised Staff Assessment all contributed to the analysis of potential AML-related impacts associated with development of the proposed action.

4.11.5.2 Discussion of Direct and Indirect Impacts

Proposed Action

AMLs pose physical safety hazards, including injury and death, associated with the presence of deadly gases, lack of oxygen, explosives and toxic chemicals in the mine (including from illicit drug labs); strandings, falls and all-terrain vehicle (ATV) flips, roll-overs and other crashes; encounters with wild animals, such as rattlesnakes or scorpions; exposure to diseases from bat droppings, hantavirus, radon and radiation; and exposure to toxic mine tailings and soil, water, and air contaminated with cyanide, lead, arsenic, mercury, and other toxins that could be inhaled through dust and particles or through contact with impounded acidic water. (BLM, 2007; MSHA, 2009a; MSHA, 2009b). BLM expects the potential risk for injuries and deaths at AML sites to increase as recreational use of public lands (including use of mountain bikes and OHVs) increases and members of the public, including construction workers, are increasingly in contact with heretofore isolated sites (BLM, 2007).

During construction, operation and maintenance, and closure and decommissioning of the BSPP, workers on site, and members of the public offsite (who may be drawn the project and then skirt its fence line) could intentionally or unintentionally access the AMLs and, thereby, be exposed to the above-described risks.

Alternatives

Action Alternatives

Risks associated with AMLs would apply equally to all of the action alternatives, including the proposed action, Reconfigured Alternative and Reduced Acreage Alternative, since each such alternative could attract workers or members of the public to or near the site.

No Action Alternatives

Such risks also could apply to the each of the No Action Alternatives in connection with pursuit of any of the use opportunities that would be available on the site consistent with the CDCA Plan, regardless of whether such uses ultimately involve a renewable energy project, to the extent that people could be attracted to the area near the AMLs. Slightly reduced risk could be expected to result under No Action Alternative B relative to the other alternatives, since preclusion of a renewable energy development on the site would be more likely to result in existing recreational users and other visitors to the site staying on established trails and paths. Greater risks and higher incidence of exposure to the AMLs could be expected to result commensurate with the likelihood that workers or visitors would veer from established paths in a way to brings them closer to the AML openings.

4.11.5.3 Discussion of Cumulative Impacts

Incremental AML-related impacts of the BSPP and alternatives could be cumulative if other projects in the cumulative scenario also attract people to the areas where these three AMLs are located during the lifespan (from construction to decommissioning) of the BSPP. The other projects identified in Section 4.1 as part of the cumulative scenario are not expected to attract people to the relevant areas. Consequently, AAML-related cumulative impacts are not expected to result.

4.11.5.4 Summary of Mitigation Measures

BLM-PHS-2: AML openings should be identified, flagged and avoided if they pose a physical safety hazard. The Applicant should coordinate with the BLM to identify any hazards with the openings on public land so that BLM may develop mitigation measures to avoid the sites or mitigate related hazards. Such mitigation measures shall be consistent with the BLM's Abandoned Mine Land Program Policy Handbook (H-3720-1) (BLM, 2007), as it may be amended from time to time, or with a comparable resource. The Applicant also shall coordinate with the owner of the site that appears to be on private land to mitigate any hazards associated with that opening.

4.11.5.5 Residual Impacts after Mitigation Measures were Implemented

None are expected.

4.11.5.6 Unavoidable Adverse Impacts

None are expected.

4.11.6 Undocumented Immigrants (UDI)

There are no known incidents with UDI at or near the BSSP site. Thus, no UDI-related direct or indirect impacts would result from the BSPP or alternatives, no mitigation measures would help the project and no cumulative impacts, residual impacts or unavoidable adverse impacts on UDI would result.

4.11.7 Transmission Line Safety and Nuisance

4.11.7.1 Impact Assessment Methodology

The potential magnitude of the line impacts of concern depends on compliance with the listed design-related LORS and industry practices (Table 1-1). These LORS and practices have been established to maintain impacts below hazard thresholds. Thus, if the proposed action would comply with applicable LORS, then it would remain below such thresholds.

4.11.7.2 Direct and Indirect Impacts

Proposed Action

This analysis focuses on the transmission line required to serve the generation facility, and addresses the following issues taking into account both the physical presence of the line and the physical interactions of its electric and magnetic fields:

1. aviation safety;
2. interference with radio-frequency communication;
3. audible noise;

4. fire hazards;
5. hazardous shocks;
6. nuisance shocks; and
7. electric and magnetic field (EMF) exposure.

The transmission line for the proposed action, the Reconfigured Alternative and the Reduced Acreage Alternative would follow the same route. The line would (a) be constructed, operated, and maintained according to SCE's guidelines for line safety and field management which conform to applicable LORS and (b) would traverse undisturbed desert land with no nearby residents, thereby eliminating the potential for residential electric and magnetic field exposures.

Since the line for the proposed action, Reconfigured Alternative and Reduced Acreage Alternative would be designed and operated according to the applicable SCE guidelines, there would be no difference in the magnitude of the field and nonfield impacts of concern in this analysis. This lack of difference would manifest itself regarding radio frequency communication, audible noise, hazardous and nuisance shocks, electric and magnetic field levels, fire hazards and aviation safety.

Aviation safety

An overhead 230-kV single circuit, three-phase transmission line and 52 steel monopoles, ranging from 90 feet to a maximum of 145 feet in height and spanning less than 10 miles, would proceed on a route directly south from the BSPP power block and eventually cross I-10 and turn westward to SCE's planned Colorado River Substation. Forty-three of the 52 monopoles are located in Blythe Airport Compatibility Zones, D, C, and B1.

Because the transmission line and poles could affect navigable airspace, the FAA requires the Applicant to file Form 7460-1 and 7460-2. In addition, because 43 monopoles would be located in airport compatibility zones, Riverside County ordinances would require that the project be reviewed by the Riverside County Airport Land Use Commission. The Applicant has thus submitted a "Notice of Proposed Construction and Alteration (Form 7460) for FAA's safety assessment (Solar Millennium 2009a p.5.14-6). The FAA conducted this safety analysis and concluded in a December 29, 2009 memorandum to the Applicant entitled "Determination of No Hazard to Air Navigation" that the proposed transmission line would not pose an aviation hazard to area aircraft.

On February 25, 2010, CEC staff met with staff and several members of the ALUC regarding the proposed action. As a result of that meeting, the ALUC sent a letter to the CEC indicating its major concerns regarding the potential hazards to flight for the Blythe Airport. Those hazards included the following:

1. Reflectivity and temporary flash occurrences;

2. Radio frequency emissions for electrical motors or other on-site equipment (transmission lines) and the potential for interference;

3. Height and velocity of thermal plumes from the dry cooling units;

4. Height and location of structures, including the dry cooling units and power poles and lines;

5. Provision of adequate open space within any portion of the project potentially within Compatibility Zone D; and

6. The cumulative impacts of additional hazards to flight considering the amount of existing and proposed solar (and conventional energy generating) facilities surrounding the Blythe Airport.

As of April 15, 2010, the FAA had reviewed 52 poles. Red lights were required on two poles located in Compatibility Zone D. In addition, a survey was required for five poles included in Zone D; two poles in Zone B1; one pole in Zone C; and for seven poles in Zone D. Also, the FAA noted that the transmission line is being revised south of I-10 and 12 poles would require a resubmittal of FAA Form 7460. The FAA also noted that additional poles also could require resubmittal of FAA Form 7460 depending on a land survey just completed and ultimate placement of individual poles.

Interference with Radio-Frequency Communication

The proposed action line would be designed, built and maintained in keeping with standard SCE practices that minimize surface irregularities and discontinuities and related corona noise. Such corona effects would further be minimized by the specific low-corona designs proposed by the Applicant. Since the line would traverse an uninhabited open space and would not interfere with modern digital air port-related communications, no interference-related complaints would be expected.

Audible Noise

Since the noise level depends on the strength of the line electric field, the potential for perception could be assessed from estimates of the field strengths expected during operation. Such noise is usually generated during rainfall, mainly from overhead lines of 345 kV or higher such as the proposed line. Research by the Electric Power Research Institute (EPRI 1982) has validated the efficacy of available mitigation measures by showing that the fair-weather audible noise from all modern transmission lines even of more than 345 kV would be generally indistinguishable from background noise at the edge of a right-of-way of 100 feet or more. Since the proposed low-corona design is also aimed against surface electric fields gradients, staff does not expect the operation of the proposed line to add significantly to current background noise levels in the project area. For an assessment of the noise from the proposed line and related facilities, please refer to the **Noise** section.

Fire Hazards

Potential fire hazards would be addressed through compliance with applicable LORS (Table 1-1). Such hazards would be caused by sparks from conductors of overhead lines, or could result from direct contact between the line and nearby trees and other combustible objects.

Hazardous and Nuisance Shocks

Operation of the proposed transmission line could result in hazardous and/or nuisance shocks. For the proposed line, the Applicant would be responsible in all cases for ensuring compliance with these grounding-related practices within the ROW.

Electric and Magnetic Field Exposure

While EMF hazards have not been established from the available evidence, the absence of such evidence does not serve as proof of a definite lack of a hazard. Therefore, it is appropriate, in light of present uncertainty, to recommend feasible reduction of such fields without affecting safety, efficiency, reliability, and maintainability of the proposed line.

Since the line for the proposed action and the Reconfigured Alternative would be designed and operated according to the applicable SCE guidelines, there would be no difference in the magnitude of the field and non-field impacts of concern in this analysis. This lack of difference would manifest itself regarding radio frequency communication, audible noise, hazardous and nuisance shocks, electric and magnetic field levels, fire hazards and aviation safety.

Alternatives

Action Alternatives

Construction and operation of the Reconfigured Alternative and the Reduced Acreage Alternative would have the same transmission line safety and nuisance impacts to those analyzed for the proposed BSPP since the transmission line under these alternatives would follow the same route.

No Action Alternatives A and C

Under No Action Alternative A, the Proposed Action would not be implemented, but the land on which the BSPP is proposed would become available to other uses that are consistent with BLM's land use plan, potentially including other renewable energy projects. Under No Action Alternative C, the Proposed Action would not be implemented, but BLM would allow for other solar projects on the site. Under these no action scenarios, other renewable energy projects may be constructed to meet state and federal mandates, and those projects would likely require transmission lines that would have similar transmission line safety and nuisance impacts to the proposed action.

No Action Alternative B

Under No Action Alternative B, the Proposed Action would not be implemented and BLM would make the area unavailable for future solar development. Under this no action scenario, it is expected that the site would remain in its existing condition, with no new structures or facilities constructed or operated on the site. However, it is possible that other uses consistent with the site's CDCA Plan classification could require transmission lines that would have similar transmission line safety and nuisance impacts to the proposed action.

4.11.7.3 Cumulative Impacts

Incremental impacts of construction, operation, maintenance and decommissioning of the BSPP could contribute to a cumulative effect on transmission line safety and nuisance when considered in combination with additional transmission lines that would be associated with the cumulative projects (see Section 4.1). The cumulative impacts area for potential cumulative transmission line safety and nuisance impacts would be limited to the immediate vicinity of the proposed line. The relevant timeframe within which incremental impacts could interact to cause or contribute to cumulative impacts would begin when the proposed line is erected and would last for as long as the line remains in place. This time period very likely could extend past the point of site closure and decommissioning of the BSPP.

Existing conditions within the cumulative impacts area reflect a combination of the natural condition and the effects of past actions and are described in FEIS chapter 3. Direct and indirect effects of the BSPP and alternatives are analyzed above. Past, present and reasonably foreseeable future actions making up the cumulative scenario are identified in Section 4.1. It is unlikely that transmission lines associated with the cumulative projects would be sited in the immediate vicinity of the transmission line of the proposed action. Therefore, cumulative impacts are not anticipated to result from the proposed action. None of the alternatives is expected to cause or contribute to any cumulative transmission line safety and nuisance impacts, because, if a line is built pursuant to the alternative, incremental impacts would be the same as those of the proposed action and, if no line is built, no line-related impacts would result.

Regarding EMF exposure, when field intensities are measured or calculated for a specific location, they reflect the interactive, and therefore, cumulative effects of fields from all contributing conductors. This interaction could be additive or countervailing, depending on prevailing conditions. Since the proposed action’s transmission line would be designed, built, and operated according to applicable SCE field-reducing guidelines (as currently required by the CPUC for effective field management), any contribution to cumulative area exposures should be at levels expected for SCE lines of similar voltage and current-carrying capacity. The action alternatives would contribute to cumulative EMF conditions, as could No Action Alternative scenarios that might include a transmission line. If no transmission line were developed, pursuit of the alternative would not generate EMF.

4.11.7.4 Summary of Mitigation Measures

The implementation of the mitigation measures imposed by the Energy Commission as Conditions of Certification for the BSPP also would avoid or reduce impacts on the quality of the human environment. These mitigation measures are set forth in Appendix G. The following mitigation measures address impacts on transmission line safety and nuisance:

TLSN-1, TLSN-2, TLSN-3, TLSN-4, TLSN-5

4.11.7.5 Residual Impacts after Mitigation Measures were Implemented

None are expected.

4.11.7.6 Unavoidable Adverse Impacts

None are expected.

4.11.8 Traffic and Transportation Safety

4.11.8.1 Impact Assessment Methodology

The Traffic and Transportation Safety analysis focuses on:

1. Whether construction or operation of the BSPP would result in traffic and transportation safety impacts, including aviation safety.

2. Whether the BSPP would comply with applicable LORS (see Table 1-1).

In this analysis, potential impacts are identified related to the construction and operation of BSPP on the surrounding transportation systems and roadways and, when applicable, mitigation measures are proposed.

4.11.8.2 Direct and Indirect Impacts

Proposed Action

Aviation Safety

Construction, operation and decommissioning of the BSPP could affect the operation of the Blythe Airport because of its location in an airport compatibility zone. An aviation consultancy firm assisted with the assessment of impacts this proposed power plant on aviation safety and the general operations of Blythe Airport.

The BSPP includes four dry-cooling systems, including four 120-foot air-cooled condensers, one for each system. In addition, one component of one of BSPP's proposed dry-cooling systems, the power block, is located in Blythe Airport Compatibility Zone E. The air-cooled condenser itself is located approximately 135 feet outside Compatibility Zone E. Under certain ambient air conditions, all four air-cooled condensers could create upward plumes exceeding 14.1 feet per second (f/s), which is equivalent to 4.3 meters per second (m/s), at heights as much as approximately 1,670 feet above ground level (AGL). For the purposes of this analysis, it has been determined that a plume of 14.1 f/s velocity has the potential to affect aircraft operations.

The 14.1 f/s velocity threshold is based on a review of a 2004 safety circular AC 139-05(0) prepared by the Australian Government Civil Aviation Safety Authority. In that safety circular, the Australian Civil Aviation Authority noted "aviation authorities have established that an exhaust plume with a vertical velocity in excess of 4.3 meters per second (m/s) may cause damage to an aircraft airframe or upset an aircraft when flying at low levels" (CASA 2004 as cited in the CEC RSA June 2010).

Solar facilities generally use one of three technologies designed to concentrate the sun's rays to generate heat, thereby creating electricity. Those three technologies consist of power towers, linear receiver tubes, and dish/engines. Together, plants that generate energy using any of those three technologies may be classified as concentrating solar plants. BSPP would be a concentrating solar plant that uses linear receiving tubes.

All three technologies introduced in the previous paragraph have the potential for creating glint and glare. *Glint* is defined as a momentary flash of light; *glare*, as a more continuous source of excessive brightness relative to the ambient lighting. Hazards from glint and glare from concentrating solar plants can range from permanent eye injury or retinal burn to temporary disability or distractions (flash blindness). These hazards could affect people working nearby or on the airport; pilots using or flying over the airport; or motorists driving on or to the airport property itself.

The BSPP would consist of approximately 5,600 acres of parabolic trough solar collector arrays installed immediately southeast of the airport. A parabolic trough, a type of a solar thermal energy collector, is constructed as a long parabolic mirror with a Dewar tube running its length at the focal point. Sunlight is reflected by the mirror and focused on the Dewar tube. The trough is usually aligned on a north-south axis and rotated to track the sun as it moves across the sky each day. Troughs are stowed facing the ground.

In addition, BSPP's proposed transmission lines and facility control systems would use specific electronic frequencies that could interfere with aircraft communications or avionics (radio frequency interference or RFI). FAA regulations and the Riverside County Airport Land Use Commission's Airport Land Use Compatibility Plan require minimization of electronic interference. Interference from electronic frequencies for the proposed transmission line as well as from the facility control systems has been mitigated by the specific low-corona or low electrical discharge designs proposed by the Applicant. In addition, the electrical wires needed to operate the facility control systems would be buried underground, thereby eliminating electrical interference.

The Applicant has proposed the addition of two, four-acre evaporation ponds, artificial bodies of water, to be located next to each of the four power blocks. The addition of those evaporation ponds will result in 32 acres of evaporation ponds, with at least one pond located in Blythe Airport Compatibility Zone D.

Evaporation ponds have the potential to attract birds, especially where natural water sources are scarce. When located on or near airports, those evaporation ponds can affect airport operations by attracting birds. The flying birds could become a hazard to aircraft, particularly during take-offs and landings, the most critical times of flight. During take-offs and landings, the presence of birds could obscure pilots' vision or result in other distractions that could cause pilots to lose control of their aircraft.

Roadway Safety

The direct and indirect traffic and transportation safety-related impacts of the proposed BSPP on the transportation system are examined in this section. Several pieces of equipment that exceed roadway load or size limits would need to be transported to the BSPP site via I-10 during construction, potentially resulting in a roadway hazard. This equipment includes the steam turbine generator and main transformers. The equipment would be transported using multi-axle trucks.

To transport the equipment, the Applicant must obtain special ministerial permits from Caltrans to move oversized or overweight materials. In addition, the Applicant must ensure proper routes are followed; proper time is scheduled for the delivery; and proper escorts, including advanced warning and trailing vehicles as well as law enforcement control are available, if necessary.

Hazardous materials to be used by the BSPP consist of heat transfer fluid (Therminol VP-1™) as well as diesel fuel, mineral insulating oil, and lube oil. Tanker trucks would use I-10 two times a month to make deliveries to the site. Federal and state regulations include specific procedures for transporting hazardous materials. See Table 1-1 for information about applicable LORS.

Alternatives

Action Alternatives

Construction and operation of the Reconfigured Alternative and the Reduced Acreage Alternative would have similar aviation and roadway safety impacts as those described for the proposed BSPP since the facilities under these alternatives would generally be the same, with only a minor reconfiguration of one solar unit or a 25 percent reduction in the overall acreage. Therefore, there would be no substantial change in impacts from an aviation and roadway safety perspective under these alternatives.

No Action Alternatives A and C

Under No Action Alternative A, the site would become available to other uses that are consistent with BLM’s land use plan, including another solar project. Under No Action Alternative C, the Proposed Action would not be implemented and BLM would allow for other solar projects on the site. Under these no action scenarios, other renewable energy projects could be constructed to meet state and federal mandates, and those projects would likely require construction activities and facilities that would have similar aviation and roadway safety impacts to the proposed action.

No Action Alternative B

Under No Action Alternative B, the proposed action would not be implemented and BLM would make the area unavailable for future solar development. Under this no action scenario, it is expected that the site would remain in its existing condition, with no new structures or facilities constructed or operated on the site. However, other uses consistent with the CDCA Plan use classification could be developed on the site. Such other uses could cause similar, greater or lesser aviation and roadway safety impacts than the proposed action.

4.11.8.3 Cumulative Impacts

Incremental traffic and transportation-related safety impacts resulting from construction, operation, maintenance and decommissioning of the BSPP could result in a cumulative effect in combination with past, present, or reasonably foreseeable future actions. The cumulative impacts area for traffic and transportation-related safety consists of the I-10 corridor and airspace governed by the Riverside County Airport Land Use Commission's Airport Land Use Compatibility Plan, which establishes policies applicable to land use compatibility planning in the vicinity of airports throughout Riverside County. This geographic scope of cumulative impacts analysis was established based on the natural boundaries of the affected resources, i.e., where on-road traffic and transportation impacts of the proposed action could occur and where aviation safety could be affected not only above the Blythe Airport, but also above airports in the vicinity of the Blythe Airport. Potential cumulative effects on traffic and transportation safety could begin as soon as the earliest of the following events associated with the proposed action: installation-related testing of the proposed air-cooled condensers, installation of facilities that could cause glint or glare, or the occurrence of water within the evaporation ponds. This beginning point may not coincide precisely with the initiation of the construction period. The potential for cumulative impacts would persist for as long as these features are present, and could extend to the conclusion of the closure and decommissioning phase of the proposed action.

Existing conditions within the cumulative impacts area reflect a combination of the natural condition and the effects of past actions and are described in FEIS chapter 3. Direct and indirect effects of the BSPP and alternatives are analyzed above. Past, present and reasonably foreseeable future actions making up the cumulative scenario are identified in Section 4.1. Within the cumulative impacts area for traffic and transportation-related safety, there are 13 solar projects proposed along the I-10 corridor predominantly between Desert Center and Blythe. Based on the currently available data for these various projects (information obtained from Plans of Development and other project documents), and assuming all projects move forward, these projects would be under construction in the same general time frame as the proposed action (2011 to 2016). Other types of projects also could proceed during this timeframe and, thereby, affect the I-10 corridor and safety at and in the vicinity of the Blythe Airport.

Of these projects, two, in addition to the proposed action, are parabolic trough projects (i.e., the Palen Solar Power Project and Genesis Solar Energy Project). Each would be anticipated to contribute incremental impacts that are similar in type, duration and intensity as the proposed action.

Concerning potential cumulative impacts on aviation safety, aircraft approaching from or departing to the east fly over the existing Blythe Energy Project (see Table 9 Existing Projects along the I-10 Corridor (Eastern Riverside County). In addition, First Solar's Blythe (21 MW solar PV) is under construction (Blythe I), and Blythe Airport Solar I, a 100 MW solar photovoltaic energy facility to be built in 20-MW phases (Blythe II), is proposed for construction on 640 acres within an 829-acre area on the grounds of the Blythe Airport. The 640-acre facility would be located east of Runway 17-35 and to the north of Runway 8-26 in several airport compatibility zones. As a result, the construction and operation of the BSPP combined with construction, operation and maintenance of these other projects at or near the airport could affect the operation of and aviation safety at the Blythe Airport because of their location in several airport compatibility zones. In addition, if Blythe II is constructed, the airport's traffic pattern will need to be changed as required by a condition of certification imposed by the Energy Commission when granting approval for the project in 2005. Several power plants are currently located or proposed for location within two miles of the Blythe Airport. Sixteen acres of evaporation ponds have been built at the Blythe Energy Plant I. In addition, the CEC has approved for construction a second plant, Blythe Energy Plant II, next to the existing Blythe Energy Plant I. The applicant for that project has applied to the Energy Commission for an extension to start construction by December 14, 2013. If Blythe II is constructed, a third evaporation pond would be added to that existing location. As a result, up to 56 acres of evaporation ponds could be located within two miles of the Blythe Airport. The evaporation ponds proposed as part of the BSPP would be netted and monitored to prevent birds from landing on them. However, this might not be enough to preclude the evaporation ponds from serving as an attractant to birds.

4.11.8.4 Summary of Mitigation Measures

The implementation of the mitigation measures imposed by the Energy Commission as Conditions of Certification for the BSPP also would avoid or reduce impacts on the quality of the human environment. These mitigation measures are set forth in Appendix G. The following mitigation measures address impacts on transportation and aviation safety:

TRANS-6, TRANS-7, TRANS-8, TRANS-9, TRANS-10, TRANS-11

4.11.8.5 Residual Impacts after Mitigation Measures were Implemented

None are expected.

4.11.8.6 Unavoidable Adverse Impacts

None are expected.

4.11.9 Worker Safety and Fire Protection

4.11.9.1 Impact Assessment Methodology

Two issues are assessed in Worker Safety-Fire Protection:

1. The potential for impacts on the safety of workers during demolition, construction, and operations activities, and

2. Fire prevention/protection, emergency medical response, and hazardous materials spill response during demolition, construction, and operations.

Worker safety issues are thoroughly addressed by Cal/OSHA regulations. If all LORS are followed, workers would be adequately protected.

Regarding fire prevention matters, the on-site fire-fighting systems proposed by the Applicant have been analyzed and the time needed for off-site local fire departments to respond to a fire, medical, or hazardous material emergency at the proposed power plant site. If on-site systems do not follow established codes and industry standards, additional measures would be recommended. The local fire department capabilities and response times in each area have been reviewed and interviews have been conducted with local fire officials to determine if they feel adequately trained, manned, and equipped to respond to the needs of a power plant.

4.11.9.2 Direct and Indirect Impacts

Proposed Action

Worker Safety

Industrial environments are potentially dangerous during construction and operation and maintenance, and closure and decommissioning of facilities. Workers at the proposed BSPP would be exposed to loud noises, moving equipment, trenches, and confined space entry and egress. The workers could experience falls, trips, burns, lacerations, and numerous other injuries. They could be exposed to falling equipment or structures, chemical spills, hazardous waste, fires, explosions, or electrical sparks and electrocution.

Other workplace hazards that could be associated with the proposed action are less traditionally industrial, and more specific to the nature of a utility-scale solar energy generation plant. This solar power plant would provide a work environment that includes a solar field located in the high desert. The solar field features thousands of mirrors that heat a heat transfer fluid (HTF) to approximately 750°F. The pipe containing the HTF will reach temperatures at the mirror focal point as high as 1,100 °F. Experience at existing solar generating stations shows that these mirrors break, the pipes age, and HTF can leak and catch fire from ball joints or frayed flex hoses. The area under the solar arrays must be kept free from weeds and thus herbicides will be applied as necessary. Exposure to workers via inhalation and ingestion of dusts containing herbicides poses a health risk. Finally, workers will inspect the solar array for HTF leaks and broken mirrors at least once each day by driving up and down dirt paths between the rows of mirrors and even under the mirrors. Cleaning the mirrors will also be conducted on a routine schedule. All these activities will take place year-round and especially during the summer months of peak solar power generation, when outside ambient temperatures routinely reach 115°F and above.

Consequently, it would be particularly important for the Applicant to have well-defined policies and procedures, training, and hazard recognition and control at BSPP facilities to minimize such hazards and protect workers. If the BSPP complies with all applicable LORS (Table 1-1), workers would be adequately protected from health and safety hazards.

Construction Safety and Health Program

Workers at the BSPP would be exposed to hazards typical of construction, operation and decommissioning of a solar thermal electric power generating facility.

Construction Safety Orders are published at Title 8 California Code of Regulations sections 1502, et seq. These requirements have been promulgated by Cal/OSHA, would apply to the construction phase of the proposed action, and would require the development of a Construction Safety and Health Program. Such a program would include the following:

1. Construction Injury and Illness Prevention Program (8 CCR 1509)
2. Construction Fire Prevention Plan (8 CCR 1920)
3. Personal Protective Equipment Program (8 CCR 1514 — 1522)
4. Emergency Action Program and Plan

Additional programs under General Industry Safety Orders (8 CCR 3200-6184), Electrical Safety Orders (8 CCR 2299-2974) and Unfired Pressure Vessel Safety Orders (8 CCR 450-544) would include:

1. Electrical Safety Program
2. Motor Vehicle and Heavy Equipment Safety Program
3. Forklift Operation Program
4. Excavation/Trenching Program
5. Fall Protection Program
6. Scaffolding/Ladder Safety Program
7. Articulating Boom Platforms Program
8. Crane and Material Handling Program
9. Housekeeping and Material Handling and Storage Program
10. Respiratory Protection Program
11. Employee Exposure Monitoring Program
12. Hand and Portable Power Tool Safety Program
13. Hearing Conservation Program
14. Back Injury Prevention Program
15. Ergonomics Program
16. Heat and Cold Stress Monitoring and Control Program
17. Hazard Communication Program
18. Lock Out/Tag Out Safety Program
19. Pressure Vessel and Pipeline Safety Program
20. Solar Components Safe Handling Program

Operations and Maintenance Safety and Health Program

Prior to the start of operations at BSPP, the Operations and Maintenance Safety and Health Program would be prepared. This operational safety program would include the following programs and plans:

1. Injury and Illness Prevention Program (8 CCR 3203)
2. Fire Protection and Prevention Program (8 CCR 3221)
3. Personal Protective Equipment Program (8 CCR 3401-3411)
4. Emergency Action Plan (8 CCR 3220)

In addition, the requirements under General Industry Safety Orders (8 CCR 3200-6184), Electrical Safety Orders (8 CCR 2299-2974) and Unfired Pressure Vessel Safety Orders (8 CCR 450-544) would apply to the proposed action. Written safety programs for BSPP, which the Applicant would develop, would ensure compliance with the above-mentioned requirements and would assure that the impacts that otherwise could occur would be avoided or sufficiently minimized.

Safety and Health Program Elements

As mentioned above, the Applicant provided the proposed outlines for both a Construction Safety and Health Program and an Operations Safety and Health Program. The measures in these plans are derived from applicable sections of state and federal law. Both safety and health programs would be comprised of six more specific programs and would require major items detailed in the following paragraphs.

Injury and Illness Prevention Program

The IIPP would include the following components as presented in the AFC (Solar Millennium 2009a, Section 5.18.3.1):

1. Identity of person(s) with authority and responsibility for implementing the program;
2. Safety and health policy of the plan;
3. Definition of work rules and safe work practices for construction activities;
4. System for ensuring that employees comply with safe and healthy work practices;
5. System for facilitating employer-employee communications;
6. Procedures for identifying and evaluating workplace hazards and developing necessary program(s);
7. Methods for correcting unhealthy/unsafe conditions in a timely manner;
8. Safety procedures; and
9. Training and instruction.

Fire Protection

Although the need for fire department response to solar power plants is not expected to be frequent, experience has shown that there is a significant chance that response needs could arise. Development of the proposed action would be subject to requirements of the Riverside County Fire Department (RCFD), including access requirements. Further, implementation of the proposed action could require response or assistance from the RCFD's hazardous materials response team, advanced life support/ paramedic services, or disaster preparedness and response during construction, operation and maintenance, or closure and decommissioning. The number of workers on site or traveling to and from the site for the project, and thereby could require RCFD assistance, is discussed in FEIS Section 4.14, Social Economics. The types of hazards that could trigger the need for an RCFD response are discussed above. The Applicant would develop and implement a fire prevention program for the BSPP and would be required to fund capital improvements and staffing for the RCFD. The Applicant also has coordinated with the Riverside

County Fire Department to establish the level of fire-related risk that would be associated with the BSPP and to determine the appropriate level of response capability commensurate with that risk and consistent with applicable safety regulations. Based on this planning and coordination, the proposed action would not be expected to cause access-related difficulties for the RCFD or adversely affect its response capability.

Further, compliance with applicable LORS would avoid or reduce the potential for workplace accidents that otherwise would require emergency responders. For example, California regulations applicable to the proposed action would require the Applicant to prepare an Operations Fire Prevention Plan (8 CCR 3221) to determine general program requirements (scope, purpose, and applicability) and potential fire hazards; to develop good housekeeping practices, proper handling and materials storage, potential ignition sources and control measures for these sources, and the persons who would be responsible for equipment and system maintenance; to locate portable and fixed fire-fighting equipment in suitable areas; to establish and determine training and instruction requirements; and to define recordkeeping requirements. Applicable regulations also would require preparation of a Personal Protective Equipment (PPE) and first aid supplies whenever hazards are present that, due to process, environment, chemicals or mechanical irritants, can cause injury or impair bodily function as a result of absorption, inhalation, or physical contact (8 CCR 3380-3400). All safety equipment would have to meet National Institute of Safety and Health (NIOSH) or American National Standards Institute (ANSI) standards, and would carry markings, numbers, or certificates of approval. Respirators would meet NIOSH and Cal/OSHA standards. Each employee would be provided with the following information pertaining to the protective clothing and equipment: Proper use, maintenance, and storage; when to use the protective clothing and equipment; benefits and limitations; and when and how to replace the protective clothing and equipment. Compliance with the PPE Program would ensure that the Applicant complies with applicable PPE requirements and provides employees with the information and training necessary to protect them from potential workplace hazards. Further, applicable regulations would require an Emergency Action Plan (8 CCR 3220), which would outline an emergency action plan (Solar Millennium 2009a, Section 5.18.3.2). It is expected that the Emergency Action Plan would identify roles and responsibilities; determine emergency incident response training; develop emergency response protocols; specify evacuation protocols; define post emergency response protocols; and determine notification and incident reporting. Additional LORS) called *safe work practices* would apply to the proposed action. Both the Construction and the Operations Safety Programs would address safe work practices under a variety of programs. The components of these programs would include, but not be limited to, the programs discussed above. Employee safety training would include safe work practices.

Alternatives

Action Alternatives

Construction and operation of the Reconfigured Alternative and the Reduced Acreage Alternative would have similar worker safety impacts as those described for the proposed action since the facilities under these alternatives would generally be the same, with only a minor reconfiguration of one solar unit or a 25 percent reduction in the overall acreage. Therefore, there would be no substantial change in impacts associated with worker safety under these alternatives.

No Action Alternatives A and C

Under No Action Alternative A, the site would become available to other uses that are consistent with BLM's land use plan, potentially including another solar project. Under No Action Alternative C, the Proposed Action would not be implemented and BLM would allow for other solar projects on the site. Under these no action scenarios, other renewable energy projects could be constructed to meet state and federal mandates, and would likely require construction activities and facilities that would have similar worker safety impacts to the Proposed Action.

No Action Alternative B

Under No Action Alternative B, the site would be unavailable for future solar development. Under this no action scenario, it is expected that the site would remain in its existing condition. However, other uses consistent with the CDCA Plan multiple use classification could be developed or occur. Such other activities could cause similar, greater or lesser worker safety impacts relative to the proposed action.

4.11.9.3 Cumulative Impacts

Incremental worker safety-related impacts of the BSPP would result in a risk level that would remain below thresholds of concern and, therefore, would not cause or contribute to any cumulative effect on worker safety. Regardless of the level of solar development or acreage developed under either of the action alternatives, the utility-scale solar energy development that would result would be subject to the same worker safety requirements as the proposed action and, therefore, also would not result in a risk level that could cause or contribute to any cumulative effect on such safety. The No Action Alternatives are not expected to require workers, and so would not be expected to affect worker safety.

For the fire safety-related issues of emergency medical and hazardous materials spill response, the incremental impacts of the BSPP could result in a cumulative effect when combined with the incremental impacts of other projects in the cumulative scenario. More specifically, a cumulative Worker Safety/Fire Protection impact would occur in the event of a simultaneous need for a fire department to respond to multiple locations such that its resources and those of the mutual aid fire departments (which routinely respond in every-day situations to emergencies at residences, commercial buildings, and heavy industry) are over-whelmed and cannot effectively respond. For purposes of this analysis, the cumulative impacts area for fire safety-related resources consists of the RCFD's service area. Potential cumulative fire safety-related effects could occur over the course of 40 or more years, encompassing the entire lifespan of the BSPP, from construction and operation and maintenance, through closure and decommissioning, since people could be on, or en route to, the site throughout this timeframe.

Existing conditions within the cumulative impacts area reflect a combination of the natural condition and the effects of past actions and are described in FEIS chapter 3. Direct and indirect effects of the BSPP are analyzed above. Past, present and reasonably foreseeable future actions making up the cumulative scenario are identified in Section 4.1 and include existing locations that might require a fire department response as well as facilities proposed for construction, operation or demolition. Any such location within the cumulative impacts area could require response from off-site fire departments for fire, hazardous materials, or emergency medical service emergencies. Cumulative impacts could occur despite the many safeguards implemented to both prevent and control fires, hazardous materials releases, and injuries/accidents, because of the great distances involved in response and expansive sites. Although the chances of two or more solar power plants requiring emergency response simultaneously may be low, a response to one distant site could impede or preclude a simultaneous response to another solar plant, residential or commercial location, or other location in demand. However, while cumulative impacts theoretically are possible, they are not likely given the 14-stations located within the RCFD's service area and mutual aid agreements. Emergency response capabilities would be adequate.

4.11.9.4 Summary of Mitigation Measures

The implementation of mitigation measures imposed by the Energy Commission as Conditions of Certification for the BSPP also would avoid or reduce impacts on the quality of the human environment. These mitigation measures are set forth in Appendix G. The following would address impacts on worker safety / fire safety:

> WORKER SAFETY-1, WORKER SAFETY-2, WORKER SAFETY-3, WORKER SAFETY-4, WORKER SAFETY-5, WORKER SAFETY-6, WORKER SAFETY-7, WORKER SAFETY-8, WORKER SAFETY-9

4.11.9.5 Residual Impacts after Mitigation Measures were Implemented

None are expected.

4.11.9.6 Unavoidable Adverse Impacts

None are expected.

4.11.10 Public and Private Airstrips/Airfields

4.11.10.1 Impact Assessment Methodology

Review of FAA requirements, the airport compatibility plan for the Blythe Municipal Airport, data and analysis provided by the Applicant and in the Energy Commission's Revised Staff Assessment were reviewed in connection with this analysis.

4.11.10.2 Direct and Indirect Impacts

Proposed Action

Potential impacts of the proposed action on the Blythe Airport and generally on aviation are discussed in EIS Section 4.11.7, Transmission Line Safety and Nuisance, and EIS Section 4.11.8, Traffic and Transportation Safety. Such impacts relate, for example, to reflectivity and temporary flash occurrences; radio frequency emissions for electrical motors or other on-site equipment (transmission lines) and the potential for interference; height and velocity of thermal plumes from the dry cooling units; height and location of structures, including the dry cooling units and power poles and lines; provision of adequate open space within any portion of the project potentially within compatibility Zone D; and the cumulative impacts of additional hazards to flight considering the amount of existing and proposed solar (and conventional energy generating) facilities surrounding the Blythe Airport.

Alternatives

Potential impacts of alternatives to the proposed action on the Blythe Airport and generally on aviation also are discussed in EIS Section 4.11.7, Transmission Line Safety and Nuisance, and EIS Section 4.11.8, Traffic and Transportation Safety. See above.

4.11.10.3 Cumulative Impacts

Potential cumulative impacts on the Blythe Airport, and on aviation more generally, are discussed in EIS Section 4.11.7, Transmission Line Safety and Nuisance, and EIS Section 4.11.8, Traffic and Transportation Safety. See above.

4.11.10.4 Summary of Mitigation Measures

No mitigation measures other than the ones identified in Section 4.11.7, Transmission Line Safety and Nuisance, and EIS Section 4.11.8 would improve the project with respect to potential impacts on public and private airstrips. Thus, none are identified.

4.11.10.5 Residual Impacts after Mitigation Measures were Implemented

Other than any identified in Sections 4,12,7 and 4.11.8, no residual impacts are expected.

4.11.10.6 Unavoidable Adverse Impacts

Other than any identified in Sections 4,12,7 and 4.11.8, no unavoidable adverse impacts are expected.

4.11.11 Geologic Hazards

4.11.11.1 Impact Assessment Methodology

The proposed action and alternatives are evaluated qualitatively in terms of their effect on soil and mineral resources as well as in terms of their susceptibility to geologic and seismic hazards. Potential effects on these resources are assessed based upon existing publications and maps completed by regulatory agencies, such as the United State Geological Survey, California Geologic Survey, California Division of Mines and Geology and geotechnical engineers who have evaluated the site. The potential for damage to proposed structures or increased risk of injury due to geologic hazards is analyzed using available data from the aforementioned sources. In addition, the conclusions and recommendations provided in the geotechnical investigation are evaluated, and, where appropriate, incorporated into the analysis.

The following issues were considered in the analysis of impacts related to geology and soils for the proposed action and each alternative:

1. Accelerated and/or environmentally harmful soil erosion;
2. Damage to project elements or increased exposure of the public to risks from rupture of a known earthquake fault;
3. Injury, death, or property damage as a result of earthquake induced ground deformations (e.g. lateral spreading, subsidence, liquefaction, or collapse), or otherwise unstable soils;
4. Injury, death, or property damage as a result of an onsite or offsite landslide;

4.11.11.2 Impact Analysis

Proposed Action

Groundshaking

The occurrence of relatively large earthquakes in the Mojave region demonstrates that the site is likely to be subject to moderately intense earthquake-related ground shaking in the future (Modified Mercalli Intensity Level VI) over the life of the BSPP. The anticipated level of shaking, based on the estimated peak ground acceleration (PGA) value at the site (discussed under Seismic Hazards) could result in slight damage to older structures and would not likely result in damage to newer structures built according to current design standards. Several laws and policies impose stringent seismic safety requirements on the design and construction of new structures (see Table 1-1). While ground-shaking at the site would not constitute a major effect, mitigation should be implemented to the extent practical through structural designs consistent with the California Building Code and the site-specific geotechnical report that would be required for the BSPP to minimize risks associated with severe ground-shaking.

Secondary Earthquake Hazards.

The site is located in an area with low to moderate level of liquefaction potential (RCLIA 2009). However, the dense to very dense nature of sandy and gravelly soils encountered in the BSPP borings (Kleinfelder 2009), coupled with a groundwater table depth of greater than 150 feet below the ground surface, indicates that there is no liquefaction potential at the site (Kleinfelder 2009). Consequently, the potential for lateral spreading during seismic events would be negligible. No subsurface information is available along the portion of the site excluded from the geotechnical investigation. These areas of the site should be addressed in a BSPP-specific geotechnical report.

The site generally is underlain by dense to very dense granular soils. However, there is a potential that loose sand layers occur both at the surface and as buried layers between the borings since the site is situated on alluvial fan and alluvial valley deposits (Kleinfelder 2009). These layers create potential for earthquake-induced settlement. The potential for and mitigation of the effects of earthquake-induced settlement of site soils during an earthquake should be addressed in a BSPP-specific geotechnical report. Common mitigation methods include deep foundations (driven piles; drilled shafts) for severe conditions, geogrid-reinforced fill pads for moderate severity and over-excavation and replacement for areas of minimal hazard.

Subsidence and Settlement

No regional subsidence due to the historic groundwater withdrawal has been reported in the vicinity of the proposed BSPP (Solar Millennium 2009a). Further, no localized or regional subsidence was recorded even during the 1980’s and 1990’s when regional groundwater extraction was at its historic maximum of approximately 48,000 acre-feet per year in the general area. In addition, no petroleum or natural gas withdrawals are taking place in the proposed site vicinity. Therefore, the potential for local or regional ground subsidence resulting from petroleum, natural gas, or groundwater extraction is considered to be very low.

Hydrocompaction

The geotechnical report prepared for the BSPP indicates a low to moderate risk of hydrocompaction based on the geotechnical data and the observation of soil profile in the test pits (Kleinfelder 2009). The potential for and mitigation of the effects of hydrocompaction of site soils should be addressed in a project-specific geotechnical report. Typical mitigation measures would include over-excavation/replacement, mat foundations or deep foundations depending on severity and foundation loads.

Corrosive Soils

Fine grain, moist soils containing sulfides are present at the site and would be corrosive to buried structures. If a buried structure were to corrode as a result of contact with these solids, it could crack or prematurely fail. However, on site soil conditions are neither unique nor particularly hazardous, and methods to address corrosive and expansive soils are common engineering practices. Consequently, the effects of corrosive soils could be mitigated effectively through final design by incorporating the recommendations of a site-specific geotechnical report. Typical mitigation measures would include backfilling pipeline excavations with suitable clean engineering fill.

Erosion

The preliminary stages of construction, especially site grading, excavation, and soil stockpiling would leave loose soil exposed to the erosive forces of rainfall and high winds. Because soil surface disturbance for the proposed project would be greater than one acre, specific erosion control measures would be identified as part of the National Pollutant Discharge Elimination System (NPDES) General Construction permit and Storm Water Pollution Prevention Plan (SWPPP) required for construction. During construction, erosion control measures would be implemented that utilize Construction Water Quality Best Management Practices (BMPs) to avoid or minimize soil erosion and off-site sediment transport. Examples of typical construction BMPs include scheduling or limiting activities to certain times of the year, in particular to avoid flash floods; installing sediment barriers such as silt fence and fiber rolls along the perimeter of the active construction area; maintaining equipment and vehicles used for construction; and developing and implementing a spill prevention and cleanup plan. The SWPPP (and associated BMPs) would be prepared and implemented prior to commencing construction, and BMP effectiveness would be ensured through the sampling, monitoring, reporting, and record keeping requirements contained in the construction general permit. In addition, the general construction permit required under the NPDES program would require that the topsoil be preserved in areas requiring grading in order to ensure proper implementation of post-construction BMPs for site restoration. Therefore, substantial or accelerated soil erosion or loss of topsoil during and following construction would be minor.

In sum, the main geologic hazards at this site include ground shaking, hydrocompaction, earthquake inducted settlement, corrosive soils, and erosion. These potential hazards could be mitigated effectively through facility design by incorporating recommendations contained in a design-level geotechnical report.

Alternatives

Action Alternatives

The geologic units that would be disturbed by the Reconfigured Alternative or Reduced Acreage Alternative are the same as those that would be disturbed by the proposed action. Each of the action alternatives would have similar geographic and physical relationship of faults and major geologic features. The main geologic hazards for each of the action alternatives would include ground shaking, hydrocompaction, earthquake induced settlement, corrosive soils, and erosion. Therefore, no changes to the levels of impact, beyond those discussed for the proposed action, would be anticipated for either the Reconfigured Alternative or Reduced Acreage Alternative.

No Action Alternative A

If No Action Alternative A were selected, the construction and operational impacts of the BSPP would not occur. There would be no grading of the site and no installation of power generation and transmission equipment. Throughout the project area there is potential for strong seismic ground shaking in the event of a Maximum Credible Earthquake (MCE), which would be a magnitude 7.9 earthquake on the Southern San Andreas Fault. Seismic activity also could result from earthquake-induced settlement. Corrosive soils are present on the site, although they would not be expected to pose a public health and safety threat under this alternative. Erosion would occur in a manner consistent with existing conditions relating to wind and flash flooding. Geologic hazards would not affect public health and safety under No Action Alternative A. No Action Alternative A also would eliminate contributions to cumulative impacts on a number of resources and environmental parameters in Riverside County and in the Colorado Desert as a whole.

In the absence of the BSPP, however, other power plants, both renewable and non-renewable, would constructed to serve the demand for electricity and to meet RPS. If No Action Alternative A were chosen, other utility-scale solar power facilities could be built; the resulting impacts to the environment could be similar to, or greater or less than, those of the proposed action depending on where they ultimately are constructed.

No Action Alternative B

Because the CDCA Plan would be amended, it is possible that the site would be developed with the same or a different solar technology. As a result, impacts related to geology could result from the construction and operation of a solar technology and would likely be similar to the impacts from the proposed action. Different solar technologies require different amounts of grading and maintenance; however, it is expected that all the technologies would require some grading and maintenance. As such, No Action Alternative B could result in impacts similar to those of the proposed action. Impacts to other facilities from geologic hazards (i.e. ground shaking, earthquake-induced settlement, etc.) would be similar.

No Action Alternative C

Because the CDCA Plan would be amended to make the area unavailable for future solar development, it is expected that the site would continue to remain in its existing condition, with no new structures or facilities constructed or operated on the site. As a result, the geologic conditions of the site would not be expected to change noticeably from existing conditions and, as such, No Action Alternative C would not result in impacts to geologic resources that could occur during construction of the proposed action. However, in the absence of the BSPP, other renewable energy projects could be constructed to meet State and Federal mandates, and could have similar, or greater or lesser, impacts than the proposed action depending on their ultimate location.

4.11.11.3 Cumulative Impacts

Impacts resulting from construction, operation, maintenance and decommissioning of the BSPP could result in a cumulative effect in connection with geologic resources and hazards with other past, present, or reasonably foreseeable future actions. The geographic scope of the cumulative impacts analysis for such resources is limited generally to the BSPP site and transmission line route overlying the Palo Verde Valley groundwater basin. This geographic scope of cumulative impacts analysis was established because potential cumulative effects, as they pertain to geologic hazards, generally are limited to regional subsidence due to groundwater withdrawal in the Palo Verde Valley groundwater basin. Impacts associated with strong ground shaking and earthquake-induced settlement, hydrocompaction, and corrosive soils are not cumulative in nature and would not add to potential cumulative impacts to the facility. Potential cumulative effects on geologic resources and hazards could occur at any time during the lifespan of the BSPP, from construction to decommissioning.

Existing conditions within the cumulative impacts assessment area of geologic resources and hazards reflect a combination of the natural condition and the effects of past actions and are described in FEIS chapter 3. Direct and indirect effects of the BSPP are analyzed above. Briefly, however, the construction of the BSPP is not expected to require any significant amount of groundwater pumping; thus, impacts to regional subsidence are not expected. Construction of the BSPP is expected to cause minor and temporary contribution to erosion. The operation of the BSPP is expected to result in about a 600-ac-ft/yr increase in annual groundwater pumping. Since operation of the BSPP would only contribute a minor amount of additional groundwater withdrawal to the overall amount in the Palo Verde groundwater basin and since this cumulative amount is only a fraction of historic pumping levels that did not result in any documented subsidence, operation of the BSPP is not expected to impact regional subsidence in the Palo Verde groundwater basin. Operation of the BSPP is not expected to require any significant excavation or grading such that cumulative impacts to soil resources are not expected. Finally, decommissioning of the BSPP is not expected to require any significant amount of groundwater pumping; impacts to regional subsidence are not expected. Decommissioning of the BSPP would include excavation and grading at the site. Compliance with the required NPDES General Construction Permit and proper implementation of applicable BMPs would insure that any erosion impacts are minor.

Past, present and reasonably foreseeable future actions making up the cumulative scenario are identified in Section 4.1. Although minor, the BSPP could contribute a level of impact to cumulative geologic resource and hazard conditions.

Subsidence and Settlement

Historic groundwater withdrawals of approximately 48,000 acre-feet per year (ac-ft/yr) have not resulted in any documented subsidence in the vicinity of the proposed BSPP. The proposed action would result in increased annual groundwater pumping, from the current 2,000 aft/yr to approximately 2,600 aft/yr (a 30 percent increase). Several projects identified in the cumulative scenario (FEIS Section 4.1) are located within the Palo Verde Valley groundwater basin. Such projects could include groundwater pumping of similar magnitude to the BSPP; however, the combined effect of these projects would still result in much less than the historic rate of 48,000 ac-ft/yr. Since this level of pumping did not result in any documented regional subsidence, significant impacts to regional subsidence would not be expected. Therefore, there would be no significant cumulative contribution to regional subsidence from foreseeable renewable projects, including the BSPP, in the Palo Verde Valley groundwater basin. Additional information on groundwater withdrawal is contained in Section 4.19, Water Resources.

Erosion

Erosion resulting from implementation of past, present and reasonably foreseeable projects could result in significant impacts to soil and water resources. Increased development and areas covered with impervious surfaces in the vicinity of the BSPP could result in decreased stormwater infiltration. Decreased infiltration corresponds to increased runoff and erosion potential. Stormwater quality is regulated under the NPDES program. It is expected that all development projects in the vicinity of the BSPP would have to comply with NDPES program requirements, regardless of whether they fall under the primary jurisdiction of a federal, state or local agency. As a result, each project would implement BMPs, such as those discussed above, during and after construction in order to minimize erosion. Therefore, no substantial cumulative contribution to erosion is expected to result from the cumulative projects, including the BSPP.

Based on the above discussion, the potential for significant adverse cumulative impacts to the proposed project from geologic hazards during the project's design life is negligible and that the potential for impacts to geologic resources is very low. For the reasons discussed above, impacts of alternatives to the BSPP could contribute to cumulative geologic conditions and hazards in proportion to the extent to which they affect such conditions at all.

4.11.11.4 Summary of Mitigation Measures

Implementation of the mitigation measures imposed by the Energy Commission as Conditions of Certification for the BSPP also would avoid or reduce impacts on the quality of the human environment. These mitigation measures are set forth in Appendix G. The following address impacts associated with geologic hazards:

CIVIL-1, CIVIL-2, CIVIL-3, CIVIL-4

STRUC-1

GEO-1

SOIL&WATER-1

4.11.11.5 Residual Impacts after Mitigation Measures were Implemented

None are expected.

4.11.11.6 Unavoidable Adverse Impacts

None are expected.

4.11.12 Site Security

4.11.12.1 Impact Assessment Methodology

The energy generation sector is one of 14 areas of Critical Infrastructure listed by the U.S. Department of Homeland Security (DHS). The level of security needed for any particular facility depends on the threat imposed, the likelihood of an adversarial attack, the likelihood of success in causing a catastrophic event, and the severity of consequences of that event. The U.S Department of Homeland Security's Chemical Facility Anti-Terrorism Standards require facilities that use or store certain hazardous materials to conduct vulnerability assessments and implement certain specified security measures. These standards were implemented with the publication of Appendix A, a list of chemicals of interest

4.11.12.2 Impact Analysis

Proposed Action

Neither the chemical constituents of Therminol VP-1 (diphenyl ether and biphenyl) nor other chemicals proposed to be used and stored at this proposed power plant are on the chemicals of interest list and, thus, the proposed facility would not be covered by the standards. However, all power plants under the Energy Commission's jurisdiction should implement a minimum level of security consistent with the Standards and, as a contributing element of the energy sector, the BSPP should provide at least that minimum level of security needed to protect California's electrical infrastructure from malicious mischief, vandalism, or domestic/foreign terrorist attacks.

The level of security needed for a particular power plant depends on the threat imposed, the likelihood of an adversarial attack, the likelihood of success in causing a catastrophic event, and the severity of consequences of that event. To determine an appropriate level of security for the BSPP, Energy Commission staff used an internal vulnerability assessment decision matrix modeled after the U.S. Department of Justice Chemical Vulnerability Assessment Methodology (July 2002), the NERC 2002 guidelines, the U.S. Department of Energy VAM-CF model, and U.S. Department of Homeland Security regulations published in the Federal Register (Interim Final Rule 6 CFR Part 27). Based on this analysis, the BSPP would fall into the "low vulnerability" category. Accordingly, Energy Commission staff proposed that certain security measures be implemented.

Alternatives

Action Alternatives

If an energy generation facility were constructed on the proposed site, the level of security needed would be facility-specific and depend on the threat imposed, the likelihood of an adversarial attack, the likelihood of success in causing a catastrophic event, and the severity of consequences of that event. It is assumed that consideration of these factors would result in the same conclusion for either the Reconfigured Alternative or Reduced Acreage Alternative as for the proposed action: "low vulnerability."

No Action Alternative A

If No Action Alternative A were selected, there would be no site security issue.

No Action Alternative B

Because the CDCA Plan would be amended to identify the site as suitable for solar energy development, site security impacts associated with any resulting facility would likely be comparable to those of the proposed action.

No Action Alternative C

Even though the CDCA Plan would be amended to make the area unavailable for future solar development, other renewable energy uses could be developed with the appropriate CDCA Plan amendment. Site security impacts would result from the development of any energy generation facility on the site at a level commensurate with the threat imposed, the likelihood of an adversarial attack, the likelihood of success in causing a catastrophic event, and the severity of consequences of that event. However, if a use other than energy generation were to be developed or pursued, no energy generation-related site security impact would result.

4.11.12.3 Cumulative Impacts

The development and operation of the BSPP would contribute an incremental "low vulnerability" site security threat to a cumulative effect relative to site security with other past, present, or reasonably foreseeable future energy generation actions. The geographic scope of the cumulative impacts analysis for such threat would be the California Desert area. Potential cumulative site security effects could occur at any time during the lifespan of the BSPP, from construction to decommissioning, and would not persist past closure and decommissioning.

Other past, present and reasonably foreseeable future energy generation projects are identified in PA/FEIS Section 4.1. As of January 2010, there were 244 renewable projects proposed in California in various stages of the environmental review process or under construction. Solar, wind, and geothermal development applications have requested use of BLM land, including approximately one million acres of the California desert. State and private lands have also been targeted for renewable solar and wind projects. In addition, nearly 80 applications for solar and wind projects are being considered on BLM land in Nevada and Arizona. (CEC RSA June 2010) Renewable energy projects in BLM's California Desert District are identified in Table 4.1-2. Renewable energy projects on state and private lands are identified in Table 4.1-3. The BLM has not received facility-specific threat determinations such as the one prepared for the proposed BSPP; however, given the utility-scale nature of the proposed action and similarities with other proposed utility scale solar proposals such as Genesis, Palen, and Desert Sunlight, the BLM assumes that threat levels among the facilities would be comparable. Smaller projects could have an even lower vulnerability. Although the threat imposed and likelihood of an adversarial attack may be comparable regardless of facility size, the likelihood of a smaller (lower energy output) facility's success in causing a catastrophic event and the severity of consequences of that event would seem reduced.

The presence of other Department of Homeland Security "Critical Infrastructure and Key Resources" sectors in the cumulative impacts analysis area, if present, also could contribute incrementally to the overall threat level. Such other sectors include National Monuments and

Icons, Agriculture and Food, Banking and Finance, Chemical, Commercial Facilities, Critical Manufacturing, Dams, Defense Industrial Base, Emergency Services, Government Facilities, Healthcare and Public Health, Information Technology, Nuclear Reactors, Materials and Waste, Postal and Shipping, Water, Communications, and Transportation Systems (including aviation and highway). Thus, the Wileys Well Communication Tower, Blythe Municipal Airport, and I-10 each could contribute an incremental impact to the overall security threat.

4.11.12.4 Summary of Mitigation Measures

In order to ensure that this facility (or a shipment of hazardous material) is not the target of unauthorized access, mitigation measures HAZ-5 and HAZ-6 (see Appendix G) address both construction security and operations security plans. These plans would require the implementation of site security measures that are consistent with the Security Guidelines for the Electricity Sector published by the North American Electric Reliability Corporation in 2002 (NERC, 2002); the Critical Infrastructure Protection standard for cyber security (NERC, 2009); and the U.S. Department of Energy's Vulnerability Assessment Methodology for Electric Power Infrastructure in 2002 (DOE, 2002). These security measures include perimeter fencing and breach detectors, possibly guards, alarms, site access procedures for employees and vendors, site personnel background checks, and law enforcement contact in the event of a security breach. Site access for vendors would be strictly controlled. Consistent with current state and federal regulations governing the transport of hazardous materials, hazardous materials vendors would have to maintain their transport vehicle fleets and employ only drivers who are properly licensed and trained. The project owner would be required, through its contractual language with vendors, to ensure that vendors supplying hazardous materials strictly adhere to the U.S. DOT requirements that hazardous materials vendors prepare and implement security plans per 49 CFR 172.802 and ensure that all hazardous materials drivers are in compliance with personnel background security checks per 49 CFR Part 1572, Subparts A and B. The compliance project manager (CPM) may authorize modifications to these measures, or may require additional measures in response to additional guidance provided by the U.S. Department of Homeland Security, the U.S. Department of Energy, or NERC, after consultation with appropriate law enforcement agencies and the Applicant.

4.11.12.5 Residual Impacts after Mitigation Measures were Implemented

None are expected.

4.11.12.6 Unavoidable Adverse Impacts

None are expected.

4.12 Impacts on Recreation

4.12.1 Impact Assessment Methodology

The BSPP is analyzed for its effects on recreational resources by assessing the impacts to land acreage as well as types of known recreational uses including hiking, backpacking and long term camping in established Federal, State, or local recreation areas and/or wilderness areas.

The CDCA Plan recognizes that the California desert is "a reservoir of open space and as a place for outdoor recreation" (CDCA Plan, BLM, 1980, page 69). The CDCA Plan notes that the diverse landscape of the California desert provides for a variety of physical settings. Further, the CDCA Plan identifies the wide variety of desert recreation uses, ranging from off-road vehicles to outdoor preservationists, and the increasing challenge to accommodate these varied and sometimes competing uses. For example, Long Term Visitor Area (LTVA) visitors typically enjoy backcountry vehicle touring on routes and washes and in the surrounding areas and, thus, would be impacted by the closures of open vehicle routes in the vicinity of the BSPP. However, this section 4.12 focuses on non-transportation-related recreational opportunities. For impacts to OHV users, see Section 4.16 Impacts on Transportation and Public Access - Off-Highway Vehicle Resources.

4.12.2 Discussion of Direct and Indirect Impacts

Proposed Action

On-Site Recreational Users

According to the Recreation Element of the CDCA Plan, "lands managed by the Bureau [BLM] are especially significant to recreationists." The conversion of 6,000 acres of public land to support the BSPP could disrupt dispersed recreational activities. Construction activities associated with the proposed action could cause direct and indirect impacts on noise, fugitive dust, and truck and other vehicle ingress and egress to the construction site; visual intrusions also could impact visitors seeking experiences for natural setting. During operations, the site would not be available for recreational use. However, such use could resume upon closure and decommissioning. Although day users, hikers and RV campers would no longer be able to utilize this area for dispersed recreational opportunities and related experiences and benefits during construction and operation of the BSPP, dispersed recreational activities has not been observed within the project area by BLM Rangers; therefore impacts to recreational user opportunities would be minimal.

Campers, hikers and backpackers could compensate by utilizing other desert lands in the vicinity of the proposed site for their recreational experiences and benefits. This could result in more concentrated use of those areas, leading to loss of some native vegetation, wildlife habitat fragmentation or loss, elevated soil loss, increases in noise, and possible temporary declines in air quality from more concentrated vehicle use in a smaller available area. However, this impact would be minimal because, as discussed above, high recreational use has not been observed within the project area by the BLM Rangers.

Off-Site Recreational Users

Effects to recreational users of specially-designated lands (including wilderness, ACECs and LTVAs) could occur. For a discussion of potential impacts to OHV route access to wilderness areas, see Section 4.16, Impacts on Transportation and Public Access - Off Highway Vehicle Resources. For a discussion of the potential impacts to visual quality from wilderness areas and ACECs see Section 4.18, Impacts on Visual Resources.

Special Designations

Five wilderness areas are located in the vicinity of the site: the Palen/McCoy, Big Maria Mountains, Rice Valley, Little Chuckwalla Mountains and Riverside Mountain. The Palen/McCoy Wilderness is the closest to the BSPP site at approximately four miles to the northwest. Recreational users could be impacted by construction, operation and decommissioning activities that would generate noise and dust.

As discussed in Section 4.9, *Impacts on Noise*, typically, “high pressure steam blow” is the loudest noise encountered during construction of a project incorporating a steam turbine. With a silencer installed on the steam blow piping, as required under NOISE- 7, noise levels commonly are attenuated to 89 dBA at 50 feet. During operation, the primary noise source of the BSPP would be the power block. The Applicant predicts the proposed action’s operational noise level at receptor LT to be 40 dBA Leq at 725 feet. Closure and decommissioning-related noise would be less than expected for construction, since no high pressure steam blows would be required, but in other respects are anticipated to be comparable to construction noise levels. Considering the fact that the nearest special designation where recreational use would occur is approximately four miles from the BSPP site, noise would attenuate such that the sound from the loudest noise associated with construction, the steam blow, would be barely audible (approximately 23 dBA at 21,120 feet); noise associated with operational activities would be virtually inaudible (approximately dBA at 21,120 feet) and noise associated with decommission would be less than construction. Therefore, impacts to recreational users would be minimal.

As discussed in Section 4.2, Impacts on Air Resources, construction, operations and decommissioning activities could generate dust in the form of PM10/PM2.5. However, the worst-case PM2.5 and PM10 impacts occur at the fence line and drop off quickly with distance. Therefore, there would be no impacts to recreational users within special designation areas.

Long Term Visitor Areas

The Midland Long Term Visitor Area (LTVA) is located approximately five miles northeast of the proposed site. Visitors camping at this LTVA are seeking opportunities for socialization with similar users in a semi-primitive environment. As noted above, due to the distance from the BSPP there would be no impacts to recreational users from noise and/or dust crated by construction, operations and decommissioning activities. It is anticipated that some construction workers could reside in RV campers at the Mule Mountain and Midland LTVAs in California and the La Posa LTVA south of Quartzsite in Arizona, or possibly camp on public lands in the vicinity of the proposed site during the construction phase of the project. Although the BLM offers developed campgrounds within commuting distance of the project, only the LTVAs allow long-term camping. The Midland and Mule Mountains LTVAs allow camping up to seven months (September 14 to April 16) with a special use permit. Outside of these dates, the camping limit is 14 days. Depending on the number of authorized workers using the LTVA, use could impact the social setting or the physical infrastructure of the LTVAs. However, the LTVAs are designed with minimal facilities given that campers must use self-contained RVs and there are no assigned or designated sites, except for the Wiley's Well and Coon Hollow Campgrounds within the Mule Mountain LTVA. Midland LTVA is 135 acres and averages 41 permits per year. Mule Mountain LTVA is 2,805 acres with an average of 135 permits per year. Except for the designated campsites at Wiley's Well and Coon Hollow, each LTVA can accommodate several hundred RV units with a minimum distance of 15 feet between units, which is well in excess of current use.

Impacts to LTVAs from maximum authorized use by construction workers would be to the social and recreation experience of winter users. If the LTVAs were used to a level that spacing and relative solitude is reduced, seasonal long-term visitors could move to other LTVAs in Arizona or Imperial County, thereby compounding crowding at these already popular sites. If there is significant use of the LTVAs by workers, then the BLM may need to increase law enforcement patrols at the LTVAs, thus reducing patrols on public lands elsewhere.

Although it theoretically is possible that unauthorized use of these LTVAs could occur when they are closed from April 16 to September 14, such use would be subject to law enforcement and, in any event, would be unlikely since it is extremely hot during the closed season.

Conclusion

Therefore, impacts associated with construction and operation of the BSPP to on-site and off-site recreational users would be minimal. Impacts associated with closure and decommissioning would likely benefit recreational values, since additional acres would be reclaimed and, thereby, made available for active or passive recreational use.

Alternatives

Reconfigured Alternative

The selection of the Reconfigured Alternative would disturb approximately 150 additional acres relative to the proposed action. Impacts to on-site and off-site recreational users associated with the operation, maintenance and closure would be similar to the proposed action.

Reduced Acreage Alternative

If this alternative were selected, the only difference with regard to direct and indirect effects relative to the proposed action would correlate directly to the reduction of 1,200 acres of surface disturbance. Other impacts to on-site and off-site recreational users associated with the operation, maintenance and closure would be similar to the proposed action.

No Action Alternative A

If No Action Alternative A were selected, none of the anticipated recreation-related impacts of the proposed action would occur. Instead, the land on which the BSPP is proposed would become available to other uses consistent with CDCA Plan use opportunities, potentially including another renewable energy project. Thus, impacts of this alternative on recreation could be substantially similar to the proposed action.

No Action Alternative B

If No Action Alternative B were selected, the CDCA Plan would be amended to make the site unavailable for future solar development. Other use opportunities consistent with the CDCA Plan would remain available. Thus, recreation-related-impacts of this alternative would vary from no impacts (e.g., if the site were left in its existing condition and no structures built that could affect the recreational opportunities or experiences available from adjacent properties) to substantial impacts (e.g., if a more intense or intrusive use were made depending on what use ultimately remain in its existing condition, with no new structures or facilities constructed or operated on the site. Generally, for the two no action alternatives, there would be no direct or indirect impacts the recreational opportunities and experiences.

Alternative Action C

If the No Action Alternative C, which would deny the ROW and amend the CDCA to find the proposed action area as suitable for any type of solar energy development, recreation opportunities would be impacted to the same degree and extent as the proposed action. For example, if the acreage of the future solar energy developed is 50 percent less and the technology is similar to the BSPP, then impacts to recreation opportunities would be 50 percent less. However, different solar technologies in the future could present different impacts on the recreational opportunities.

4.12.3 Discussion of Cumulative Impacts

Impacts to on-site and off-site recreational users resulting from construction and operation of the BSPP would be minimal, and impacts associated with closure and decommissioning would likely benefit recreational values, since additional acres would be reclaimed and, thereby, made available for active or passive recreational use. Accordingly, the potential for incremental, BSPP-specific, impacts to result in a cumulative effect on recreation with other past, present, or reasonably foreseeable future actions seems low. The geographic scope of the cumulative effects analysis for recreation consists generally of the California Desert, with emphasis on eastern Riverside County, and specifically of specially-designated recreation or wilderness areas (including ACECs and LTVAs).

Past, present and reasonably foreseeable future actions making up the cumulative scenario are identified in Section 4.1. Existing conditions within the cumulative impacts area reflect a combination of the natural condition, including related recreational opportunities, and the effects of past actions. See, e.g., Table 4.1-4, Existing Projects along the I-10 Corridor Eastern Riverside County. No existing significant adverse cumulative impact on recreation is apparent.

Present and reasonably foreseeable future actions, including other renewable energy projects, making up the cumulative scenario also are identified in Section 4.1. See, e.g., Table 4.1-2, Renewable Energy Projects in the California Desert District, and Table 4.1-3, Renewable Energy Projects on State and Private Lands. Individually and collectively, these projects would add large- and small-scale industrial, utility-related and other uses in the region, resulting in direct preclusion of access to recreational lands that would be dedicated to other, non-recreational uses. Within the California Desert District, approximately 567,882 acres potentially available for recreational use could be lost to solar development, and an additional 433,721 acres could be lost to wind development (see Table 4.1-2). However, most of the projects in the cumulative scenario are in areas with low recreation use or potential future opportunities. In some cases, the facilities themselves may become local or regional attractions for travelers or sightseers, especially if the projects include interpretive sites or visitor facilities. This would be a change in type of use, but could result in a net gain for recreation opportunities. To the extent that No Action Alternatives A and B would not result in development of the site, no cumulative impact on recreation would occur. Although the proposed action's effects on recreation individually would be low for the BSPP area, this impact, in combination with past, present, and proposed and reasonably foreseeable projects in eastern Riverside County could highly impact recreation opportunities and experiences of users, communities, and regional populations.

4.12.4 Summary of Mitigation Measures

The following mitigation measures would be imposed by the BLM to avoid or reduce impacts on the quality of the human environment. The following mitigation measures would avoid or minimize impacts on recreation:

> **BLM-REC-1:** The Applicant shall engage residents of Blythe, recreation user groups, interested public, organizations, and agencies to identify specific recreation management prescriptions to provide alternative recreational opportunities and experiences on the lands outside the BSPP site boundary. This effort shall delineate what the BLM and its partners would do to provide any additional management, marketing, monitoring, and administrative actions to meet recreational benefit demands for this area.

> **BLM-REC-2:** The Applicant shall prepare and distribute interpretative materials including a construction schedule and safety information regarding trucks and other heavy equipment on local roads, to users of the Midland, Mule Mountains and La Posa LTVA's, Wiley Wells and Coon Hollow Campgrounds, and BLM kiosks stating the development of the solar facilities at the BSPP site and the temporary or permanent closure of approximately 6,000 acres of public land to recreational use. The BLM authorized officer shall approve the draft materials prior to distribution.

BLM-REC-3: The Applicant shall encourage project workers to utilize local housing or private RV parks in Blythe and/or nearby communities.

BLM-REC-4: No less than 60 days prior to construction, the Applicant shall coordinate construction activities and the BSPP construction schedule with the authorized officer for the recreation areas impacted. The Applicant shall schedule construction activities to avoid heavy recreational use periods in coordination with and at the discretion of the authorized officer. The Applicant shall locate construction equipment to avoid temporary preclusion of recreation areas in accordance with the recommendation of the authorized officer. The Applicant shall document its coordination efforts with the authorized officer and provide this documentation to the Lead Agencies and affected jurisdictions at least 30 days prior to construction.

BLM-REC-5: The Applicant shall coordinate with the authorized officer for the applicable federal, State, or local parks and recreational facilities at least 60 days before construction in order to identify alternative recreation facilities that may be used by the public during construction. The Applicant shall post a public notice at recreation facilities that are to be closed or where access would be limited during project construction. The Applicant shall document its coordination efforts with the parks and recreation departments and provide this documentation to the Lead Agencies and all affected jurisdictions 30 days prior to construction.

4.12.5 Residual Impacts after Mitigation Measures were Implemented

There would be a loss of about 6,000 acres of public lands that would not be available for dispersed camping and other recreation opportunities and experiences within the site boundary for the duration of the BSPP. Such lands would return to public use, including recreational use, following closure and decommissioning.

4.12.6 Unavoidable Adverse Impacts

The surface disturbance that would occur from the BSPP would result in unavoidable adverse impacts on recreation resources by permanent removal of vegetation, landforms, and other nature features of the characteristic landscape for the life of the BSPP or until decommissioning and restoration occurs.

4.13 Social and Economic Impacts

4.13.1 Impact Assessment Methodology

The social and economic analyses of the proposed action effects complies with the National Environmental Policy Act (NEPA) requirements given the respective power plant licensing and land jurisdictions within the BLM. The social and economic impact analyses evaluate project-related changes on the existing local population and economy (including employment and the relationship to local housing conditions). The economic impacts of the BSPP-related construction and operation spending of the BSPP and other related socioeconomic impacts are also estimated. The proposed action's projected peak employment is used to analyze worst-case construction employment impacts to the local communities, their social character and their economies. The potential effects to the local area's social character are evaluated based on the findings of the economic impact analysis.

The impacts on public services related to health and safety (e.g. police protection, fire protection and emergency medical services) are analyzed in Section 4.11, *Impacts on Public Health and Safety*. Potential effects on parks and recreational opportunities are considered in Section 4.12, *Impacts on Recreation*.

The Council on Environmental Quality Regulations for Implementing the Procedural Provisions of the NEPA (40 CFR Part 1500 - 1508) provides no specific thresholds of significance for socioeconomics impact assessments. Significance varies, depending on the setting of the proposed action (40 CFR 1508.27[a]), but 40 CFR 1508.8 states that indirect effects may include those that are growth-inducing and others related to induced changes in the pattern of land use, population density, or growth rate.

An input-output model (IMPLAN) was used to estimate the indirect economic impacts associated with construction- and operation-phase expenditures resulting from the BSPP that would benefit the eastern Riverside County region.

The cumulative impact analysis evaluated the socioeconomic impacts of the future combined implementation of the Solar Project identified in the Cumulative Project Scenario discussed in Section 4.1.

4.13.2 Discussion of Direct and Indirect Impacts

Proposed Action

Construction

Construction employment and spending for the proposed action would be the primary direct economic impact associated with the BSPP. As such, the construction employment and related spending effects would be a temporary impact lasting for the anticipated 69-month duration of the construction period. Given the absence of any significant current economic use of the site, the construction activities associated with the proposed action would represent a beneficial economic impact adding new employment and spending to the local economy.

Economic

As discussed in greater detail in Section 3.14, *Social and Economic Setting*, the origin of BSPP construction workers is a central factor determining the magnitude and extent of potential socioeconomic impacts to the local economy and communities associated with the proposed action. The direct benefits of employment and higher personal incomes primarily would benefit the communities from which construction workers and their families reside, since construction workers would likely spend the majority of their earnings in these communities. The workers' spending for goods and services would have an indirect socioeconomic impact on the communities and economies where that spending occurs. In addition, if there is an insufficiency of suitable local workers to staff the BSPP, then the BSPP could attract individuals to relocate to the area (either temporarily or permanently), which could consequently result in an increased demand for housing and local services. If there is insufficient housing or service capacity, then adverse indirect social and economic impacts could result. People permanently (or in some cases even only temporarily) moving into the area for work could encourage the construction of new homes, extension of roads and/or other infrastructure development and/or could increase the existing demand for public services. Informal worker lodging or camping in the local area would likely be a particular concern. Given the relatively long commute distances that some workers could face, some could seek to save travel-related time and costs by choosing to camp at existing public camp sites or, informally, on nearby public or private lands.

Project Construction Labor Needs

The availability of the local and regional workforce to meet the BSPP's construction labor needs has been analyzed to determine whether the BSPP would induce population growth. Consistent with the geographic demarcations for the local and regional study areas, the "local workforce" consists of employable residents living in relatively close proximity to the site (i.e., the cities of Blythe, California or Quartzite, Arizona; or the community of Ehrenburg, Arizona).[1] The "regional workforce" consists of all potential employable adults currently living up to a two-hour commute (one-way) to the site. As discussed in Section 3.14 and shown in Figures 3.14-1 and 3.14-2, the regional labor force consists of the employable adults living in the cities west of the site along I-10 as far as, and including, the City of Palm Springs.

The Applicant expects that construction would last 69 months, with an average of about 604 daily construction workers with a peak employment of 1,004 workers during month 16 of construction (Solar Millennium 2009a, p. 5.11-24). Generally, increased employment represents a beneficial economic impact on local communities from the new job opportunities and increased income generated for the local economy. However, in rural areas such as Blythe and/or projects with more skilled/specialized job requirements, increased labor demand can have adverse indirect

[1] In addition, residents living in the unincorporated areas near these communities or within an hour's commute of the project would also be considered local labor force. However, given the very limited data on the unincorporated residents, it is conservatively assumed that all the unincorporated population identified in Section 3.14 are regional but not local residents.

socioeconomic impacts on the local communities if it causes significant in-migration that the existing local housing, infrastructure and/or other public services cannot support. The estimated peak employment of 1,004 is used to analyze worst-case construction employment related impacts from potential in-migration.

Labor Force Supply

Table 4.13-1 shows Year 2006-2016 occupational employment projections for the Riverside/ San Bernardino/Ontario MSA[2] by construction labor skill as compared to the estimated number of total construction workers by craft needed during the peak month (month 14) as presented in the Application for Construction (AFC) (Solar Millennium 2009a, p 5.11-26). The primary trades required for construction of the proposed action will include pipefitters, skilled and unskilled laborers, electricians, carpenters, cement finishers, equipment operators, ironworkers, and truck drivers.

Table 4.13-1 shows that there is a very large population of suitably skilled construction workforce for the proposed action currently living within Riverside and San Bernardino Counties.[3] However, only a portion of these workers could be expected to be currently living within the region. Based on the regional study area's estimated 2010 population of 476,451 residents, compared to a corresponding Riverside and San Bernardino population of 4,212,684, the regional study area's skilled labor force would total approximately 11.3 percent of the skilled workforce shown in Table 4.13-1. Overall, that would suggest a total skilled labor force of approximately 14,665 workers (11.3 percent of approximately 130,000 total skilled construction workers)[4] living within the regional study area.

Applying the current local unemployment levels of 12.7 percent within the regional study area would suggest that approximately 1,860 unemployed skilled workers may currently reside in the regional study area. Compared with the required average project employment need of 604 workers, the proposed action could employ up to approximately 32.5 percent of the estimated currently unemployed construction workers. During peak construction, 1,004 workers would be needed, which would employ up to nearly 54 percent of the estimated available unemployed skilled workforce. While this would represent a major proportion of the region's skilled workforce, there also could be individuals amongst the region's estimated nearly 22,500 unemployed (i.e., 24,340 total regional unemployed – 1,860 regional skilled unemployed construction workers) that have or could obtain the necessary training to perform the facility construction. Also, it is likely that some of the currently employed skilled local construction workers would change their jobs in order to work closer to home and their positions would be filled by other workers living outside of the regional study area.

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2 Metropolitan Statistical Areas (MSA) are geographic entities defined by the U.S. Office of Management and Budget (OMB) for use by Federal and State statistical agencies in collecting, tabulating, and publishing socioeconomic statistics. The Riverside/San Bernardino/Ontario MSA consists of Riverside and San Bernardino Counties combined. As such, the MSA population and labor force estimates include a major portion of individuals residing outside the likely daily commuting range from the site.

3 Given its more rural character and the far smaller size of its labor force, only a very minor proportion of future construction workers would be expected to originate from La Paz County in Arizona. For this analysis, it is conservatively assumed that all construction workers for the BSPP would be California residents.

4 Using the average of 2006 and 2016 skilled labor force estimates shown the Table 3.14-1.

TABLE 4.13-1
TOTAL LABOR BY SKILL IN RIVERSIDE/SAN BERNARDINO/ONTARIO MSA (2006 and 2016 Estimate) AND PROJECT REQUIRED CONSTRUCTION BY CRAFT PEAK MONTH

Trade	Total # of Workers for Project Construction by Craft – Peak Month	Riverside/ San Bernardino/Ontario MSA 2006	Riverside/ San Bernardino/Ontario MSA 2016
Surveyor	16	1,420	1,670
Operator	94	4,790	5,460
Laborer	229	27,930[a]	32,080[a]
Truck Driver	28		
Oiler	4		
Tradesman	8		
Carpenter	77	28,850	32,390
Boilermaker	9	4,630[b]	5,330[b]
Pipe Fitter	290		
Paving Crew	0	630	720
Electrician	81	6,740	7,600
Cement Finisher	80	4,110	4,690
Ironworker	42	19,460	20,800
Millwright	18	2,630[c]	2,960[c]
Construction Manager	2	4,380	5,110
Project Manager	2	10,990[d]	12,380[d]
PM Assistant	2		
Timekeeper	2		
Administrator	5		
Support	2	120[e]	130[e]
Support Assistant	2		
Engineer	7	1,370	1,600
Welder	1	3,960	4,640
Total	***1,001***	***122,010***	***137,560***

NOTES:
[a] "Construction Laborers" category was used.
[b] "Plumbers, Pipefitters, and Steamfitters" category was used.
[c] "Machinists" category was used.
[d] "Supervisors, Construction and Extraction Workers" category was used.
[e] "Helpers - Construction Trades" category was used.

Source: Solar Millennium 2009a, Tables 5.11-8, 5.11-11, and 5.11-17.

Consequently, it is expected that most, if not all, of the construction employment for the BSPP would consist of construction workers who live within a two-hour commute from the site. Employee ride sharing, and the relatively long duration of the work would likely encourage workers to commute considerable daily distances to work on the project.

Housing and Lodging Impacts within the Local Study Area

As shown in Table 3.14-2, the current published vacancy rates for the cities of Blythe, California; Ehrenberg, Arizona; and Quartzsite, Arizona are 16.1, 34.9, and 41.9 percent, respectively. These vacancy rates indicate that some currently vacant housing could be available for construction workers who choose to relocate within the local study area. Altogether, it is conservatively estimated that up to approximately 2,480 existing housing units could be available as potential housing for future construction workers (this estimate does not account for other potential available housing within the unincorporated local study area). The extent to which construction workers choose to rent local housing would depend on the rental prices and the condition of the available housing. Especially if construction workers would be willing to share rental accommodations, rental housing could be an option for workers wishing to relocate or, more likely, commute weekly to work at the site.

In addition, as discussed in Section 3.14, analysis of the current motel and hotel businesses and their occupancy rates suggests that lodging could be available to accommodate construction workers who choose to stay temporarily at a local motel or hotel to be close to the site. There are approximately 1,000 hotel/motel rooms within the local study area (i.e., the Cities of Blythe and Quartzite and community of Ehrenburg) (AS 2009a, p. 5.11-27).

Other lodging opportunities also could be available at privately-owned RV/campgrounds and public campground areas within the local study area. However, during the high season (December to March) these facilities can be popular with visitors and, therefore, could have only limited availability for construction workers. In addition, most of the public campgrounds (including the BLM administered Long Tern Visitor Areas) are intended for recreational use; construction workers might not be permitted to use these areas. Consequently, it is unlikely that the RV/campgrounds would be very suitable or attractive lodging options for most BSPP construction workers who seek local accommodations.[5] However, the BLM may allow temporary LTVAs to be established at the Project site for project employees for the duration of project construction.

Furthermore, particularly during the non-winter season, it is likely that there would be considerable housing opportunities within the local area for construction workers seeking temporary accommodations. Lodging facilities within the local study area could include both rental housing for workers seeking longer term local housing and motel lodging for those looking for more occasional or shorter stay accommodations. The relatively high vacancy rates also would ensure that any BSPP-related temporary housing needs would be met with existing housing or lodging facilities. As a result, no new housing or motel development would be expected to be induced by the proposed action and the increased use of these under-utilized housing or motel lodging would be considered beneficial for local property owners.

Construction Worker Expected Commuting Patterns

Given the major skilled labor force residing within the areas of Riverside and San Bernardino Counties, and the common construction worker commuting habits (EPRI, 1982; CEC, 2010), it is reasonable to expect that BSPP construction workers residing outside the regional study area would commute weekly to the local area rather than in-migrate with their families. Consequently,

5 Except for construction workers that already own their own RV or camper trailers.

any such workers who choose to reside temporarily in the local area would have a limited service impact on local services and infrastructure. Furthermore, given that existing housing and/or lodging facilities would be used to accommodate the few (if any) construction workers who choose to stay temporarily in the local area, the local transient occupancy tax revenues, local rental home owners' property, and/or business taxes payments should account for their limited local infrastructure and public service usage.

Therefore, it is concluded that the proposed action would not induce substantial growth or concentration of population in either the regional or local study areas. Furthermore, construction of the proposed action would not encourage people to relocate to the area and, thereby, result in new and unplanned growth or land use changes.

Construction Spending Impacts

Construction of the proposed action would create a temporary, positive impact on the local economic base and fiscal resources. Construction workers wages and salaries would provide additional income to the area, as would expenditures within the local and regional study areas for construction materials and services. An IMPLAN input-output model was used to estimate economic impacts within eastern Riverside County based on the construction-phase BSPP-related expenditures that would be expected to occur within the regional study area.

IMPLAN is an economic impact modeling tool that uses region-specific input/output accounts by industry to estimate secondary impacts of economic changes. Secondary impacts include: (1) indirect impacts that occur due to the purchase of goods and services by firms involved with construction and operation; and (2) induced impacts, which result from household spending by project- related employees. Secondary impacts can occur in the form of employment, income, output, and taxes.

Social Accounting Matrices (SAM) multipliers were used for the impact analysis. SAM multipliers are recommended by the writers of the IMPLAN software because an induced effect estimate using a SAM multiplier is based on information in the social account matrix, which accounts for social security and income tax leakage, institution savings, and commuting. The multipliers for the impact analyses for the proposed action were derived based on specific industry data for the Riverside County study area in the IMPLAN Professional input/output relationships to represent the direct economic impacts associated with the proposed action (e.g., estimated annual construction cost and annual operation cost). Zip code level IMPLAN data was obtained to enable both Riverside County and sub-County area analysis of the spending impacts from future project construction and operation. IMPLAN Sector 36, "Construction of other new non-residential structures," was selected as the IMPLAN sector most closely corresponding to the North American Industry Classification System Code 21, which is used for "Power plants, new construction." All figures are in presented in 2010 dollars. Table 4.13-2 summarizes the IMPLAN analysis findings.

The proposed construction labor payroll has been estimated at approximately a total of $406 million over 69 months ($70.6 million estimated annually). Capital expenditures and local spending on construction materials, equipment, and service are estimated to total approximately

TABLE 4.13-2
BSPP CONSTRUCTION ECONOMIC BENEFITS (2010 Dollars)

Fiscal Benefits	
State and local sales taxes	$9.9 million ($1.72 million average per year)
BSPP Construction Spending	
Labor	$406.0 million ($70.6 million average per year)
Materials, equipment and services	$60.0 million ($10.4 million average per year)
Total	$466.0 million ($81.0 million average per year)
Direct, Indirect, and Induced Benefits	
Direct	
Economic Output	$466.0 million ($81.0 million average per year)
Jobs	604 jobs (monthly average)
Indirect	
Economic Output	$86.2 million ($15.0 million average per year)
Jobs	108 jobs
Induced	
Economic Output	$243.8 million ($42.4 million average per year)
Jobs	354 jobs
Total	
Economic Output	$796.0 million ($138.4 million average per year)
Jobs	1,066 jobs

SOURCE: Solar Millennium, 2009a; ESA, 2010.

$60 million over 69 months ($10.4 million estimated annually). For this analysis, it was assumed that the construction material and equipment purchases would include standard construction materials and services that would mostly be obtained from within the IMPLAN study area.[6] These BSPP expenditures were used to estimate the economic benefits to the local and regional economies. The IMPLAN model also assumes that all of the construction workers for the proposed action would be from within the regional study area of eastern Riverside County.

The proposed solar facility construction is expected to directly create an average of 604 annual full-time employees over 69 months, with a peak monthly employment of 1,004 full-time employees. This new employment would create both indirect and induced secondary employment in the regional study area. Indirect employment is defined as employment that would be generated by the purchase of goods and services required for the facility’s development. Induced employment is defined as employment that would be generated by the purchase of goods and services by businesses that are indirectly supported by the proposed action.

6 The costs for specialized solar materials and equipment (e.g., panels) that would have to be purchased from outside Riverside County are not included, since their acquisition from out-of-County or out-of-State suppliers/manufacturers would have minimal economic benefit to local or regional businesses.

As shown in Table 4.13-2, according to the IMPLAN analysis, construction of the BSPP could be expected to have the direct beneficial economic impact of generating an average of $70.6 million in annual spending on construction labor within the regional study area for the duration of the construction period. In addition, on average, approximately $10.4 million would be spent annually on construction materials, equipment, and services from businesses within the regional study area. Together, the construction spending is expected to generate up to an additional $47.4 million per year in indirect and induced economic output for other businesses in eastern Riverside County.

The actual future economic impact for eastern Riverside County could be smaller than the total economic benefits shown in Table 4.13-2. BSPP-related spending would benefit eastern Riverside County and the local economies depending on the extent that workers live and spend their earnings at businesses locally and elsewhere in eastern Riverside County. Given the local study area's rural character, most of the projected benefits would likely be received by the larger cities and communities located elsewhere in eastern Riverside County, outside the local study area. The economic benefits to both local and regional businesses could be less than those estimated by the IMPLAN model if greater sales leakage occurs assumed for by the IMPLAN model. Irrespectively, the net short-term economic impact on the local and regional economies would be considerable.

In terms of economic output impacts, the primary local industries that would benefit the most include the following: rental housing, architectural and engineering services, wholesale and retail trade businesses, real estate establishments, physicians and other medical professionals, food service, and hotel/motel businesses.

Social

The potential for BSPP-related impacts to the local study area's social character are determined by the nature of economic impacts of the construction activity and any BSPP-related in-migration.

As discussed above, construction of the BSPP could be expected to generate considerable economic benefits directly for both construction workers and local businesses providing materials and services for construction. In addition, major indirect and induced spending benefits for the local and eastern Riverside County economies would be generated by subsequent spending of the construction workers and construction businesses' income within the local and regional economy. The economic benefits are expected to extend widely within the local and regional economy but would most benefit food, retail, lodging, real estate, and medical related businesses.

The additional new income for the local economy from the BSPP would have a positive, but short-term, contribution towards supporting local business and maintaining the economic vitality of the City of Blythe and other neighboring communities. The positive effect for the local economy would be increased given the local study area's recent and on-going economic weaknesses as a result of both longer term changes and the more recent economic downturn. The continued viability of Blythe's local business community is essential for its long term well-being. Increased local employment opportunities would improve local residents' standard of living and will help retain younger residents who otherwise would be more likely to leave the community if there are insufficient local employment opportunities. The local community's positive social attitudes to the proposed action may generally be expected to increase based on the extent that local residents are employed (either directly or indirectly) or otherwise benefit from the BSPP.

BSPP-related in-migration of new residents could affect the social character of the local study area. An influx of new individuals with different values, lifestyles, and/or socio-demographic backgrounds could have a positive or negative influence on the quality life and/or community values. The existing community members' attitudes and opinions to any such changes could vary greatly among individuals. However, in general, the magnitude of the in-migration would need to be relatively substantial for the social environment to be noticeably altered. Furthermore, social changes typically require, or are most commonly associated with, permanent changes to the community's composition and/or attitudes rather than as the result of short-term influences or changes.

As discussed above, the majority of construction workers for the BSPP would be expected to commute daily to the site. Given that most workers would likely travel to the site from their homes located west of Blythe, local residents may have little daily interaction with most workers. It is possible that some construction workers could chose to commute weekly from their homes and stay within the local area at local hotels/motels or perhaps rent homes. In this case, after the workday is over, these individuals would be more likely to interact with existing residents at local businesses or community facilities. However, given the very limited number of construction workers expected to stay in the local area during the work week, the presence of these individuals would not be expected to result in substantial or long-term adverse effects to the local area's social composition and character.

Therefore, in general, given the expected new local employment opportunities and economic benefits to local business and relatively limited temporary in-migration of construction workers, most local residents and stakeholder groups would be expected to be supportive or, at a minimum, would not oppose the solar facility's construction. Consequently, the BSPP would be expected to have a minor and largely positive impact on the social character of the local study area for the temporary duration of facility construction.

Alternatives

Reconfigured Alternative

The construction spending and employment for the Reconfigured Alternative is expected to be comparable to those for the proposed action and, consequently, the social and economic impacts would be similar.

Reduced Acreage Alternative

Construction spending and employment for the Reduced Acreage Alternative would be expected to be lower than for the proposed action and, consequently, the social and economic impacts would be similarly reduced in magnitude.

No Action Alternative A

The social and economic impacts associated with the proposed action would likely only be delayed by selecting No Action Alternative A, since this region of the United States has extremely positive characteristics for solar power generation. If the proposed action were not approved, another application for a different solar generating facility or a different type of solar generating facility would likely be filed at some time in the future. An application could also be filed for a wind energy facility or any other kind of use and impacts would result based on the specific use requested.

No Action Alternative B

The social and economic impacts resulting from the proposed action would not occur under No Action Alternative B since the application would be denied and the subsequently amended plan would identify the land as unsuitable for solar energy generation. However, the land would remain open to other types of rights-of-way and/or land use authorizations, resulting in potential impacts specific to a future use other than solar energy generation.

No Action Alternative C

Impacts associated with the proposed action would likely only be delayed under No Action Alternative C, since this region of the United States has extremely positive characteristics for solar power generation. If this proposed action were not approved, another application for a different solar generating facility would likely be filed at some time in the future.

Operation

Economic

As discussed in greater detail in Section 3.14, the origin of BSPP workers is a central factor determining the magnitude and extent of potential socioeconomic impacts to the local economy and communities from the proposed action. The direct benefits of employment and higher personal incomes primarily would benefit the communities where the workers and their families reside, since that would likely be where they spend the majority of their earnings. Workers' spending for goods and services would have an indirect on the communities and economies where that spending occurs. In addition, if there are an insufficient number of suitable local workers available to staff the BSPP, then the BSPP could attract individuals to relocate to the area, which, in turn, could result in an increased demand for housing and local services. If there is insufficient housing or service capacity to meet the new demand, then adverse indirect social and economic impacts could result.

For this analysis, the BSPP would "induce substantial population growth" if workers permanently (or in some cases even only temporarily) move into the local area for employment at BSPP facilities and, thereby, encourage the construction of new homes, extension of roads, other infrastructure development, and/or increase demand for public services.

Project Operations Labor Needs

The employment and spending by the proposed action's future operations would be the primary direct long-term economic impact associated with the BSPP. The proposed action is expected to require a total of 221 permanent full-time employees (Solar Millennium 2009a, p. 5.11-29). Table 4.13-3 shows Year 2006-2016 occupational employment projections for the Riverside/ San Bernardino/Ontario MSA by operational labor skill as compared to the estimated number of total operational workers needed (Solar Millennium 2009a, p. 5.11-29).

TABLE 4.13-3
TOTAL LABOR BY SKILL IN RIVERSIDE/SAN BERNARDINO/ONTARIO MSA (2006 and 2016 Estimate) AND PROJECT REQUIRED OPERATION

Trade	Total # of Workers for Project Operation	Riverside/ San Bernardino/Ontario MSA 2006	Riverside/ San Bernardino/Ontario MSA 2016
Maintenance and Repair Workers, General	--	11,920	13,690
Plant and System Operators	--	2,030	2,380
Total	***221***	***13,950***	***16,070***

SOURCE: Solar Millennium 2009a, Tables 5.11-8 and 5.11-11.

Approximately half the operations jobs would be lower skilled positions. All employees would be provided with necessary training. The basic job requirements for the lower skilled operations workers would likely be high school diplomas and basic mechanical equipment operating abilities. Former agricultural equipment operators, construction laborer, and many other manual labor jobs would be expected to have transferrable skills.

The other more skilled operations would generally require some secondary education and greater mechanical/electrical equipment experience than the lower skilled operation position. Project construction workers and more experienced farm or other equipment operators would be expected to have transferrable skills suitable to those required for these positions. On-the-job training could be expected to enable, over time, some lower skilled employees to gain the expertise necessary to staff the more skilled operations positions. In addition, local community colleges (Palo Verde College in Riverside and College of the Desert in Palm Desert) as well as University of California - Riverside have recently developed Utility Job Training Courses with federal funding support specifically designed to provide its students with the training necessary to qualify for the higher skilled operations jobs.

As shown in Table 4.13-3, data for the Riverside/San Bernardino/Ontario Metropolitan Statistical Area (MSA) indicates that in the 2006, the "Maintenance and Repair Workers, General" and "Plant and System Operators" employment sector contained a total of 13,950 workers, with 2016 forecasts for these employment sectors to grow to a total of 16,070 employees. The existing labor force of currently qualified plant and system operators within Riverside and San Bernardino counties is relatively limited and likely reflects the current level of available employment opportunities. As discussed in the previous estimate of the proportion of construction work living in the regional study area, on a per capita basis, it may reasonably be assumed that approximately 11.3 percent of these Riverside MSA operators and general maintenance workers would live within the regional study area. These would correspond to approximately 1,700 maintenance workers and plant operators,[7] of which, based on the regional unemployment levels, approximately 215 would be expected to be currently unemployed.

While the need for 110 more skilled plant operators for the facility's future operations would likely exceed the region's existing supply of unemployed plant operators and would also correspond to more than half the estimated unemployed general maintenance workers in the region, there would also be individuals amongst the region's estimated other nearly 24,125 unemployed (i.e. 24,340 total regional unemployed – 215 unemployed general maintenance / plant operators) that have or could obtain the necessary training to perform the facility operations. Also, it is likely that some of the currently employed workers would change their jobs to obtain a better paying job and/or to work closer to home. Given the region's high unemployment levels, any currently employed worker switching jobs could expect to have their vacated position filled by other workers (possibly including others living outside of the regional study area).

According to the Applicant, at least 75 percent of workers would be expected to come from within the regional study area workforce (AFC, p. 5.11-29), resulting in a potential influx of up to 55 workers in communities within the proposed action's regional and local study areas (Solar Millennium 2009a). Consequently, it is expected that most of the facility's operations employment would be provided by workers living within the regional study area from the site. Future BSPP-related in-migration may occur but would be expected to be very minor with at most 55 employees relocating to the local study area. Furthermore, depending on the success of local training programs and possible interest amongst project construction workers or other more skilled local residents, actual in-migration may be lower or unnecessary except for a few top plant management and supervisory positions.

Housing Impacts within the Local Study Area

There would be greater incentive for future operations workers to live closer to the site since the operations job opportunities at the solar facility would be permanent positions. These operations jobs also could encourage workers to seek permanent homes in the local area. As shown previously in Table 4.13-2, the most current published vacancy rates for the cities of Blythe, California; Ehrenberg, Arizona; and Quartzsite, Arizona are 16.1, 34.9, and 41.9 percent, respectively. These vacancy rates indicate that there is likely currently considerable vacant housing, which could be available to future operations workers who choose to relocate to the local study area. Altogether, it is conservatively estimated that up to approximately 2,480 existing housing units could be available as potential housing for future construction workers (the estimate does not account for other potential available housing within the unincorporated local study area).

7 Using the average of 2006 and 2016 skilled labor force estimates shown the Table 4.13-3.

Currently, home and rental prices within the City of Blythe and the other communities within the local area are relatively affordable and there is considerable available housing supply. These vacancy rates and the relatively minor number of BSPP employees likely seeking local housing indicates that more than sufficient existing local housing would be available for any future operational employees choosing to relocate to the local area. Therefore, no new housing or infrastructure growth would be necessary to provide housing or public services for the BSPP's operations workforce.

Future facility operations would encourage, at most, a small number of people to relocate to the area. The small magnitude of the potential action-related in-migration would be readily accommodated by the local area's existing housing and, consequently, would not result in new and unplanned growth or land use changes. Therefore, it is concluded that the proposed action would not induce substantial growth or concentration of population in the local study areas.

Consequently, the BSPP's future operations would not be expected to result in population growth either directly or indirectly that would be major in magnitude or adverse in nature.

Operations Spending Impacts

The future facility operations would have a long-term, positive impact on the local economic base and fiscal resources. Operations workers' wages and salaries would provide additional income to the area, as would expenditures within eastern Riverside County for construction materials and services.

As discussed in the construction spending impact analysis, an IMPLAN input-output model was used to estimate the indirect and induced economic impacts for eastern Riverside County based on the operation-phase BSPP expenditures that would be expected to occur within the regional study area.

The same IMPLAN model was used to estimate the BSPP's operations impact on the eastern Riverside County economy although IMPLAN Sector 31, "Electric power generation, transmission, and distribution," was used to estimate spending impacts for operations labor since it most closely corresponds to the North American Industry Classification System Code 221119, which is used for, "Electric power generation: solar." For this analysis, it was assumed that the operations material and equipment purchases would be for standard construction materials and services that would mostly be obtained from within the IMPLAN study area. These BSPP expenditures were used to estimate the economic benefits to the regional study area economy. The IMPLAN model also assumes that all of the BSPP's operations workers would reside within the regional study area of eastern Riverside County.

BSPP operations would create a permanent, positive impact on the local economy and fiscal resources. Operations employees' salaries would provide additional income to the area, as would expenditures within the multi-county study area for operations and maintenance materials and services. Table 4.13-4 summarizes the IMPLAN analysis findings for the future BSPP operations.

TABLE 4.13-4
BSPP OPERATIONS ANNUAL ECONOMIC BENEFITS (2010 Dollars)

Fiscal Benefits	
Estimated annual property taxes	$400,000[1]
State and local sales taxes	$1,600,000
School Impact Fee	$0
Project Operations Spending	
Labor	$9.4 million
Operations and maintenance supplies	$9.6 million
Total	$19.0 million
Direct, Indirect, and Induced Benefits	
Direct	
Economic Output	$19.0 million
Jobs	221 jobs
Indirect	
Economic Output	$2.3 million
Jobs	16 jobs
Induced	
Economic Output	$6.9 million
Jobs	58 jobs
Total	
Economic Output	$18.4 million
Jobs	295 jobs

NOTES:
[a] At present, there is no property tax assessed on solar components (mirrors, solar boiler, heat exchangers) improvements by law (Section 73 of the California Taxation and Revenue Code). Components included under the exemption include storage devices, power conditioning equipment, transfer equipment, and parts. The first operational year would generate an estimated $400,000 in annual property taxes.

SOURCE: Solar Millennium, 2009a; ESA, 2010.

The annual expenditures of the BSPP were assumed to be $9.6 million for materials, equipment, and supplies; and $9.4 million in payroll annually. These figures were used as inputs into the model to predict economic and employment impacts.

BSPP operations are expected to directly employ 221 full-time employees. This employment would create both indirect and induced secondary employment in the region. Indirect employment is defined as employment that would be generated by the purchase of goods and services required by the BSPP. Induced employment is defined as employment that would be generated by the purchase of goods and services by businesses that are indirectly supported by the BSPP.

As shown in Table 4.13-4, according to the IMPLAN analysis, BSPP operations could have the direct beneficial economic impact of generating a total of $19.0 million in annual spending on labor and materials within eastern Riverside County. This operations spending would be also expected to generate up to $9.2 million in new indirect and induced economic output and earnings for other businesses and residents within eastern Riverside County.

The actual future economic impact for eastern Riverside County could be smaller than the total economic benefits shown in Table 4.13-2. BSPP related spending would benefit eastern Riverside County and the local economies depending on the extent that workers live and spend their earnings at businesses locally and elsewhere in eastern Riverside County. Given the local study area's rural character most of the projected benefits likely would be received by the larger cities and communities located elsewhere in eastern Riverside County outside the local study area. The economic benefits to both local and regional businesses could be less than estimated if greater sales leakage occurs than that expected by the IMPLAN model. Irrespectively, the net annual economic impact would be a minor and positive benefit on the local and eastern Riverside County economies.

In terms of economic output impacts, the primary local industries that would benefit the most include: rental housing, architectural and engineering services, wholesale and retail trade businesses, real estate establishments, physicians and other medical professionals, and food service businesses.

Social

The potential for proposed action-related impacts to the local study area's social character are determined by the nature of economic impacts of the BSPP and any related in-migration.

As discussed above, the BSPP could generate considerable economic benefits directly for both workers and local businesses providing materials and services for the project. In addition, major indirect and induced spending benefits for the local and eastern Riverside County economies would be generated by subsequent spending by the workers and businesses income within the local and regional economy. The economic benefits are expected to extend widely within the local and regional economy but would most benefit food, retail, lodging, real estate, and medical-related businesses.

The additional new income for the local economy from the BSPP would have a positive contribution towards supporting local business and maintaining the economic vitality of the City of Blythe and the other neighboring communities for the lifetime of the project. The positive effect for the local economy would be increased given the local study area's recent and on-going economic weaknesses as a result of both longer term changes and the more recent economic downturn. The continued viability of Blythe's local business community is important for the City's long-term well-being. Increased local employment opportunities would improve local residents' standard of living and would help retain younger residents that otherwise would be more likely to leave the community if there are insufficient local employment opportunities. The extent of the local community's positive social attitudes towards the BSPP could be expected to increase as more local residents gain employment (either directly or indirectly) or otherwise benefit from the BSPP.

Project-related in-migration could affect the social character of the local study area. An influx of new individuals with different values, lifestyles and/or socio-demographic backgrounds could have a positive or negative influence on the quality life and/or community values. The existing community members' attitudes and opinions to any such changes could vary greatly between individuals. However, generally, the magnitude of the in-migration would need to be relatively substantial to noticeably alter the prevailing social environment. Furthermore, social changes typically require or are most commonly associated with permanent changes to the community's composition and/or attitudes rather than as the result of short-term influences or changes.

The majority of the facility's permanent workforce is expected to commute daily to the site. Given that most workers would likely travel to the site from their homes located west of Blythe, local residents would have little daily interaction with most workers. It is possible that some workers would choose to commute weekly from their homes and stay at local hotels/motels or perhaps rental homes. In the latter case, before or after the workday is over, these individuals would be more likely to interact with existing residents at local businesses or community facilities. However, given the very limited number of workers expected to stay in the local area during the work week, their presence would not be expected to result in substantial or long-term adverse effects to the local area's social composition and character.

Therefore, generally, given the expected new local employment opportunities and economic benefits to local business and relatively limited in-migration of permanent workers, most local residents and stakeholder groups would be expected to be supportive or at a minimum not opposed to BSPP operation. Consequently, the proposed action is expected to have a minor impact and largely positive impact on the social character of the local study area's economy for the 30-40 year duration of the BSPP.

Alternatives

Reconfigured Alternative

The operations spending and employment for the Reconfigured Alternative would be expected to be comparable to those for the proposed action and, consequently, the social and economic impacts would be similar.

Reduced Acreage Alternative

The operations spending and employment for the Reduced Acreage Alternative would be expected to be reduced from that for the proposed action and, consequently, the social and economic impacts would be similarly lesser in magnitude.

No Action Alternative A

The social and economic impacts associated with the proposed action would likely only be delayed by selecting No Action Alternative A, since this region of the United States has extremely positive characteristics for solar power generation. If this proposal were not approved, another application for a different solar generating facility or a different type of solar generating facility would likely be filed at some time in the future. An application could also be filed for a wind energy facility or any other kind of use and impacts would result based on the specific use requested.

No Action Alternative B

The social and economic impacts resulting from the proposed action would not occur under No Action Alternative B, since the application would be denied and the amended plan would classify the land as unsuitable for solar energy generation. However, the land would remain open to other types of rights-of-way and/or land use authorizations, resulting in potential impacts specific to a future use other than solar energy generation.

No Action Alternative C

Impacts associated with the proposed action would likely only be delayed by selecting No Action Alternative C, since this region of the United States has extremely positive characteristics for solar power generation. If this proposed action were not approved, another application for a different solar generating facility would likely be filed at some time in the future.

Decommission

Economic

The anticipated lifespan of the BSPP is estimated to be 30 to 40 years. Closure- and decommissioning-related social and economic impacts would be related to both the discontinuation of the solar operations and the short-term effects of the necessary facility deconstruction and subsequent site reclamation activities.

The direct economic impact associated with discontinuation of the solar energy generation site would result in job losses for the operations workforce, which would no longer be needed to maintain the facility’s daily operations and/or repair the solar power generation equipment and related infrastructure. Closure would also directly reduce future revenues to any local material, equipment, and service suppliers previously supporting the facility’s daily operations.

In addition, closure would have the additional adverse economic effect of reducing the employment and revenues for other local or regional businesses that rely on spending by the BSPP’s operations staff or suppliers. As a result of the reduced income and revenues of these affected businesses, the BSPP’s staff and support businesses would make few purchases from other local businesses, which, in turn, would reduce these businesses and its employees’ income and purchasing ability.

Deconstruction activity could, however, result in a short-term increase in local spending from the employment, equipment, and materials required to both dismantle the solar facility and reclaim the site. The cost and duration for the deconstruction activities is likely to be roughly comparable to that of the construction; except that the amount of labor and materials would be less than that required for the facility development because the facility would not need to be operational. The magnitude and duration of the resulting short-term economic benefits would likely be proportional to the extent of the deconstruction activity required for the facility's removal. The economic benefits to the local and regional economy would also likely be of a similar type and magnitude as those projected for construction, unless there is significant change to the local and regional economy during the interim period.

Given a reasonable expectation of considerable increased solar-related local business development and employment, it could be expected that there would be an increased number and variety of businesses that could provide necessary solar-related services. This would, in turn, ensure that the local and regional economies would be able to retain a greater proportion of benefit from the future decommissioning spending since a smaller proportion of the work would be performed by out-of-region businesses and, hence, leak out the region's economy.

Consequently, the economic impacts associated with the ultimate decommissioning could be initially positive from the increased employment and business spending over the relatively brief duration of the deconstruction and site restoration activities. However, following the completion of the decommissioning process, there would be minor adverse long-term economic impacts to the local economy from the lost of the solar facility's employment and annual spending.

Social

As discussed in the economic analysis above, ultimate closure and decommissioning would result in the reduced local employment opportunities and decreased revenues for businesses supplying the materials, equipment, and services required to operate and maintain the BSPP. In addition, there would be secondary economic losses for local residents and businesses that benefit from sales and employment by the BSPP employees and supplier businesses.

The potential for adverse social impacts would depend on the magnitude of the facility-related economic losses. Future decommissioning the proposed action alone would be expected to have, at most, a very minor adverse social impact. Given a reasonable expectation that a considerable number of other solar developments would occur within the region as well as an increase in other solar-related local business development and employment, the loss of an individual project would have a reduced potential to result in adverse social impacts. For substantial adverse social impacts to occur, the scale of employment and/or business economic losses would need to be of a type and magnitude that worker relocation and/or business closures would occur so that the local quality of life is reduced or the local communities' social character is adversely altered. Furthermore, the potential for adverse social impacts could be significantly reduced or eliminated if proposed decommissioning is anticipated and planned appropriately. In addition, the potential for adverse social impacts would also be significantly reduced if alternative employment and business opportunities develop, thereby reducing the economic impacts to the workers and businesses affected by the closure.

Consequently, future decommissioning of the BSPP could result at most in a very minor adverse long-term social impact from the reduced local employment and spending. It is also very possible that future decommissioning of the BSPP would result in a negligible adverse future social impact.

4.13.3 Discussion of Cumulative Impacts

The potential for cumulative socioeconomic impacts exists where there are multiple projects proposed in an area that have overlapping construction schedules and/or project operations that could impact similar resources. Projects with overlapping construction schedules and/or operations could collectively result in a demand for labor that cannot be met by the region's labor pool, which could lead to an influx of non-local workers and possibly their dependents. This population increase could impact social and economic resources if there are insufficient housing resources and/or infrastructure and public services to accommodate the new residents' needs.

Section 4.1 identifies current solar and non-solar projects which could be developed in the foreseeable future within both eastern Riverside County and elsewhere in Riverside County or the surrounding counties. While a large number of projects may be planned and, therefore, considered to be possible for future development, not all of them are expected to actually be built due to construction funding constraints, schedule, and/or delays. Many of the currently proposed projects in the local region anticipate participation in federal funding programs and/or assistance for project development. Given the uncertain and challenging economic circumstances facing both federal and state economies, it is far from assured that future funding and other governmental support will be sufficiently available for all the proposed projects within the projected schedules.

As shown in Table 4.4-1, currently more than a dozen BLM renewable energy projects are identified in the Cumulative Project Scenario for the social and economic analysis. In addition, six smaller BLM authorized actions are also identified. Finally, the Blythe Airport Solar 1 and Chuckwalla Valley Raceway projects are two other developments expected to occur or be completed within eastern Riverside County.[8]

There are 13 solar projects proposed along the I-10 corridor predominantly between Desert Center and Blythe. Based on the currently available data for these various projects (information obtained from Plans of Development and other project documents), and assuming all projects move forward, these projects would be constructed in the same general timeframe as the proposed action (i.e. between 2011and 2016).

The cumulative analysis conservatively assumes that all the proposed solar projects would be completed (or at least begin major construction) within the five-year cumulative timeframe. This cumulative impacts discussion is based on available data with respect to both construction schedules and the projects' labor requirements. If construction and operating labor requirements are not known for some projects, average work force levels of other comparable projects and professional judgments have been used to develop conservative estimates of expected cumulative labor requirements for these projects.

[8] The Chuckwalla Valley Raceway project is scheduled for completion in late 2010 and therefore would not be expected to add any significant construction labor need during the 2011 to 2016 cumulative analysis time period.

Economic

Construction

Cumulative Construction Labor Needs

If all of the 13 major BLM Solar Projects identified in eastern Riverside County are constructed, a total of 6,108 MW of new solar power would be developed. The average solar power project would be approximately 470 MW in size and may be expected to require approximately 1,926 full time equivalents (FTE) construction workers to be built.[9] Full build-out of all 13 BLM solar projects would require approximately 25,040 FTE of construction worker employment over the cumulative analysis's five year time-frame. This labor demand would be roughly equivalent to an average of 5,000 FTE of construction workers per year annual. This level of construction worker labor demand would represent the minimum employment impact on the regional study area since it assumes that all the BLM solar project construction work would be evenly performed over the five year period.

However, it will be solar projects' peak construction employment needs that would place the highest demand on the regional construction labor supply and have the greatest potential for cumulative socioeconomic impacts. The peak construction labor requirements for solar projects are estimated to average 1.86 workers per MW. In which case, during its period of peak construction, a typical 470 MW solar project would employ approximately 875 construction workers. Under the extremely improbable circumstance that peak construction of all 13 planned BLM solar projects happening concurrently, a maximum of 11,360 construction workers would be required in the region.

The actual cumulative construction labor force demand within the study region will be higher than the 5,000 FTE minimum and likely considerably lower than the 11,360 FTE maximum. The average construction period for BLM solar projects is estimated to be approximately 43 months or 3.6 years. Furthermore, project developers will likely seek to minimize the construction occurring during the hottest summer months and may stagger their construction periods accordingly. Consequently, some seasonality may be expected to occur as developers favor more construction during the region's cooler winter months. Therefore, conservatively assuming that all the projects would be completed with the five-year cumulative scenario period, the regional labor need for a realistic "worst case condition" would be for four projects to have peak labor needs during the same year.[10]

Given an average construction period of 3.6 years, it would be expected that at least nine of the 13 BLM solar projects would be occurring at any one time and, more likely, at least 11 would be ongoing during the expected peak labor demand period of 2012 to 2014. Therefore, the peak construction labor demand for the cumulative analysis is estimated to be equivalent to the total construction labor demand for seven solar projects under average construction conditions and four solar projects during peak construction. Altogether, such a rate of solar construction would

9 This is based on an estimated average construction labor need of approximately 4.1 construction workers (FTE) per MW of solar power production capacity.

10 The peak construction requirement typically occurs during mid-construction, suggesting that 2012 – 2014 would be most likely to experience peak labor demands.

be expected to require a total of 7,180 construction workers for the various BLM solar projects along the I-10 corridor during the years of major solar project development.[11]

In addition, there also could be demand for construction workers from the planned non-BLM solar project proposed for the Blythe Airport. This 100 MW solar project could contribute approximately 150 construction workers annually over the course of a multi-year construction period. The future construction needs of the various other non-solar projects on BLM land in the region are not known but, altogether, reasonably could be expected to have an annual construction labor need roughly comparable to another solar project (i.e., 530 construction workers).

Therefore, 7,880 construction workers is very conservatively estimated to represent the maximum possible future cumulative labor force demand from the region's planned solar and non-solar development. This estimate assumes all the identified projects would be developed within the five year cumulative analysis period.[12] The proposed action's maximum potential contribution to this cumulative effect would be approximately 12.7 percent during its peak construction period. The project's average contribution to the cumulative impact would be approximately 7.8 percent during its non-peak construction.

Regional Labor Force Supply

As discussed earlier in the social and economic analysis, the total work force of skilled construction workers currently living in eastern Riverside County is estimated to be approximately 14,665. Future demand for 7,880 construction workers would be equivalent to employment for more than half (53.7 percent) of the current skilled labor force. Such demand for construction workers far exceeds the current unemployed construction labor force. Approximately, an additional 850 skilled construction workers are currently expect to be added to the eastern Riverside County labor force by 2016 (based on past job projections shown in Table 4.13-1). The cumulative labor force demand would still represent more than half the region's currently forecasted future skilled construction labor force.

The current unemployed labor force within eastern Riverside County is estimated to be 24,340. The construction worker demand would represent approximately a 32.4 percent decrease in the regional study area's unemployment level. Although many of the region's currently unemployed residents may lack transferable skills or have the physical aptitude to acquire the necessary skills required by cumulative labor demand, many residents could be adequately trained to be employable. Furthermore, some of the construction work would be more entry-level positions which may be suitable for less skilled workers.

Some of the regional workforce currently employed in other sectors also could have the capabilities to qualify for BSPP construction work. In such cases, some job transferring may occur, especially since the construction jobs may be expected to be relatively well-paid and

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[11] This assumes a typical 470 MW solar projects requiring 527 workers under average construction conditions and 873 workers during their shorter periods of peak construction.

[12] In actuality, construction labor shortages (and related wage escalation) would also be expected to become a possible constraint reducing the pace of future development occurring.

attractive for many local residents. The less skilled or desirable jobs vacated by individuals transferring to construction work could be filled by other less skilled unemployed residents. Finally, the cumulative labor force demand on eastern Riverside County also could be partly reduced as projects located to the west would be closer to cities and potential workers outside the BSPP's regional study area. Consequently, these projects could meet some of their labor needs from residents from Desert Hot Springs, Morongo Valley, or Banning.

Housing and Lodging Impacts within the Local Study Area

Nonetheless, there could be demand for specialized construction trades that exceed the available labor supply for that specialty within eastern Riverside County. In which case, it is assumed that those job positions would be filled by workers relocating into the region from elsewhere.

Given the numerous factors discussed above, it is difficult to project the extent of future weekly commuting or other in-migration that would be necessary to meet the future cumulative labor needs within the region. However, as a conservative assumption, other social and economic impacts analyses for solar projects have suggested that a 15 percent rate of in-migration would be a conservative and reasonable assumption. Such a proportion of in-migration applied to the projected maximum future cumulative labor force demand would suggest that up to 1,165 construction workers could require temporary housing in the local, or possibly, regional study area.

As discussed earlier, the skilled construction labor force within Riverside County is estimated to be approximately 69,100. This suggests that there is likely to be a considerable additional potential labor force available that could be willing to commute weekly or temporarily relocate to the local area. Consequently, from a broader geographic and labor force perspective, no significant shortages of adequately skilled construction workers, if foreseen, provide adequate and/or suitable housing available for relocating near the projects' sites.

The cumulative influx in construction labor to the area could create demand for temporary housing that is greater than the existing supply of temporary lodging. As discussed in the previous construction impact analysis, private and public RV/campgrounds are not expected to be suitable or attractive lodging options for most project construction workers seeking local accommodations. There are expected to be some suitable and available temporary lodging at local hotel/motel lodging. Although, room availability and prices could be higher during the winter months, based on County-wide vacancy rate estimates, nearly 300 rooms could be available in the local area. Given that some construction workers might be willing to share rooms and save on their lodging costs, the existing local hotel/motels could be able to satisfy up to 450 future construction workers seeking local temporary housing. If construction workers were willing to commute 1.25 to 1.75 hours daily to the site, the supply of potential hotel/motel increases dramatically to an estimated 8,285 rooms, which would correspond to 2,420 rooms. This would be more than sufficient temporary housing for an expected 1,165 construction workers seeking temporary housing.

In addition to the available lodging in the local area, there are also potentially considerable under-utilized homes in the local area that may be suitable for rent by construction workers seeking local housing. Within the City of Blythe, approximately 880 homes are currently estimated to be vacant and another 1,594 local housing units may be available within the cities of Ehrenburg and Quartzite in Arizona. Given that some construction workers could be willing to share homes to reduce their lodging costs, these housing units could provide more sufficient housing for the projected cumulative local housing demand.

Some of the solar developers might also choose to develop onsite housing facilities for their construction work forces. For example, on-site worker accommodations are planned as part of the Rice Solar project by its developer.[13] The Eagle Crest Pumped Storage project near Desert Center is located at a former mine site that has housing previously used by mine workers. Project documents indicate that the possible use of the onsite housing for the pumped storage project is under consideration.

Irrespective of the availability of temporary housing, it may be expected that, even under future cumulative conditions, a relatively small proportion of construction workers would choose to permanently relocate to the local communities where they are employed during construction. This is because many construction workers could choose to commute relatively long distances to their work sites and may expect to seek work within the more populated areas of Riverside and San Bernardino Counties in the future.

Furthermore, during the same time period with the greatest potential for adverse impacts resulting from the cumulative demand for construction worker housing, there also would be a major positive economic stimulus to the Blythe area and eastern Riverside County economies associated with the solar development which could likely offset any adverse impacts.

In summary, there is potential for short-term adverse cumulative social and economic impacts in the Blythe area associated with the demand for skilled construction labor for the dozen solar projects proposed for future development within eastern Riverside County. Analysis suggests that future construction labor demand would be greatest from 2012 to 2014 and may be sufficient to exceed the existing local work force within eastern Riverside County. In which case, there may be increased demand for temporary local housing from construction workers seeking to commute weekly to the local area. However, given the estimated availability of lodging and possible rental housing, it is expected that there will adequate and suitable housing to meet any future construction worker temporary housing demand. Therefore, no major adverse social or economic impacts would be expected to result.

Operations

If all of the 13 major BLM Solar Projects identified are constructed, a total of 6,108 MW of new solar power would be developed. The average solar power project is estimated to require approximately 0.21 operations workers for each MW of solar power production. Consequently, if full build-out of the planned solar development occurs, the future cumulative operations labor

[13] Development of temporary worker housing facilities is more likely to be possible at projects (such as Rice), which are located on private property.

employment in the region would be approximately 1,280. The BSPP's operations employment of 221 jobs represents approximately a 17.3 percent contribution to the cumulative operations labor need.

As discussed in the earlier operations analysis, there is currently only a limited population of skilled plant workers living in the eastern Riverside County. However, the transferability of construction worker skills, on-the-job and local community college training opportunities, as well as the lower skilled qualification requirements for half the operations job suggest that there would be many local and eastern Riverside County residents who would be able to meet the cumulative operations labor needs.

Even conservatively assuming that up to 25 percent of the future operations labor force could be recruited from non-region residents, there would be an in-migration population of 320 operations workers. There is more than sufficient available local housing to accommodate the housing needs of these workers and their families. Furthermore, the relatively limited number of new residents would not be expected to result in any noticeably change to the local communities' social composition or character. The future operations of the solar projects will also generate significant annual economic benefits in local employment, direct and indirect spending at local businesses as well as positive sales and other tax benefits for the local area. Consequently, the cumulative social and economic effect of the future operations of the solar projects would be minor and beneficial.

Decommissioning

Evaluating the proposed action's cumulative impacts when future facility decommissioning occurs is highly speculative. Ultimate decommissioning is expected to occur in 30 to 40 years' time. It is not possible to project with any confidence the likely future social and economic conditions of the local and regional study area. Similarly, it is very difficult to envision the future cumulative scenario conditions that appropriately represent the context within which the BSPP would dismantle its facilities and site reclamation would occur. Simply stated, any presumptions of the future status for the other solar projects (e.g., continued operation, replacement or decommission) would directly determine the nature of the impact that discontinuation of the proposed action would be expected to have.

In any case, the proposed action is expected to be one of many similar solar projects within the eastern Riverside County region. As such, the proposed action's contribution and influence on the region's social and economic conditions would likely be proportional to: (a) its magnitude relative to the other developments projects in the region; and (b) the collective size and relationship of the combined development projects to the region's social and economic conditions. Consequently, from the current perspective and based on the currently and foreseeable future circumstance for the project and the region, there is no evidence to suggest that future decommissioning of the BSPP would have anything but at most a very minor adverse cumulative impact on the local and regional area's economic or social environment.

Social

Construction

The cumulative impact of the many proposed future solar and non-solar development projects in Eastern Riverside County would result in considerable short-term construction activity at many locations throughout the region. Future cumulative demand for construction workers for these projects could exceed the available supply of skilled construction workers living in the region. In this case, construction workers from elsewhere in Riverside County, Southern California, or Arizona could be attracted to the area by the construction employment opportunities. The potential for adverse social impacts would be decreased if there is a sufficient suitable supply of housing and lodging to satisfy these workers' local housing demand. Therefore, in this case, no new residential or lodging growth would be expected to occur.

The ongoing construction activity in the region, influx of construction workers both commuting daily to the site, and the more limited number who could choose to temporarily live in the local area could noticeably alter the social character and environment within Blythe and the other communities within the local area. A construction worker population of 7,780 would be equivalent to nearly approximately 29 percent of the estimated total local study area population and, consequently, would be cumulatively likely to be very noticeable.

The potential influx of construction workers to the local area would be accompanied by an increase in economic activity from their spending in local business establishments. In addition, the planned new development projects would also make purchases from local businesses for construction materials and supplies, various kinds of services, etc.

The effects of the increased activity on local attitudes and quality of life may vary amongst residents. While some residents may be displeased by increased traffic, new visitors and temporary residents (particularly those employed or otherwise benefiting economically from the construction) could welcome the development.

However, an influx of new workers also could increase the demand for certain kinds of government services and infrastructure (e.g., police and fire services and medical facilities and services). There have been other past instances of rapid growth in rural areas as a result of energy-related development, most notably the energy boom in the 1970s in states such as Wyoming. A number of communities, such as Rock Springs and Gillette, Wyoming, became known as "boomtowns," and the local economic benefits from the new energy development in the region were accompanied by some social changes that were not seen as positive by many existing residents. These included changes such as growth in number of bars, higher crime rates, and perceived (by some) aesthetic degradation due to rapid growth occurring to accommodate the sudden increase in population.

The presence of existing larger communities (such as Indio and Coachella) that are within possible commuting range for construction workers could suggest that circumstances may differ substantially from those facing the more isolated Wyoming boomtown communities 35 years ago.

However, there would remain a potential for temporary impacts in the Blythe area, particularly if the possibility of such social and economic impacts are not unanticipated and are not managed.

Operations

As discussed in the corresponding economic cumulative analysis, the proposed action's future operations would be expected to have a minor and beneficial effect on the local and eastern Riverside County economy. Even conservatively assuming that up to 25percent of the future operations labor force could be recruited from non-region residents, there would be an in-migration population of only 320 operations workers. There is likely to be more than sufficient available local housing to accommodate the housing needs of these workers and their families. Furthermore, the relatively limited number of new residents would not be expected to result in any noticeably change to the local communities' social composition or character. The future operations of the solar projects also would generate significant annual economic benefits in local employment, direct and indirect spending at local businesses as well as positive sales and other tax benefits for the local area. Consequently, the cumulative social and economic effect of the future operations of the solar projects would be minor and beneficial.

Decommissioning

As discussed in the corresponding economic cumulative analysis, there is insufficient information to reliably project the conditions when decommissioning of the proposed facilities would occur in 30 to 40 years in to the future. Consequently it is highly speculative to attempt to characterize the future situation and circumstances under which facility decommissioning would occur.

In any case, the proposed action is expected to be one of many similar solar projects within the eastern Riverside County region. Consequently, from the current perspective and based on the currently and foreseeable future circumstance for the project and the region, there is no evidence to suggest that the future project decommissioning would have anything but at most a very minor adverse cumulative impact on the local and regional area's social environment.

Alternatives

Reconfigured Alternative

The construction spending and employment for the Reconfigured Alternative would be expected to be comparable to those for the proposed action and, consequently, the cumulative impact would be similar.

Reduced Acreage Alternative

The construction spending and employment for the Reduced Acreage Alternative would be expected to be reduced from that for the proposed action and, consequently, the cumulative impact would be similarly reduced in magnitude.

No Action Alternative A

The social and economic impacts associated with the proposed action would likely only be delayed by selecting No Action Alternative A, since this region of the United States has extremely positive characteristics for solar power generation. If this proposal were not approved, another application for a different solar generating facility or a different type of solar generating facility would likely be filed at some time in the future. An application could also be filed for a wind energy facility or any other kind of use and any cumulative impacts would result based on the specific use requested.

No Action Alternative B

The social and economic impacts resulting from the proposed action would not occur under No Action Alternative B since the application would be denied and the plan amended to identify the land as unsuitable for solar energy generation. However, the land would remain open to other types of rights-of-way and/or land use authorizations, resulting in potential cumulative impact specific to a future use other than solar energy generation.

No Action Alternative C

Cumulative impacts associated with the proposed action would likely only be delayed by selecting No Action Alternative C since this region of the United States has extremely positive characteristics for solar power generation. If this Project were not approved, another application for a different solar generating facility would likely be filed at some time in the future.

4.13.4 Summary of Mitigation Measures

No mitigation is required.

4.13.5 Residual Impacts after Mitigation Measures were Implemented

No mitigation measure would be implemented and therefore no residual impacts would remain.

4.13.6 Unavoidable Adverse Impacts

No unavoidable adverse social or economic impacts would be expected to be associated with the proposed action.

4.14 Impacts on Soils Resources

4.14.1 Impact Assessment Methodology

Official Series Descriptions by the National Resources Conservation Service (NRCS), the leading source for soil surveys, were used to detail soil characteristics of an area including depth, texture, drainage, permeability, and erosion hazard of individual soil mapping units. A general survey to characterize the soil conditions was also commissioned by the Applicant and conducted in summer 2009 in conjunction with the Preliminary Geotechnical Investigation. General soils data was also derived from the United States General Soil Map, which is a 4th order survey (5th order being the least detailed – scale of 1:250,000 to 1:1,000,000). This data was used in conjunction with observations and laboratory testing to characterize the soils on the BSPP site.

4.14.2 Discussion of Direct and Indirect Impacts

Proposed Action

Erosion

Erosion is the displacement of solids (soil, mud, rock, and other particles) by wind, water, or ice and by downward or down-slope movement in response to gravity. Due to generally flat terrain, the BSPP site is not prone to significant mass wasting (gravity-driven erosion and non-fluvial sediment transport) at present. Soil characteristics at the BSPP site allow for the potential for wind and water erosion, and significant sediment transport currently occurs along McCoy Wash during periods of infrequent flooding.

Grading of the BSPP site would result in a less than 1 percent slope downward from the west to the east of the site. Earthwork associated with the BSPP would include excavation for foundations and underground systems, and the total earth movement that would occur is approximately 8.3 million cubic yards. The vast majority of the BSPP grading and excavation would occur on the BSPP site, with only minor excavation needed for installation of a gas line within the linear right-of-way.

During construction, the BSPP site and those portions of the BSPP ROW supporting off-site linear facilities (access road, gas pipeline and transmission line corridor) would be disturbed. At that time, the surface of the disturbed areas would be devoid of vegetation and there would be the highest potential for erosion, as well as associated effects including soil loss and increased sediment yields downstream from disturbed areas.

Wind Erosion

The potential for soil loss by wind erosion was estimated using the Wind Erosion Prediction System (WEPS) for pre-development (undisturbed), during construction, and operational conditions. The soils on the BSPP site have a low to very high hazard for wind erosion. The results are presented in the following table.

TABLE 4.14-1
ESTIMATE OF SOIL LOSS BY WIND EROSION USING
WIND EROSION PREDICTION SYSTEM (WEPS) MODEL

Soil Type	Predicted Soil Loss (tons per acre per year)		
	Undisturbed Conditions	Disturbed Conditions (Construction)	Operational Conditions
Gunsight Series	88	71	38
Cipriano Series	101	81	49
Aco Series	539	553	296

SOURCE: AECOM, 2009.

The wind erosion values calculated for the site indicate that during construction, only the Aco Series type soils would exceed undisturbed conditions. Large areas of the site consist of desert pavement that has formed from previous removal of fine particles through wind erosion. The resulting desert pavement is resistant to further wind erosion. If this protective layer is disturbed, the underlying layer of aeolian material is subject to high levels of wind erosion, comparable to the Aco Series. The Aco Series on the eastern third of the site has the highest erosion rates for undisturbed, disturbed, and operational conditions.

Water Erosion

The potential for soil loss by water erosion (sheet and rill erosion) was estimated using the Universal Soil Loss Equation (USLE) for pre-development, during construction, and operational conditions; results are included in Table 4.14-2.

TABLE 4.14-2
ESTIMATE OF SOIL LOSS BY WATER EROSION

Soil Type	Predicted Soil Loss (tons per acre per year)		
	Undisturbed Conditions	Disturbed Conditions (Construction)	Operational Conditions
Gunsight Series	0.42	0.92	0.84
Cipriano Series	1.16	4.63	1.46
Aco Series	0.23	0.51	0.23

SOURCE: AECOM, 2009.

Water erosion from sheet and rill erosion under the present undisturbed conditions can be considered negligible except for wash areas in the central portion of the site where soils are potentially more erosive due to higher silt content. High infiltration rates, flat slopes, and low rainfall contribute to the low water erosion rates. Modeling shows soil erosion rates would increase for both construction and operation on all soil series except on the Aco Series during the operations phase, which would revert to its undisturbed erosion rate. Increased rates are due to soil compaction and the resulting increase in bulk density. Compaction of the soil would decrease soil infiltration rates causing greater runoff, especially during high intensity, short duration rainfall events. Additional information on the impacts of stormflow events on soils, and the BMPs and other mitigation measures to be applied, is presented in Section 4.19, *Water Resources*.

Alternatives

Reconfigured Alternative

Impacts would be essentially the same as the proposed action. The increase in footprint of 150 acres would have a minor effect on the analysis results. Soil erosion at the Reconfigured Alternative site could be impacted as a result of the construction and operation of the Reconfigured BSPP. Impacts related to implementation of mitigation measures to minimize soil erosion from wind and surface water are anticipated to be similar to those associated with the proposed action.

Reconfigured Alternative construction activities would disturb site soils at the site and along the linear facilities route(s). It is at the time of this disturbance that there would be the highest potential for erosion, as well as associated effects including soil loss and increased sediment yields downstream from disturbed areas. It is expected that BMPs would be utilized to minimize the impacts of soil erosion during construction.

Reduced Acreage Alternative

Peak construction impacts would be the same as the proposed action since construction activity levels are estimated to be similar. Long term construction impacts would be less since the construction period would be reduced. Operation impact levels would be reduced since only three of the four proposed units would be built and operated.

No Action Alternative A

Because there would be no amendment to the CDCA Plan and no solar project approved for the site under this alternative, it is expected that the site would continue to remain in its existing condition, with no new structures or facilities constructed or operated on the site. As a result, the impacts to soils from the construction and operation of the proposed action would not occur. However, the land on which the BSPP is proposed would remain available to other uses that are consistent with BLM's land use plan, including another solar project requiring a land use plan amendment. In addition, in the absence of the BSPP, other renewable energy projects may be constructed to meet State and Federal mandates, and those projects would have similar impacts in other locations.

No Action Alternative B

Because the CDCA Plan would be amended to make the area unavailable for future solar development, it is expected that the site would continue to remain in its existing condition, with no new structures or facilities constructed or operated on the site and no soil erosion impacts or impacts to jurisdictional waters. As a result, this No Action Alternative would not result in the impacts to soils under the proposed BSPP. However, in the absence of the BSPP, other renewable energy projects could be constructed to meet State and Federal mandates, and those projects would have similar impacts in other locations.

No Action Alternative C

Because the CDCA Plan would be amended, it is possible that the site would be developed with the same or a different solar technology. As a result, impacts to soils would result from the construction and operation of the solar technology and resulting ground disturbance and would likely be similar to the impacts to soils and water from the proposed action, including erosion impacts and impacts to jurisdictional waters. Different solar technologies require different amounts of grading; however, it is expected that all solar technologies would require grading and maintenance. As such, this No Action Alternative could result in impacts to soils and water similar to the impacts under the proposed action.

4.14.3 Discussion of Cumulative Impacts

Impacts resulting from construction, operation, maintenance and decommissioning of the BSPP could result in a cumulative effect on soils resources with other past, present, or reasonably foreseeable future actions. The geographic scope of the cumulative effects analysis for soils consists of the Mojave Desert Air Basin, since soils could be transported offsite by wind, and the watershed boundary, since surface flows also could carry eroded soils off-site. Potential cumulative effects on soils resources could occur at any point during the overall lifespan of the BSPP, from pre-construction activities to the conclusion of facility closure and site reclamation.

Existing conditions within the cumulative impacts analysis area reflect a combination of the natural condition and the effects of past actions and are described in this PA/FEIS Chapter 3. Direct and indirect effects of the BSPP are discussed above. In general, construction of the proposed action would result in temporary changes at the site that could incrementally increase local wind-borne soil erosion and storm water runoff during construction. However, the BSPP would be expected to contribute only a small amount to any possible short-term cumulative impacts related to soil erosion, because the Applicant would be required to implement the mitigation measures specified below. Operation of the proposed action would result in permanent changes at the BSPP site. These changes could incrementally increase local soil erosion and storm water runoff. The proposed action would not be expected to cumulatively contribute to these possible long-term operational cumulative impacts because potential BSPP related soil erosion and increased sedimentation resulting from storm water runoff are expected to be reduced to an acceptable level through implementation of the mitigation measures specified below. Nonetheless, these incremental contributions to air- or water-born erosion and sedimentation could combine with the incremental impacts of other past, present and reasonably foreseeable future actions making up the cumulative scenario (see Section 4.1). Construction or maintenance activities, including grading, compaction, drilling, back-filling, driving on unpaved roadways, etc., could disturb soils at any work site, regardless of the type of project and regardless of the phase of its development. However, the combined vegetation removal anticipated as a result of the numerous proposed utility-scale renewable energy projects, including the BSPP, could expose soils to higher wind-borne erosion rates than the area otherwise would be exposed to. This also could exacerbate runoff rates, especially during high intensity, short duration rainfall events. The Reconfigured Alternative, Reduced Acreage Alternative and No Action Alternatives could be expected to contribute to a cumulative impact on soil resources in proportion to the amount of soil disturbance that could occur pursuant to each.

4.14.4 Summary of Mitigation Measures

The implementation of mitigation measures imposed by the Energy Commission as Conditions of Certification for the BSPP also would avoid or reduce impacts on the quality of the human environment. These mitigation measures are set forth in Appendix G. The following mitigation measures would avoid or minimize impacts on air resources:

> SOIL&WATER-1, SOIL&WATER 10, SOIL&WATER-11, SOIL&WATER-14, SOIL&WATER-15

4.14.5 Residual Impacts after Mitigation Measures were Implemented

Residual soil resource impacts are the increased soil loss from construction and operation as outlined in Tables 4.14-1 and 4.14.-2.

4.14.6 Unavoidable Adverse Impacts

None.

4.15 Impacts on Special Designations

4.15.1 Impact Assessment Methodology

The CDCA Plan serves as a guide for the management of all BLM-administered lands in three desert areas: the Mojave, the Sonoran, and a small portion of the Great Basin. The CDCA Plan covers approximately 25 million acres, of which 12 million are public lands. The primary goal of the CDCA Plan is to provide overall maintenance of the land while planning for multiple uses and balancing the needs of people with the protection of the natural environment.

The NECO Plan is a landscape-scale, multi-agency planning effort that protects and conserves natural resources while simultaneously balancing human uses of the California portion of the Sonoran Desert ecosystem (e.g., the Colorado Desert). The NECO Plan amended the CDCA Plan. The CDCA Plan/NECO Plan is the comprehensive Federal land use and planning document for BLM and other public lands in the project area.

The NECO Plan incorporated 23 wilderness areas (totaling over a million acres) established by the 1994 California Desert Protection Act in the CDCA. Since wilderness areas and ACEC's are the only special designation that could be impacted by the BSPP, this section was prepared using information from the CDCA/NECO Plans.

4.15.2 Discussion of Direct and Indirect Impacts

Proposed Action

The proposed action would have no effects on special designations, since the site is not subject to any such designation, and no new designations or amendments to existing designations are proposed; however, it could affect values in five designated wilderness areas: the Palen/McCoy, Big Maria Mountains, Little Chuckwalla Mountains, Rice Valley and Riverside Mountains wildernesses.

The proposed action would not impact the four ACECs located in the vicinity of the site (i.e., Mule Mountains, Big Marias, Chuckwalla Valley Dune Thicket, and Palen Dry Lake) as these were established to protect cultural and biological resources, and visitor use to these areas is a secondary resource benefit. The Mule Mountain and Chuck Valley Dune Thicket ACECs are located south of the I-10 corridor. Big Marias and Palen Dry Lake are located approximately eight and 14 miles respectively from the BSPP site boundary. Therefore, there would be no effects to wilderness areas or ACEC's from the implementation of the BSPP.

However, indirect short-term or long-term impacts could result from the BSPP to wilderness users' opportunities for solitude, and primitive-unconfined recreation due to construction, operations or decommission activities in any of the surrounding wilderness areas. See also, Section 4.16, *Impacts on Transportation and Public Access - Off Highway Vehicle Resource*, Section 4.18, *Impacts on Visual Resources*, and Section 4.12, *Impacts on Recreation*, which discusses potential impacts to recreational users, including those using wilderness areas and ACECs from air quality and noise. Therefore, since this is not an indirect impact on special designations, the BSPP would have no impacts.

Alternatives

Reconfigured Alternative

For the same reasons discussed above for the proposed action, no impacts to wilderness areas or ACEC's would occur.

Reduced Acreage Alternative

For the same reasons discussed above for the proposed action, no impacts to wilderness areas or ACEC's would occur.

No Action Alternatives A and B

Under No Action Alternatives A and B, the ROW application would be denied and the ROW grant would not be authorized. Under No Action Alternative A, the CDCA Plan would not be amended; by contrast, under No Action Alternative B, the CDCA Plan would be amended to identify the application area as unsuitable for any type of solar energy development. Regardless of whether the CDCA Plan amendment occurs, neither of these alternatives would result in to special designations for the same reasons as discussed for the proposed action.

Alternative Action C

If No Action Alternative C were selected, the ROW application would be denied, the ROW grant would not be authorized, and the CDCA Plan would be amended to identify the application area as suitable for any type of solar energy development. Like the proposed action, no impacts to wilderness areas or ACEC's would occur.

4.15.3 Discussion of Cumulative Impacts

No direct impacts to designated wilderness areas and ACEC's would occur with implementation of the proposed action and alternatives. Therefore, since there are no direct impacts, no cumulative impacts to special designations would result.

4.15.4 Summary of Mitigation Measures

None required.

4.15.5 Residual Impacts after Mitigation Measures were Implemented

There would be no residual impacts.

4.15.6 Unavoidable Adverse Impacts

None.

4.16 Impacts on Transportation and Public Access – Off Highway Vehicle Resources

4.16.1 Impact Assessment Methodology

Public Access

The CDCA and NECO Plan, which includes a detailed inventory and designation of open routes in the vicinity of the BSPP, were reviewed to determine impacts to open routes.

Transportation

This analysis focuses on potential impacts related to the construction, operation and decommissioning of the BSPP on the surrounding transportation systems and roadways based on the CECs Revised Staff Assessment. For impacts to local transportation systems, the CEC evaluated impacts based on level of service (LOS) determinations, which is a generally accepted measure used by traffic engineers, planners, and decision-makers to describe and quantify the congestion level on a particular roadway or intersection in terms of *speed, travel time,* and *delay*.

In addition, the CEC used methodology contained in the *Highway Capacity Manual 2000* to determine potential impacts to intersections from operations of the proposed action. This methodology was used to assess delays at an unsignalized intersection for movements operating under traffic control—a stop sign, for example. For an intersection at which the only stop-sign is placed at a side street, delay would be reported for movements controlled by the stop sign. The delay then would be assigned a corresponding letter grade to represent the overall condition of the intersection or level of service. These grades range from LOS A, free-flow, to LOS F, poor progression.

The assessment of transportation-related impacts is based on evaluations and technical analyses designed to compare the pre-BSPP conditions to the post-BSPP conditions.

4.16.2 Discussion of Direct and Indirect Impacts

Proposed Action

Public Access

OHV Routes

The site has approximately seven miles of designated open routes that would be closed to off-highway vehicle (OHV) use. Designated travel routes and distances within the BSPP site boundary are described in Table 4.16-1, which includes one major route and several small spurs.

The major route, No. 661085, is a north/south link between the Interstate 10 corridor and Arlington Mine Road to the north. This route provides access for both street-legal and non-licensed OHV's

TABLE 4.16-1
DESIGNATED ROUTES WITHIN BLYTHE PROJECT AREA

NECO Designated Route Number	Distance within BSPP site (mi)	Recreational Significance
661085	2.01	High
661113	1.86	Med
660835	0.81	Med
661185	0.54	Unknown
660839	0.43	Unknown
661115	0.98	Med
Total	***6.63***	

that are not permitted to travel on the paved county maintained Midland Road. Elimination of this route would impact the ability of OHV's to travel in this area and would additionally eliminate an important link that forms a looped route around the east and west side of the Palen/McCoy and the Rice Valley Wilderness, respectively. According to the BLM Rangers from the Palm Springs Field Office, OHV use in and around the site is minimal with not more than, conservatively, a few hundred visits in a year during the cool months (September-May). Moreover, there are a number of other alternative routes that provide access to these wilderness areas from the I-10 corridor so overall access for wilderness recreation would not be impacted. In general, sightseeing and day use touring by locals is the predominant use pattern on the affected routes; therefore, removal of approximately 6,000 acres of open space within a natural desert environment could impact OHV users whom would access the site for hiking and camping from designated OHV routes.

Moreover, major route No. 661085 provides access to two private land in-holding areas north of the BSPP site. These land owners would lose their legal access as the entire site boundary is fenced.

The remaining designated routes within the project area have been evaluated in the field by BLM for potential access to historical or recreational features but do not appear to have the significance of route No. 661085.

The first minor road that would be closed exits the north-south road on private property then extends across BLM-administered land to private property that lies immediately west of the southwestern portion of BSPP and terminates at the western boundary of the private land. Although shown on maps as an "open" route, BLM has not secured an easement from the landowner that would allow public access across the private land to the BLM-administered land. Since the BLM has not secured an easement, this road would not need to be relocated, as it does not provide legal access to BLM-administered land. As part of continued plan implementation, BLM could close this road.

The second minor road exist the north-south road further north and heads west approximately one mile before terminating approximately 0.5 mile west of the BSPP site. This road does not provide access to private in-holding and/or any other special designated areas. Accordingly, this road could be closed for as long as the BSPP is operational and restored to open status once the BSPP is removed and the land reclaimed. This would be within the purview of the BLM's continued plan implementation actions not requiring a plan amendment.

While construction of the proposed transmission line would traverse an open route and result in disruptions to motorized vehicle use along this route, as the transmission line would be strung over the route on existing structures, it would only result in a temporary disruption to the use of that portion of the route. Users of the established route could detour onto the linear ROW and travel the length of the transmission line further disturbing native plants and animals.

Construction and operation of the proposed action would introduce a new industrial feature that could attract OHV operators in the surrounding viewshed to the site boundary via designated OHV open routes or overland. This could increase the opportunities for vandalism, illegal cross-county use and other disruptive behavior.

Washes Open Zones

This project area is located in the Limited Multiple Use Class (MUC L) which allows OHV travel in open washes. The McCoy Wash, a navigable wash, would be transected by the BSPP site, which would result in closure of the wash to OHV users.

Transportation

Construction

Workforce. Construction of the BSPP would be completed over an approximately 69-month period beginning in late 2010. The construction workforce would peak during month 16 at approximately 1,000 workers per day and average approximately 600 workers over the course of construction. Construction of the transmission line is expected to require a limited crew with fewer than 25 workers during peak periods. However, the transmission line construction schedule would not coincide with the peak of plant site construction employment.

The worst-case scenario, where all workers commute in automobiles with only one occupant per vehicle, yields a peak trip generation of approximately 1,000 inbound trips during the morning peak period and another 1,000 outbound trips during the evening peak hour. In the worst-case scenario, one-way worker trips would peak at 2,000 trips per day and an average of 1,200 one-way trips per day. Construction would also generate an average of approximately 15 to 20 one-way, truck trips per day with a peak of approximately 50 to 75 truck trips per day. The peak time for truck travel would occur during the construction of the foundation for the plant site and would not coincide with the peak onsite worker commute timeframe (month 16 in early 2012).

To accommodate the worst-case scenario, a temporary parking area of approximately eight acres would be required for construction personnel parking (assuming 350 square feet per vehicle) with additional area required for the staging and laydown of equipment, materials, and supplies. The project would include onsite laydown and parking areas during construction. Those areas would be relocated around the site as construction progresses. Safety and efficiency concerns require on-site parking and laydown areas. That is, a traffic hazard could occur if workers were to park on public roadways or if public roadways were used for the staging and laydown of equipment, materials, and supplies. Such a hazard could adversely impact the LOS on I-10 as well as the safety of the workers and drivers.

The construction workforce would be drawn from the surrounding local and regional area, including a small number from the greater Los Angeles Basin. See FEIS Section 4.13. Project construction traffic from the Los Angeles, Palm Springs, and Indio areas is expected to follow I-10 east to the site. Workers traveling from Blythe and the Arizona towns of Quartzsite, Ehrenberg, and Cibola would follow I-10 west to the site.

A large portion of the construction workforce is expected to come from or at least be temporarily housed in the Blythe and Indio areas (including Coachella, Thermal, and Mecca). These workers would also approach the site following I-10 from the west. Drivers approaching from Blythe itself would generally follow I-10 westerly to Mesa Drive where they would exit to the north and follow Blackrock Road west to the site. However, some workers are likely to follow Hobsonway west directly to Blackrock Road.

Traffic from the Brawley/ El Centro area is expected to follow State Route 78 north to I-10 and I-10 west to Mesa Drive. Traffic from the Indio/ Palm Springs area and points west would follow I-10 east to Mesa Drive and the site.

See the following Traffic and Transportation tables for information about traffic volumes for roads and intersections used to access the site:

1. Table 4.16-2, 2010 Peak Hour Roadway Traffic Volumes, Design Capacities, and Levels of Service Without Project

2. Table 4.16-3, 2012 Peak Hour Roadway Traffic Volumes, Design Capacities, and Levels of Service With Project

3. Table 4.16-4, Existing Peak Hour Intersection Levels of Service Without Project

4. Table 4.16-5, 2012 Peak Hour Intersection Levels of Service With Project (With Mitigation)

TABLE 4.16-2
2010 PEAK HOUR ROADWAY TRAFFIC VOLUMES,
DESIGN CAPACITIES, AND LEVELS OF SERVICE WITHOUT PROJECT

	Existing Conditions			
Roadway/Segment	**Travel Lanes**	**Volume**	**Capacity**	**LOS**
I-10 West of Project Site	4	3,278	8,000	A
I-10 East of Project Site	4	3,278	8,000	A

NOTES: Baseline information from Caltrans 2009 data. Capacity represents approximate two-way capacity in vehicles per hour.

SOURCE: CEC RSA June 2010 Transportation and Traffic Table 1

TABLE 4.16-3
2012 PEAK HOUR ROADWAY TRAFFIC VOLUMES,
DESIGN CAPACITIES, AND LEVELS OF SERVICE WITH PROJECT

	2012 Conditions			
Roadway/Segment	Travel Lanes	Volume	Capacity	LOS
I-10 West of Project Site	4	4,278	8,000	A
I-10 East of Project Site	4	4,178	8,000	A

NOTES: Baseline information from Caltrans 2009 data. Year 2009 traffic volumes expanded to Year 2012 at historical rates from year 2002 to 2007 (4.275 percent per year). Capacity represents approximate two-way capacity in vehicles per hour.

SOURCE: CEC RSA June 2010 Transportation and Traffic Table 2

TABLE 4.16-4
EXISTING PEAK HOUR INTERSECTION
LEVELS OF SERVICE WITHOUT PROJECT

	Existing Conditions			
	AM Peak Hour		PM Peak Hour	
Intersection	Delay	LOS	Delay	LOS
I-10 Westbound Ramps/Mesa Drive	1.7	A	2.4	A
I-10 Eastbound Ramps/Mesa Drive	3.2	A	3.7	A
Black Rock Road/Mesa Drive/Hobson Way	2.7	A	3.4	A

NOTES: Existing conditions data from Wilson Engineering, 2009. Year 2009 traffic volumes expanded to Year 2012 at historical rates from years 2002 through 2007 or 4.275 percent per year. Average vehicle delay is in seconds. LOS pertains to intersection as a whole. LOS for intersection as a whole.

SOURCE: CEC RSA June 2010 Transportation and Traffic Table 3

TABLE 4.16-5
2012 PEAK HOUR INTERSECTION
LEVELS OF SERVICE WITH PROJECT (With Mitigation)

	Year 2012 and 500 Workers			
	AM Peak Hour		PM Peak Hour	
Intersection	Delay (in seconds)	LOS	Delay (in seconds)	LOS
I-10 Westbound Ramps/Mesa Drive	5	A	1.1	A
I-10 Eastbound Ramps/Mesa Drive	8	A	6.4	A
Black Rock Road/Mesa Drive/Hobson Way	11.3	B	9.1	A

NOTES: Year 2009 traffic volumes expanded to Year 2012 at historical rates from years 2002 through 2007 or 4.275 percent per year. LOS assumes 1,000 person workforce split in two shifts of 500 employees arriving and departing one hour apart. LOS for intersection as a whole.

SOURCE: CEC RSA June 2010 Transportation and Traffic Table 4

As indicated in the Table 4.16-2 and Table 4.16-3, LOS for I-10 east and west of the site would operate at LOS A before and during peak hour construction conditions. As Indicated in Table 4.16-4 and Table 4.16-5, intersections would operate at LOS A with the implementation of Applicant-recommended staggered travel times for construction workers. Staggered travel times are important for these intersections because movement of traffic is controlled by stop signs. As a result, vehicle traffic could easily become backed-up or stacked as drivers exit I-10 to the BSPP site.

In addition, several pieces of equipment that exceed roadway load or size limits would need to be transported to the site via I-10 during construction. This equipment includes the steam turbine generator and main transformers. The equipment would be transported using multi-axle trucks. To transport this equipment, the Applicant must obtain special ministerial permits from Caltrans to move oversized or overweight materials. In addition, the Applicant must ensure proper routes are followed; proper time is scheduled for the delivery; and proper escorts, including advanced warning and trailing vehicles as well as law enforcement control are available, if necessary. These roadways could be damaged due to BSPP-related construction activities.

Parking Capacity. The BSPP would include a temporary parking area of approximately eight acres for construction workers, based on the assumption of 350 square feet per vehicle. The parking area would accompany 1,000 vehicles and would be relocated around the site as construction progresses.

An additional area would be required for staging and laydown of equipment, materials, and supplies. That area would also be relocated around the site as construction progresses.

Since the proposed construction parking area is on-site the construction phase of the project would not result in any parking spill-over to sensitive areas and would not create any adverse impacts.

Operations

As indicated in Table 4.16-6 and Table 4.16-7, surrounding roadways and intersections are projected to operate well-below capacity when BSPP is operational in 2016. Projections have taken into account continued local and regional growth as well as the completion of Palen Solar Power Project located 35 miles west of Blythe. Consequently, the addition of 221 workers arriving at the plant in staggered shifts over a 24-hour period would not alter existing or future roadway operating characteristics (LOS). Since these workers would park on-site, the operational phase of the BSPP would not result in any parking spill-over to sensitive areas and would not create any adverse impacts.

In addition, BSPP operations would require approximately 12 truck trips per day for the delivery of materials and supplies as well as for offsite shipment of wastes.

Truck travel as well as other non-employee site visits would be very small and would typically occur during non-peak periods.

TABLE 4.16-6
2016 PEAK HOUR ROADWAY TRAFFIC VOLUMES, DESIGN CAPACITIES, AND LEVELS OF SERVICE

	2016 Conditions Plus Project Operations		
Roadway Segment	**Volume**	**Capacity**	**LOS**
I-10 West of Project Site	3,899	8.000	A
I-10 East of Project Site	3,960	8.000	A

NOTES: Year 2009 traffic volumes expanded to Year 2016 (project completion) at historical rates from years 2002 to 2007 or 4.275 per year. Capacity is approximately two-way capacity in vehicles per hour. Completion Palen Solar Power Project north of I-10 assumed in calculations.

SOURCE: CEC RSA June 2010 Traffic and Transportation Table 5

TABLE 4.16-7
2016 PEAK HOUR INTERSECTIONS LEVELS OF SERVICE

	2016 Conditions Plus Project Operations			
	AM Peak Hour		PM Peak Hour	
Intersection	**Delay**	**LOS**	**Delay**	**LOS**
I-10 Westbound Ramps/Mesa Drive	3.5	A	2.2	A
I-10 Eastbound Ramps/Mesa Drive	4.3	A	5.1	A
Black Rock Road/Mesa Drive/Hobson Way	5.4	A	5.6	A

NOTES: Year 2009 traffic volumes expanded to Year 2016 at historical rates from years 2002 through 2007 or 4.275 percent per year Average vehicle delay is in seconds.

SOURCE: CEC RSA June 2010 Traffic and Transportation Table 6

Alternatives

Reconfigured Alternative

Public Access

Impacts to major route, No. 661085, a north/south link between the Interstate 10 corridor and Arlington Mine Road to the north would generally be the same. However, since the modified Unit 3 would be more south than the proposed Unit 3, another spur road, the southernmost spur, which accesses a private in-holding would be closed. Impacts to the other two spur routes would be the same as under the proposed action. Under the Reconfigured Alternative impacts to OHV open routes would increase to approximately 8.5 miles of open routes impacted. Impacts related to construction, operations, maintenance and decommission of this alternative would be similar to the proposed action. Moreover, OHV use access would be restricted to the west side of the Big Maria Wilderness Area and to the northeast side of the Palen/McCoy Wilderness Area by closing approximately 8.5 mile of OHV routes.

Transportation

Since implementation of the Reconfigured Alternative does not significantly affect the number of workers needed for construction and operation, impacts would be similar to the proposed action.

Reduced Acreage Alternative

Public Access

Impacts to major route, No. 661085, a north/south link between the Interstate 10 corridor and Arlington Mine Road to the north would generally be the same as the proposed action. Impacts to the two spur roads would not occur. Under the Reduced Acreage Alternative, impacts to OHV open routes would decrease to approximately one mile of open routes impacted. There would be no direct impacts to McCoy wash; however, access would still be restricted during the life of the Reduced Acreage Alternative. Impacts related to construction, operation and maintenance, and closure and decommissioning of this alternative would be similar to the proposed action. Moreover, OHV use access would be restricted to the west side of the Big Maria Wilderness Area and to the northeast side of the Palen/McCoy Wilderness Area by closing approximately one mile of OHV routes.

Transportation

Since implementation of the Reconfigured Alternative does not significantly affect the number of workers needed for construction and operation, impacts would be similar to the proposed action.

No Action Alternatives A and B

Public Access

Generally, for the two no action Alternatives A and B, there would be no direct or indirect impacts to OHV routes and values.

Transportation

If No Action Alternative A or B were selected, none of the anticipated transportation-related impacts of the proposed action would occur. Instead, the land on which the BSPP is proposed would become available to other uses consistent with CDCA Plan use opportunities, potentially including another renewable energy project. Thus, impacts of this alternative on transportation could be substantially similar to the proposed action.

No Action Alternative Action C

Public Access

For the No Action Alternative C, where the ROW for the proposed action would not be granted but the CDCA would be amended to find the proposed action area suitable for any type of solar energy development, impacts to OHV open route and associated affects could be similar to the proposed action; however, dependent on the technology and site layout, impacts to OHV designated routes could be avoided or minimized.

Transportation

For the No Action Alternative C, where the ROW for the proposed action would not be granted but the CDCA Plan would be amended to find the proposed action area suitable for any type of solar energy development, impacts to transportation could be similar to the proposed action.

4.16.3 Discussion of Cumulative Impacts

Public Access

In addition to the proposed BSPP, there are many past, present, or reasonably foreseeable future actions that contribute to impacts on OHV use. During the CDCA and NECO planning process, a detailed inventory and designation of routes was developed. This route designation system, along with other land management actions such as setting aside areas of critical environmental concern (ACECs) and the congressional designation of wilderness areas, has resulted in a significant loss of OHV recreation opportunities in the eastern Riverside County. Currently, there are no BLM-designated “open” OHV areas in Riverside County. This decrease in “open” OHV areas in Riverside County through the NECO planning process likely improved the recreational experience for some users who preferred remote camping and hiking and decreased the recreational experience for some users who prefer open OHV use areas rather than designated routes. Numerous energy-related development projects, including the proposed action, would result in the closure of OHV open routes and would have an adverse effect on the viewscape that would result in some users seeking out, legally or illegally, other areas of the desert for their activities and experiences. Therefore, the combined effect of the overall cumulative past, present, and proposed and reasonably foreseeable projects in eastern Riverside County would adversely affect OHV open route through closures, rerouting, and use restrictions.

Transportation

Construction

As depicted in Figure 9, a number of solar projects are projected to be built within approximately 100 miles of the I-10 corridor (Desert Center to Blythe). The Palen, Genesis and Desert Sunlight projects currently are proposed to be constructed on BLM land and currently are under review by BLM. These projects, as well as other projects in the vicinity of the BSPP, could affect the I-10 corridor between Desert Center and Blythe due to construction traffic.

Construction of the BSPP is scheduled to overlap with the construction schedules of three other projects in the area, two solar energy generation parabolic trough projects, the Palen Solar Power Project and Genesis Solar Energy Project as well as the Desert Sunlight Photovoltaic Project. These three projects plus the BSPP would result in approximately 3,566 workers travelling on I-10 to their work sites at the same time. The overlapping construction schedules of these projects would result in cumulatively considerable impacts to I-10 as well as to local streets, highways, and intersections in the vicinity of the BSPP site.

Operations

Truck travel as well as other non-employee site visits would be very small and typically would occur during non-peak periods. Consequently, cumulative operational impacts would not be significant and would not require mitigation.

4.16.4 Summary of Mitigation Measures

Public Access

BLM-OHV-1: No less than 60 days prior to construction, the Applicant shall coordinate with the authorized officer administering any NECO Plan-designated open routes to establish temporary closure of the routes to avoid construction area hazards, if the route is deemed unsafe to use during construction. The Applicant shall post a public notice of the temporary route closure and penalties for any off route OHV activities. The Applicant shall document its coordination efforts with the authorized officer and submit this documentation to the BLM and other agencies affected at least 30 days prior to construction.

BLM-OHV-2: The BLM may require the Applicant, in consultation with the BLM, to reestablish north/south OHV connectivity to the west side of the Big Maria Wilderness Area and to the northeast side of the Palen/McCoy Wilderness Area[1].

Transportation

The mitigation measures imposed by the Energy Commission as Conditions of Certification for the BSPP would avoid or reduce impacts on the quality of the human environment. These mitigation measures are set forth in Appendix G. The following mitigation measures would avoid or minimize impacts on Transportation:

TRANS-1,[2] TRANS-2, TRANS-3, TRANS-4, TRANS-5

Implementation of TRANS-2 also would mitigate construction-based cumulative impacts.

4.16.5 Residual Impacts after Mitigation Measures were Implemented

Public Access

OHV users would be displaced and could illegally substitute other natural, undisturbed desert areas for their riding experiences and benefits causing impacts to sensitive desert resources including biological and/or cultural resources.

1 Implementation of a new route would required additional NEPA analysis as well as biological and cultural resources surveys to the extent an agreed upon route had not been surveyed during this PA/FEIS process.

2 Energy Commission staff note that with the implementation of TRANS-1, parking arrangements may be modified. The BLM concurs with this.

Transportation

LOS within the vicinity of the BSPP would be at LOS C, greater than existing LOS A.

4.16.6 Unavoidable Adverse Impacts

Public Access

Reflected sun from the solar troughs would produce glint and glare that could distract OHV users in the surrounding areas.

The McCoy Wash, a navigable wash, would be transected by the BSPP site which would result in closure of the wash to OHV users.

Transportation

There would be no unavoidable adverse impacts related to transportation.

4.17 Impacts on Vegetation Resources

4.17.1 Impact Assessment Methodology

This analysis is based, in part, upon information from the following sources: the Application for Certification (AFC) (Solar Millennium 2009a) and Supplement to the AFC (Solar Millennium 2009b); responses to staff data requests (AECOM 2010a); CEC staff workshops held on December 9 and 18, 2009, January 7, 10, 14 and 25, 2010, and April 28, 2010; site visits by CEC staff on October 7, 2009, November 3, 2009 and January 25, 2010; communications with representatives from the California Department of Fish and Game (CDFG), the Bureau of Land Management (BLM), and the U.S. Fish and Wildlife Service (USFWS); and information contained within the Northern and Eastern Colorado Desert Coordinated Management Plan (NECO). Additionally, new information was obtained between the SA/DEIS publication and development of the PA/FEIS. This information primarily relates to surveys for special status plants (AECOM 2010w) and does not change any of the conclusions made in the SA/DEIS. The BLM was integrally involved in the preparation of this analysis with the CEC and other natural resource agencies.

This section analyzes potential impacts to vegetation resources from the construction and operation of the BSPP. This analysis addresses potential impacts of the BSPP (including ancillary facilities) to special-status plant species, sensitive natural communities and other significant vegetation resources. Direct, indirect, and cumulative impacts are analyzed and quantified, if possible.

Direct impacts are those resulting from the BSPP and occur at the same time and place. Indirect impacts are caused by the BSPP, but can occur later in time or farther removed in distance while still reasonably foreseeable and related to the proposed action. The potential impacts discussed in this analysis are those most likely to be associated with construction and operation of the BSPP.

Impact analyses typically characterize effects to plant communities as temporary or permanent, with a permanent impact referring to areas that are paved or otherwise precluded from restoration to a pre-project state. In the desert ecosystems the definition of permanent impacts needs to reflect the slow recovery rates of its plant communities. Natural recovery rates from disturbance in these systems depend on the nature and severity of the impact. For example, creosote bushes can resprout a full canopy within five years after damage from heavy vehicle traffic (Gibson et al. 2004), but more severe damage involving vegetation removal and soil disturbance can take from 50 to 300 years for partial recovery; complete ecosystem recovery may require over 3,000 years (Lovich and Bainbridge 1999). In this analysis, an impact is considered temporary only if there is evidence to indicate that pre-disturbance levels of biomass, cover, density, community structure, and soil characteristics could be achieved within five years.

4.17.2 Discussion of Direct and Indirect Impacts

Proposed Action

Stabilized and Partially Stabilized Dunes and Sand Transport Corridor

The western portion of the gen-tie route are exclusively within stabilized and partially stabilized dune habitat as well as the major regional sand transport corridor. Construction of the gen-tie would directly impact sand dunes. Construction of the gen-tie would have little direct impact on the sand transport corridor. Indirect impacts include facilitating the spread of noxious weeds, including Sahara mustard. Sahara mustard increases stabilization, and therefore degrades, dune habitat.

Sonoran Creosote Bush Scrub

Direct impacts to creosote bush scrub include the permanent loss of, and fragmentation of, adjacent wildlife habitat and native plant communities. Other temporary and permanent indirect impacts from the proposed action could occur to surrounding vegetation communities from grading activities disturbing soils and creating air-born, fugitive dust, sedimentation, and erosion, which disruption of photosynthesis and other metabolic processes. The destruction of plants and soil crusts by windblown sand and dust also exacerbates the erosion of the soil and accelerates the loss of nutrients (Okin et al. 2001).

Ephemeral Drainages & Sensitive Plant Communities

Direct impacts include permanent loss of hydrological, geomorphic, and biological functions and values of desert dry wash woodland, vegetated ephemeral steams and unvegetated ephemeral dry wash. Indirect Impacts include loss of hydrological connectivity downstream of the BSPP, including desert dry wash woodland, vegetated ephemeral steams and unvegetated ephemeral dry wash. Other indirect impacts include head-cutting on drainages upslope and erosion/sedimentation downslope. The BSPP would alter the hydrology of the area by re-routing these waterways through five engineered channels thereby altering washes downstream of the BSPP.

Special-Status Plants

Direct Impacts

No Federal or State-listed plant species occur within the BSPP Study Area so none would be impacted. Permanent direct impacts to six of the seven non-listed special status species documented within the Study Area would occur as a result of construction activities. These special status plant species are expected to be permanently and directly impacted through removal during Project construction. Additionally, a large number of Harwood's milkvetch, ribbed cryptantha and Harwood's woollystar occurrences within the BSPP are associated with the transmission line. Direct impacts to special status plants include possible additional loss of plants from construction of perimeter channel and bank stabilization on drainages upslope; accidental impacts to plants adjacent to construction, loss of plants in BSPP footprints through blading or crushing, linear facilities routes, along Black Rock Road; and potential accidental direct impacts during construction and operation.

Indirect Impacts

The anticipated indirect impacts to special-status plants, i.e., impacts outside the BSPP Disturbance Area or that occur following construction include: introduction and spread of invasive plants; alteration of the surface hydrology and basic geomorphic processes that support rare plants and their habitat (e.g., disrupted aeolian and fluvial sand transport processes from obstructions and diversions); population fragmentation and disruption of gene flow; potential impacts to pollinators; increased risk of fire; erosion and sedimentation of disturbed soils, which render the habitat vulnerable to invasion by pest plants, disturbance of the structure and ecological functioning of biological soil crusts, which affect seed germination, reduce soil nutrition, carbon sequestration, and render the soil vulnerable to water and wind erosion (Belnap & Eldridge 2001), herbicide and other chemical drift; and disruption of photosynthesis and other metabolic processes from fugitive dust during construction and operation of the BSPP.

The impacts of stressors (such as the spread of invasive plants, hydrologic and geomorphic alterations, etc.) on special-status plants are well-documented in the literature. The benefits of restoration and enhancement to rare plant populations have been demonstrated in a variety of projects conducted by public and private land managers, including BLM, National Park Service, The Nature Conservancy, US Forest Service, California State Parks, and the California Native Plant Society.

Introduction and spread of invasive plants; erosion and sedimentation of disturbed soils; potential disruption of sand transport systems that maintain habitat below the BSPP; alteration of drainage patterns; herbicide drift; disruption of photosynthesis and other metabolic processes from dust. Head-cutting (erosion) of channels upslope containing additional plants; population fragmentation, impacts to pollinators and gene flow; risk of fire are additional indirect impacts.

Cacti, Yucca, and Native Trees

Several species of non-listed cactus and native desert trees observed within the Study Area including California barrel cactus (*Ferocactus cylindraceus var. cylindraceus*), cottontop cactus (*Echinocactus polycephalus var. polycephalus*), common fishhook cactus (*Mammillaria tetrancistra*), beavertail cactus (*Opuntia basilaris*), silver cholla (*Cylindropuntia echinocarpa*), pencil cholla (*Cylindropuntia ramosissima*), catclaw acacia (*Acacia gregii*), blue palo verde (*Cercidium floridium ssp. floridium*), ironwood (*Olneya tesota*), mesquite (*Prosopis glandulosa*), smoketree (*Psorothamnus spinosum*), and ocotillo (*Fouquieria splendens ssp. splendens*) (Solar Millennium 2009a, Volume II, Biological Technical Report) would be impacted directly or indirectly. Cottontop cactus was also mapped and documented during the spring 2010 surveys. A total of six cottontop cactus were documented in the BSPP Disturbance Area during the 2010 surveys; an additional 10 plants were found in the one-mile buffer area.

Invasive Non-Native Plants

Following construction, exotic plant species are characteristically opportunistic and could occupy disturbed soils within the BSPP Disturbance Area and spread into adjacent vegetation communities. Years of high abundance of the noxious weed Sahara mustard have shown a clear negative impact on native flora (Barrows et al. 2009). Sahara mustard can form dense stands and potentially crowd out native annual plants. Sahara mustard plants growing early in the season may dominate available soil moisture which may adversely affect native annuals which start growing a little later in the season (Barrows et al. 2009). Barrows et al. (2009) found that native annuals growing under a canopy of Sahara mustard were often taller, and were etiolated, at the expense producing branches, flowers, and fruits. This led to a shift in the dominance of the following year's species composition from native annuals to Sahara mustard. Removal of Sahara mustard from active sand dunes had a positive impact on the endangered special-status plant Coachella Valley milk-vetch (*Astragalus lentiginosus var. coachellae*). Coachella Valley milk-vetch plants located on weeded study plots produced significantly more seed pods per plant than the control plots (Barrows et al. 2009).

Tamarisk, Russian thistle, Sahara mustard, Mediterranean grass, and red brome are already present in the BSPP area and would be expected to increase as a result of construction- and operation-related disturbance. The proliferation of these and other non-native species has dramatically increased the fuel load and frequency of fire in many desert ecosystems (Lovich & Bainbridge 1999). Unlike other ecosystems in California, fire was not an important part of the Mojave Desert ecosystems and most perennials are poorly adapted to even low-intensity fires, and the animals that coevolved are not likely to respond favorably to fire either. The potential spread or proliferation of non-native annual grasses, combined with the proximity to ignition sources could potentially increase the risk of fire, and the effects to these poor-adapted desert communities would be harmful, particularly to cacti and most native shrubs species. Burned creosote and other native shrubs are typically replaced by short-lived perennials and non-native grasses (Brown & Minnich 1986). The spread of invasive plants is a major threat to biological resources in the Colorado Desert because non-native plants can displace native plants, increase the threat of wildfire, and supplant wildlife foods that are important to herbivorous species.

Alternatives

Table 4.17-1 shows differences between alternatives for direct and indirect impacts, if quantified. For the No Action Alternatives, no impacts would be anticipated to Vegetation Communities and Special Status Plants in the short term though impacts similar to those discussed for the Proposed Action, Reconfigured Alternative, or Reduced Acreage could occur in the long term for No Action Alternative A and No Action Alternative C. Types of impacts are identical between the Proposed Action, Reconfigured Alternative, and Reduced Acreage Alternative quantities of impacts vary.

Table 4.17-2 compares the compensatory mitigation requirements for the three vegetation communities comprising ephemeral drainages associated with the Proposed Action, Reconfigured Alternative, and Reduced Acreage Alternative.

TABLE 4.17-1
COMPARISON OF DIRECT AND INDIRECT IMPACTS TO VEGETATION COMMUNITIES AND SPECIAL STATUS PLANTS FROM PROPOSED ACTION, RECONFIGURED ALTERNATIVE, REDUCED ACREAGE, AND NO ACTION ALTERNATIVES[a]

Vegetation Community	Proposed Action[b] (acres)	Reconfigured Alternative (acres)	Reduced Acreage Alternative (acres)	No Action A, B, C (acres)
Desert dry wash woodland	212.9 (137.5 indirect)	171.3 (71.2 indirect)	31	0
Unvegetated, ephemeral dry wash	8.7 (0.33 indirect)	5.0 (0.6 indirect)	3	0
Vegetated ephemeral swale (big galleta grass association)	370.8 (44.6 indirect)	237.0 (40.1 indirect)	211	0
Subtotal Ephemeral Drainages	***592.4***	***413.3***	***245***	***0***
Stabilized and partially Stabilized Dunes	58.2	37	37	0
Sonoran creosote bush scrub (including disturbed)	6,364.6	5,134.7	3,920	0
Disturbed habitat	0	0	0	0
Agriculture (including fallow and/or active)	4.4	0	0	0
Developed	4.9	0	0	0
TOTAL	**7,024.5**	**5,585**	**4,202**	**0**
Special Status Plants	**Proposed Action[b] (quantity)**	**Reconfigured Alternative (quantity)**	**Reduced Acreage Alternative (quantity)**	**No Action A, B, C (quantity)**
Species Combined	7,024.5 acres	25%fewer acres than Proposed Action	25% fewer acres than Reconfigured Alternative	100% fewer acres
CNPS List 1B and CNPS List 2 Plant Species				
Harwood's Milk-vetch	74 occurrences, 637 individuals	69 occurrences, 290 individuals	Unquantified	0 occurrences, 0 individuals
Las Animas Colubrina	15 occurrences, 55 individuals	12 occurrences, 49 individuals	Unquantified	0 occurrences, 0 individuals
Harwood's Woollystar (Eriastrum)	3 occurrences, 13 individuals	0 occurrences, 0 individuals	Unquantified	0 occurrences, 0 individuals
CNPS List 4 Plant Species				
Ribbed cryptantha	10 occurrences, 1.5 x10^6 individuals, 58.17 acres	Same as Proposed Action	Same as Proposed Action	0 occurrences, 0 individuals
Winged cryptantha	0 occurrences, 0 individuals	0 occurrences, 0 individuals	Unquantified	0 occurrences, 0 individuals
Utah milkvine	192 occurrences, 621 individuals	188 occurrences, 677 individuals	Unquantified	0 occurrences, 0 individuals
Desert uniicorn	8 occurrences, 9 individuals	11 occurrences, 21 individuals	Unquantified	0 occurrences, 0 individuals

NOTES:
[a] Acreages for the Proposed Project Disturbance Area (AECOM 2010q, AECOM 2010w) have been rounded. Acreages are approximate for the alternatives (see Section 3.0, Methods and Limitations in this report). It is assumed herein, that all of the vegetation for the alternatives would be impacted.
[b] Does not include direct impacts from the gen-tie and substation sites.

TABLE 4.17-2
COMPARISON OF COMPENSATORY MITIGATION REQUIREMENTS FOR THE PROPOSED ACTION, RECONFIGURED ALTERNATIVE, AND REDUCED ACREAGE ALTERNATIVE[a]

Vegetation Community	Mitigation Ratio	Proposed Action (acres)	Reconfigured Alternative (acres)	Reduced Acreage Alternative (acres)
Desert dry wash woodland	3:1	525	555	93
Unvegetated, ephemeral dry wash	1:1	8	4	3
Vegetated ephemeral swale (big galleta grass association)	1.5:1	550	360	317
Total ephemeral drainage compensatory mitigation Mitigation Measure BIO-22		**1083**	**919**	**413**

NOTE:
[a] Does not include impact acreage from construction of transmission line and substation.

4.17.3 Discussion of Cumulative Impacts

Cumulative impacts are analyzed in detail in Appendix H. Cumulative impacts would vary by alternative only to the degree to which direct and indirect impacts would vary by alternative.

Natural Communities

The geographic scope of the analysis of cumulative effects on plant communities and general wildlife habitat encompasses the NECO planning area and uses the NECO plant communities dataset to map and quantify cumulative effects on foraging habitat. The NECO plant communities dataset is based on the 1996 California Gap Analysis Project conducted by the Biogeography Lab at the University of California, Santa Barbara and coordinated through the USGS Biological Resources Division.

Table 4.17-3 quantifies the cumulative effects to plant communities, stratified by community type. Mojave creosote scrub refers to the creosote bush-dominant desert scrubs that occur within the Mojave Desert region of the California Desert geographic subdivision (Hickman 1993). The transition to Sonoran Desert is mapped at the Bristol Mountains near the Twenty-Nine Palms Marine Corps Base and extends east and south through the NECO planning area.

Special-Status Plants

Las Animas Colubrina

The GIS-based analysis of cumulative effects to Las Animas colubrina habitat (see Appendix H and Figure 21) used the NECO landforms dataset (BLM CDD 2002). The GIS summary of cumulative effects is misleading in this case because the 57 plants that would be destroyed by the BSPP occur just outside of the mapped range depicted in the NECO dataset. However, Las Animas colubrina in general occurs largely in steeper drainages in the mountains and

TABLE 4.17-3
CUMULATIVE IMPACTS: NATURAL COMMUNITIES

Plant Community[a]	Total Plant Communities[a] in NECO	Impacts to Habitat from Existing[b] Projects (Percent of all Community type in NECO)	Impacts to Habitat from Foreseeable Future[c] Projects (Percent of all Community type in NECO)	Contribution of BSPP to future cumulative impacts (Percent of total impacts from Future projects)
Mojave Creosote Scrub	805,832 acres	157 acres 0.02%	43,320 acres 5.4%	0 acres
Sonoran Creosote Scrub	3,829,999acres	11,871 acres 0.3%	226,954 acres 5.9%	5,850 acres 2.6%
Desert Dry Wash Woodland	682,027	2,971 acres 0.4%	47,585 acres 7.0%	101 acres 0.2%
Playa/Dry Lake	88,110 acres	11 acres 0.01%	18,634 acres 21.1%	0 acres
Sand Dunes+	62,140 acres	14 acres 0.02%	56 acres 0.09%	0 acres
Chenopod Scrub	2,113 acres	10 acres 0.1%	0 acres	0 acres
Agriculture, Developed	94,187 acres	4,856 acres 5.2%	1,017 acres 1.1%l	0 acres
Pinyon-Juniper Woodland	1,928 acres	0 acres	0 acres	0 acres

NOTES:
[a] Based on the BLM NECO Plant Communities dataset (BLM CDD 2002) conducted by the Biogeography Lab at the University of California, Santa Barbara and coordinated through the USGS Biological Resources Division UC Santa Barbara GAP Analysis (1996), updated during the NECO planning effort (see Appendix H of the NECO (BLM and CDD 2002)
[b] Includes only those existing projects between Desert Center and the Colorado River for which GIS-based spatial data was available at the time of the analysis
[c] Includes only BLM Renewables that had submitted a Plan of Development (POD) at the time of the analysis and those additional future projects.

+ Does not include impacts from the gen-tie.

foothills, which are less subject to direct and indirect cumulative effects of future renewable energy projects. Cumulatively considerable effects not reflected in the quantitative analysis include: spread of noxious weeds, which also fuel wildfires; and an increase in the potential for fire from transmission lines and increased vehicle use.

Although a larger portion of the population of Las Animas colubrina would be avoided just upstream of the BSPP boundary (117 plants avoided), the BSPP nevertheless would contribute incrementally to cumulative effects on Las Animas colubrina and its habitat. This incremental effect may be greater given the highly restricted range of this species in California, and its position near the periphery of its global range.

Harwood's Milk-vetch and Harwood's Woollystar

Approximately 677 Harwood's milk-vetch were found in the study area, including in the solar fields, the linear facilities route, and along the Black Rock Road. Many of the occurrences on the linear facilities route could be avoided, though direct impacts include potential accidental impacts to plants identified for avoidance. Indirect impacts include: the introduction and spread of invasive plants; erosion and sedimentation of disturbed soils; potential disruption of fluvial and aeolian sand transport systems that maintain habitat; alteration of drainage patterns; herbicide drift; and disruption of photosynthesis and other metabolic processes from dust.

Approximately 2,134 Harwood's Woollystar were found in the Study Area; approximately 35 occurrences (with varying numbers of plants at each occurrence) were mapped along the gen-tie route, some of which could be avoided. However, the indirect effects of construction of the Colorado substation would cause the loss of many plants and 33 acres of dune habitat. Harwood's Woollystar is documented from less than 20 occurrences, and much of its habitat is also at risk. The cumulative impacts would be considerable, particularly when combined with the effects of introduction and spread of invasive plants; potential disruption of aeolian and fluvial sand transport systems that maintain its habitat; alteration of drainage patterns, and; herbicide drift from this and other reasonably foreseeable future actions.

Many new occurrences of Harwood's milk-vetch have been found in the I-10 corridor (Chuckwalla Valley and Palo Verde Mesa) during the surveys for renewable energy projects. Populations of Harwood's milk-vetch, like many other rare plants of the eastern California deserts, were considered relatively stable until recently, as the push for renewable energy development has placed many at risk. Although the numbers appear robust in the vicinity of the BSPP in spring 2010 (a wetter-than-normal season), there also would be impacts to these occurrences including the direct effects of habitat loss and potentially more effects from disrupted geomorphic processes that maintain habitat, i.e., disruptions of the wind-sand transport corridor and interruptions to sediment transport along the many small washes that contribute important fresh sands to the habitat. In addition, the inevitable spread of Sahara mustard along roads from the increased vehicle use prematurely would stabilize the dunes and disrupt the dune-building processes.

The BSPP impacts to Harwood's milk-vetch and to Harwood's Woollystar, and to the dunes, sand sheets, and sandy washes on which these two special-status plants depend, would be cumulatively considerable. Although the BSPP's contribution to cumulative effects for Harwood's milk-vetch and to Harwood's Woollystar would be reduced, it is possible that the residual indirect effects of all proposed future actions, even after mitigation, could combine to cause a cumulative effect. The combined effects to the sandy habitat from all other future projects (10.8 percent of all habitat in the NECO) would be considerable.

4.17.4 Summary of Mitigation Measures

The mitigation measures imposed by the Energy Commission as Conditions of Certification for the BSPP would avoid or reduce impacts on the quality of the human environment. These mitigation measures are set forth in Appendix G. The following mitigation measures would avoid or minimize impacts on vegetation resources[1]:

[1] The CEC document intertwined vegetation and wildlife resources in the mitigation measures and these have not be modified because as a whole they mitigation the impacts to vegetation and wildlife resources.

BIO-1, BIO-2, BIO-3, BIO-4, BIO-5, BIO-6, BIO-7, BIO-8, BIO-14, BIO-19, BIO-22, BIO-23, BIO-28

Moreover, to address potential impact to Climate Change, the BLM would require, in concert with BIO-7, the following:

BLM BIO-7a: The Applicant shall ensure that monitoring accomplished under BIO-7 and other mitigating measures use available climatalogical data when analyzing project effects or resource trends.

4.17.5 Residual Impacts after Mitigation Measures were Implemented

The BSPP would have major impacts to vegetation resources, eliminating all of the Sonoran creosote bush scrub and other native plant and wildlife communities within the disturbance area of each alternative. The BSPP would also directly and indirectly affect an extensive network of desert washes comprising approximately 250-600 acres of ephemeral drainages, and would alter the hydrology of the area by re-routing these waterways through five engineered channels. The Proposed Action, Reconfigured Alternative, and Reduced Acreage Alternative would all impact the vegetation resources on the more biologically diverse west side of the Study Area. Mitigating measures to avoid, minimize, or compensate for the loss would offset the many of the impacts to varying, but unquantified degrees, though net losses in vegetation resources would occur.

4.17.6 Unavoidable Adverse Impacts

Under the technology proposed in the three alternatives, the Proposed Action, Reconfigured Alternative, and Reduced Acreage Alternative, natural vegetation communities and individuals and local populations of special status plants not otherwise avoided under proposed mitigating measures would be lost from the BSPP sites, totaling 7,025 acres, 5,548 acres, and 4,165 acres, respectively. Despite mitigating measures, the chance of invasion and spread of weeds and the chance of human-caused wildfires would persist to the areas surrounding the BSPP, threatening the surrounding vegetation and special status plant species.

4.18 Impacts on Visual Resources

This section discusses effects on visual resources that would occur with implementation of the proposed action and alternatives, cumulative effects, and mitigation measures to avoid or reduce visual effects. Overall, the BSPP would result in long-term visual alteration to approximately 7025 acres of land, nearly all of which has been classified as B-Quality[1] scenery. One exception is approximately five miles of offsite linear facilities, south of I-10, which would be within land classified as C-Quality scenery. The land altered by the BSPP solar units is considered to have a moderate visual sensitivity whereas offsite linear facilities would occur on land classified as having a high visual sensitivity.

4.18.1 Impact Assessment Methodology

There are two levels of analysis associated with the proposed action. The first is the disclosure of potential effects associated with the designation of the Interim VRM Classification. This is a general analysis and discussion based on the range of land uses allowed within the CDCA.

The second tier of analysis is with respect to the proposed action. Visual resource effects are created when the physical characteristics of facilities associated with proposed actions contrast with natural characteristics of the landscape setting. Contrast is measured by a systematic evaluation of the basic design elements of form, line, color, texture and scale, in accordance with the BLM's Handbook H-8431-1 Visual Resource Contrast Rating. If the contrast rating reveals nonconformance of the proposed action with Interim VRM Class objectives, and mitigation measures are insufficient to bring the project into compliance, then the design would need to be mitigated to the greatest extent possible, and to the VRM Class objective at a minimum. If the project cannot be mitigated to meet the VRM Class objectives, then the project application may not be approved, or may be redesigned or relocated to meet the objective.

The BSPP is evaluated for conformance with the following MUC and VRM objectives:

1. *Multiple-Use Class L* (Limited Use) protects sensitive, natural, scenic, ecological, and cultural resource values. Public lands designated as Class L are managed to provide for generally lower-intensity, carefully controlled multiple use of resources, while ensuring that sensitive values are not significantly diminished.

2. *VRM Class III*: The objective of this class is to ***partially retain*** the existing character of the landscape. The level of change to characteristic landscape should be ***moderate***. Management activities may attract attention but ***should not dominate the view of the casual observer***. Changes should repeat the basic elements found in the predominant natural features of the characteristic landscape."

3. *VRM Class II*: The objective of this class is to ***retain*** the existing character of the landscape. The level of change to characteristic landscape should be ***low***. Management activities may be seen, but ***must not attract the attention of the casual observer***. Any

1 Scenic quality is rated in three categories from A (most scenic) to C (least scenic). See Section 3.20 for a discussion of scenic quality ratings.

> change must repeat the basic elements of form, line color and texture found in the predominant natural features of the characteristic landscape."

However, since the overall VRM goal is to minimize visual impacts, mitigating measures must be prepared for all adverse contrasts that could be reduced, even if the proposed action meets VRM objectives. Further, in addition to permanent visual contrast created in the landscape, the BSPP is analyzed for adverse effects due to lighting and glare, as well as temporary construction disturbances.

4.18.1.1 Visual Contrast Rating Process

The degree to which the BSPP adversely affects the visual quality of a landscape is directly related to the amount of visual contrast between it and the existing landscape character. The degree of contrast is measured by separating the landscape into major features (land/water, vegetation, structures) then assessing the contrast introduced by the project in terms of the basic design elements of form,[2] line,[3] color, and texture. The contrast of the BSPP with landscape elements is then rated as none, weak, moderate or strong, as defined in Table 4.18-1. The purpose of this method is to reveal elements and features that cause the greatest visual impact, and to guide efforts to reduce the visual impact of a proposed action or activity. This process is described in detail in Handbook H-8431-1, Visual Resource Contrast Rating, and documented using BLM Form 8400-4 (see Appendix F).

TABLE 4.18-1
VISUAL CONTRAST RATINGS

Degree of Contrast	Criteria
None	The element contrast is not visible or perceived.
Weak	The element contrast can be seen but does not attract attention.
Moderate	The element contrast begins to attract attention and begins to dominate the characteristic landscape.
Strong	The element contrast demands attention, will not be overlooked, and is dominant in the landscape.

SOURCE: BLM Manual 8431

The criteria for visual contrast are aligned with the management objectives for each Interim VRM Class. For example, if a project results in a weak visual contrast, it is likely to be in conformance with Interim VRM Class II, whereas a project that results in a moderate contrast would likely be in conformance with VRM Class III objectives but would not conform to VRM Class II objectives.

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2 Contrast in form results from changes in the shape and mass of landforms or structures. The degree of change depends on how dissimilar the introduced forms are to those continuing to exist in the landscape.

3 Contrasts in line results from changes in edge types and interruption or introduction of edges, bands, and silhouette lines. New lines may differ in their sub-elements (boldness, complexity, and orientation) from existing lines.

4.18.1.2 Selection of Key Observation Points

The contrast rating is completed from the most critical viewpoints, or Key Observation Points (KOPs). The intent of establishing KOPs is to visualize the contrast created by the proposed action from locations most representative of how the public perceives the affected landscape. The "public" may include highway travelers, travelers on local roads, residents in surrounding interspersed private lands, off-highway vehicle users, dispersed recreational users in surrounding wilderness areas, or users of BLM facilities, such as long-term visitor areas. The sensitivity of these diverse user groups to changes in the landscape are influenced by a number of factors, including how prominent the view of the proposed action is (in terms of scale, distance and angle of observation), the frequency and duration that viewers are exposed to the view, and whether the viewer groups are aware of their surroundings or expectant of high-quality views.

Based on the above factors, and in consultation with BLM staff, eight KOPs (Figure 45) were selected to evaluate the BSPP site's existing conditions and potential visual impacts. No KOPs were selected in the surrounding BLM wilderness areas because they are located in the background zone, the level of use is low, and the BSPP would be visible from only a small fraction of the wilderness lands (see Figure 23). However, KOP 8 is included to represent an elevated view of the BSPP that could be experienced by low numbers of dispersed recreational users on open trails and roads in the McCoy and Big Maria Mountains. The location and characteristics of each KOP is summarized in Table 4.18-2.

TABLE 4.18-2
KOP LOCATION AND CHARACTERISTICS

ID	Name	View of	Distance Zone/ View Direction	User Type	View Exposure*
KOP 1	Midland Long-Term Visitor Area (LTVA)	Solar Arrays/Power Block	Background/ South-southwest	Visitors/ Campers	Seasonal use of LTVA by RVs, campers.
KOP 2	LTVA Entrance Kiosk	Solar Arrays/Power Block	Middleground/ Southwest	Day-use Visitors/ Motorists	Low traffic on Midland Rd.; seasonal use of LTVA by RVs, campers.
KOP 3	Mesa Bluffs Golf Community	Solar Arrays/Power Block	Middleground/ West	Recreation/ Residential	Facility users may experience view briefly, and some residents may have views of the project area from elevated west-facing windows.
KOP 4	Palo Verde Community College	Solar Arrays/Power Block/Transmission Lines	Middleground/ West	Students/ Staff	Students and staff may experience views for moderate periods from elevated west-facing windows.
KOP 5	Blythe Airport	Solar Arrays/Power Block/Transmission Lines	Middleground/ north-northwest	General Aviation	On-ground, view would be experienced briefly. In flight, project area would be highly exposed.
KOP 6	I-10 Westbound	Transmission Lines	Foreground/ West	Motorists	Numerous travelers exposed to view for brief periods
KOP 7	I-10 Eastbound	Transmission Lines	Foreground/ East	Motorists	Numerous travelers exposed to view for brief periods
KOP 8	McCoy Mountains	Solar Arrays/Power Block/Transmission Lines	Middleground/ East	Dispersed Recreational Users	Low use by backcountry travelers who would be exposed to the view for brief to moderate periods in topographically-favored areas.

These KOPs were chosen to represent a mix of user types and viewer exposures. The visual contrast created by the BSPP is rated using simulations from each of these KOPs, and is used to represent the visual change experienced from different locations and viewer types.

4.18.1.3 Visual Simulations

KOP photos were taken with a 35mm camera and fixed 50mm lens, with a resulting horizontal field of view of approximately 40 degrees. This field of view approximates the actual field of view experienced in the field if viewed as a 10-inch wide image at a reading distance of about one foot. Computer modeling and rendering techniques were used to produce the simulated images of the views of the site as they would appear from each KOP after the completion of construction. Existing topographic and engineering (ArcGIS and AutoCAD) data were utilized to construct 3D (eye level height [5.5 feet]) digital and photographic images of the generation and linear facilities. These images were combined with the digital photography from each KOP to produce a complete computer-aided image of the power generating facility and portions of the transmission system.

4.18.2 Direct and Indirect Impacts

4.18.2.1 Proposed Action

There are no indirect impacts of the BSPP with respect to visual resources.

Project Appearance

The proposed action would convert approximately nine square miles of naturally-appearing desert plain to an industrial facility characterized by complex, geometric forms and lines and industrial surfaces that are dissimilar to the surrounding natural landscape character. An additional two square miles would be disturbed during construction. Much of the developed area would be covered with the arrays of parabolic mirrors that would be used to collect heat energy from the sun. Figure 46 presents an image of the Kramer Junction SEGS project solar troughs, which are smaller in scale than those proposed for BSPP, but provide a visual example of a solar plant using parabolic mirrors. Table 4.18-3 provides a list of the major project features that would contribute to the apparent visual change of the landscape. The arrays of parabolic mirrors would occupy most of the disturbed area, whereas the four identical power blocks would occupy smaller areas, but would contain various buildings and structures needed for electrical generation, including a 150-foot high air cooled condenser and an 80-foot high heat transfer fluid heater. These two structures represent the tallest buildings in each of the four proposed power blocks. The proposed high voltage transmission lines leading away from the main generation facility would be 140 feet high.

The BSPP has been proposed in a topographically favorable location for at least two reasons. First, the BSPP would be constructed at a somewhat higher elevation relative to I-10, the Blythe Airport, and the northwestern fringes of the City of Blythe. This would result in a greater potential for intervening topography to diminish or shield views of the project. Second, there are two subtle knolls along a southwest-trending line on to the south and east of the proposed action area. It is likely that these two topographic features would aid significantly in shielding the size and scale of the proposed action for areas at lower elevation.

TABLE 4.18-3
BSPP FACILITY/EQUIPMENT DIMENSIONS

Legend / Name	Dimensions (LxWxH) (Feet)/Capacity	Footprint (square feet)
Switch Yard	26 x 92	2,392
Overflow Vessel And Expansion Vessel	124 x 154	19,000 Ea
Ullage Coolers And Vessel	79 x 20	1,000
Nitrogen System	Incidental	800
Heat Transfer Fluid Heater	50 x 22 x 80 Stack	1,100
Steam Generators	90 x 10 x 24 Ea	900
Weather Stations are located on top of control house, and out in field	68 x 68 x 24	200
Parking	18 x 60	1,080
Balance Of Plant Electrical Building	67 x 67 x 24 (Two Level Bldg)	4,500
Reheaters	32 x 10 Ea	320
MCC Cooling Tower	33 x 40 x 32 High	1,320
Steam Turbine	111 x 50 x 40 High	5,500
Deaerator	125 x 57	7,100
Vacuum System	19 x 35 x 24 High	665
Compressed Air System	25 x 25 x 24 High	625
Generator Circuit Breaker	20 x 30 x 20	600
Warehouse	68 x 146 x 30	10,000
Chemical Injection Skid	46 x 47 x 24	2,000
Wind Fences	30 High (East and West)	
Security Chain Link Fence	8 High	
Generator Step-Up Transformers	48 x 32 x 24	1,500
Emergency Diesel Generator	40 x 10 x 20	800
Cooling Tower	33 x 40 x 32 High	1,300
Water Tank (Ro Concentrate) (Ps1 Only)	45 Dia x 24 High / 250,000 Gal	1,590
Service Water Pumps	23' x 12' x 16'	275
Take Off Tower	30' x 35' x 50'	1,000
Blowdown Tanks	28' Dia Ea	570
Auxiliary Boiler	40' x 73' x 32'	2,900
Air Cooled Condenser	245' x 296' 120' High	73,000
Sample Panel & Lab Building	84' x 48' x 24' High	1,100
Demineralized Water Tank	16' Dia x 24' High	200
Water Treatment Area	192 x 148	28,000
Administration Building	60 x 60 x 24 High	3,600
Control Building	68 x 68 x 24 High	3,900
High Voltage Line	4 Dia x 140 High Poles	
Pipe Rack	35 ft high	
Treated Water Tank (also Firewater Storage)	91 Dia x 24 High / 1 Million Gal	6,500

Construction-Phase Impacts

During the construction period, earth-moving activities and construction materials, equipment, trucks, and parked vehicles, all could be visible on the site and along the transmission line ROW. Construction would occur over a 69 month period, during which a number of activities would take place, including large-scale vegetation removal, earthwork, operation of a concrete batch plant, as well as foundation and equipment installation. These construction activities would result in a high degree of visual contrast within the landscape, which would be similar or the same as the visual contrast effects discussed in Section 4.18.2.4 below for each KOP.

However, visual effects of construction could also include the generation of large quantities of airborne dust as well as nighttime construction lighting. The affected viewers would be motorists on I-10, a moderate number of residences at the Mesa Bluffs Golf Community, visitors of the LTVA, and dispersed recreational users. Although the construction period is estimated to be close to six years, construction would be phased, so that it would not occur in any one place for the entire period. Further, construction activities would be conducted in a manner that minimizes (visible) dust emissions, as described in Mitigation Measure AQ-SC3. These measures would include limiting the speed of vehicles, surfacing construction access roads, and controlling wind erosion on soil stockpiles and exposed earth. When nighttime construction activities take place, illumination would be provided that meets state and Federal worker safety regulations. To the extent possible, the nighttime construction lighting would be directed downward or toward the area to be illuminated and would incorporate fixture hooding/shielding, as described in Mitigation Measure VIS-3. Task-specific lighting would be used to the extent practical while complying with worker safety regulations. Disturbed areas that would not be needed during operation and maintenance of the BSPP would be revegetated according to Mitigation Measure VIS-2. Finally, earthwork and vegetation manipulation strategies in Mitigation Measure VIS-4 would assist in toning down the contrast created in earth-moving and vegetation clearing.

In summary, adverse visual effects associated with generation of large quantities of airborne dust as well as nighttime lighting during the construction period activities at both the proposed plant site and along linear routes would be reduced with the implementation of Mitigation Measures AQ-SC3, VIS-2, and VIS-3. The general visual contrast created by vegetation stripping and the presence of construction materials, equipment and partially constructed facilities would contribute to the visual contrast apparent in the landscape, which is addressed in the next section from the perspective of eight KOPs.

Operation-Phase Impacts

During the operation of the project, visual effects would be caused by the visible elements of the BSPP, as described in Section 4.18.2.1. The discussion below is divided between visual effects that are not captured by visual simulations (nighttime lighting and reflected sunlight/glare), and the visual contrast ratings of the project simulated in each KOP.

Light and Glare (all KOPs)

While the potential for glint or glare, as well as nighttime lighting, is a component of visual contrast, these issues are treated separately because the simulations used in the visual contrast rating process model the daytime visual change, and do not consider the effect of temporary glare.

Operational Lighting. BSPP operations would require onsite nighttime lighting for safety and security. The BSPP would be in an area with very few existing structures, and the use of uncontrolled or excessive lighting could be noticed by nearby motorists, residents of the Mesa Bluffs Golf Community, and could affect the nighttime experience for users of the Midland LTVA. As described in Mitigation Measure VIS-3, to reduce offsite lighting impacts, lighting at the facility would be restricted to areas required for safety, security, and operation. Exterior lights would be hooded, and lights would be directed on site so that light or glare would be minimized. This would prevent facility lighting from being directed upwards such that the night sky would be affected. Low-pressure sodium lamps and fixtures of a non-glare type would be specified. Switched lighting would be provided for areas where continuous lighting would not be required for normal operation, safety, or security. The implementation of these measures would minimize the amount of lighting potentially visible off site to the extent feasible. While these measures would not totally eliminate the light visible by surrounding user groups, facility lighting would be minimized and controlled such that it would not be a nuisance and would not detract from the ability for affected viewers to enjoy their surroundings.

Glint and Glare from Parabolic Mirrors. The large fields of parabolic mirrors could produce glint[4] and glare[5] at various times of the day. Potentially affected observers would be travelers along I-10 and nearby local roads; users of nearby BLM recreational access roads; visitors to the McCoy or Big Maria Mountains; and visitors and aviators accessing Blythe Airport. It is possible that the back reflected light or light not absorbed by both the envelope and steel annulus of the Heat Collecting Element (HCE) could produce glare, particularly when the viewer is positioned in line with the sun. This glare is more apparent as the viewer increases in distance and elevation relative to the BSPP. This glare could occur in any one place for several hours (e.g. a sunny afternoon) and would be similar in brightness and reflectivity as a water body or lake. At the time of moving into or out of stow position; the troughs have the potential to produce glint, which is the product of spread reflection of the direct image of the sun. This glint would be much more intense than the glare produced by diffused reflections, but would be momentary, and limited to periods shortly after dusk and shortly before dawn. During such periods, the bright spot would move as the observer changes position relative to the sun and mirror, with the result that the bright spot appears to “follow” the observer. Figure 47 presents an image of the Kramer Junction SEGS project solar troughs, which are smaller in scale than the proposed BSPP, but provides an example of glint that could occur momentarily at certain times of the day.

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4 A flash of light, also known as a specular reflection, produced as a direct reflection of the sun in the parabolic mirror surface.

5 A continuous source of excessive brightness, relative to ambient lighting, also known as diffused reflections.

The glint or glare produced by the BSPP would likely be more intense than any other natural or cultural features in the observer's perspective. Glint from the solar arrays could be distracting or nuisance-causing, even from locations relatively distant from the BSPP. Glare produced by diffuse reflections would increase the visual contrast of the BSPP in the landscape, but would not be quite as intense or distracting. The BSPP would include a 30 foot-high wind fence on the east and west borders of the solar field, substantially diminishing or eliminating glint and glare effects for viewers east and west of the BSPP at similar elevations. For all other viewers, the reflected sunlight from the parabolic mirrors would contribute to the visual contrast created by the BSPP, even if momentary, because the effect would be noticed by most, if not all affected viewers, and would begin to dominate the character and views of the surrounding landscape. Because the design and operation of the solar arrays is integral to generating power for the BSPP, the face of the parabolic mirrors cannot be color treated or dulled.

Several measures are available that would reduce the potential for and frequency of intense or distracting glare from the solar fields. Mitigation Measure TRAN-9 would require the mirrors to be (1) brought out of stowage before sunrise and aligned to catch the first rays of the morning sun; and (2) returned to stow position after sunset. This would prevent bright flashes due to movement in or out of stow position. The mitigation also requires mirror function to be continuously monitored both by operators and by system controls, and to ensure that any malfunctioning mirrors be automatically turned east in a manner that prevents reflection from the sun as the sun continues west. VIS-1 and BLM-VIS-1 would ensure that reflective surfaces be painted or treated so long as it would not impair proper function of the equipment or structure.

These mitigation measures would avoid bright spot reflection associated with moving in and out of stow position, and would reduce the extent of reflective surfaces within the solar fields. However, the mitigation measures cannot prevent or reduce spread reflection off the face of the parabolic mirrors when out of stow position. The contribution of glint and glare will be considered in the contrast discussion of each KOP below.

Glare from Power Block Buildings, Administrative Buildings, and Transmission Lines. Potential glare from power block facilities and the high-voltage transmission lines would be less intense and distracting, and would be reduced by applying mitigation measure VIS-1 and BLM-VIS-1. This would require that transmission lines be finished with non-specular and non-reflective material, and the insulators to be non-reflective and non-refractive. Building and structure paints and finishes would be selected to blend with the landscape. These measures would prevent glare or reduce glare to minimal levels that would not be noticeable to potential viewers.

Visual Contrast Ratings

To analyze the visual contrast in the landscape created by the BSPP, the proposed action is simulated in photographs of the area for each of the KOPs described in Section 4.18.1.2. Figures 48 through 55 present both the existing and simulated conditions at each of the eight KOPs. Conclusions on the visual contrast of the BSPP presented below do not take into consideration the nighttime contrast (lighting), which is discussed above. Documentation of the visual contrast ratings (BLM Form 8400-4, Visual Contrast Rating Worksheet) is included in Appendix G. A contrast rating worksheet is not available for KOP-8 and thus the visual contrast rating is discussed fully in text.

KOP-1: Midland Long-Term Visitor Area (LTVA). This KOP represents the view for users of the Midland LTVA campground entrance (Figure 48). KOP-1 is located approximately 6.8 miles northeast of the site; approximately 7.8 miles north of the nearest power block facilities and 9.8 miles northeast of the transmission line. The distance and the low angle of view greatly diminish the dominance and scale of the BSPP in views of the landscape. This is due to perspective foreshortening, which reduces the apparent size of surfaces of areas or objects, when seen obliquely or at low viewing angles. Further, the line contrast created by the BSPP is weak because it is coincident with the flat horizon line of the valley floor. From the vantage point in Figure 48, the BSPP could appear as a distant lake, which would be out of character with the desert landscape, but would not necessarily detract from scenic quality. The color and texture of the solar fields appears in moderate contrast to the colors and textures characteristic of the surrounding landforms and vegetation. From this distance, the power block facilities and transmission lines are indistinguishable from the solar fields, or out of view, and would go unseen by most viewers. The contrast and visibility of the BSPP from KOP-1 would vary according to atmospheric conditions, but would only be seen for brief periods from the KOP as users of the Midland LTVA enter the campground.

In summary, the BSPP, as seen from KOP-1, would result in a weak visual contrast in form and texture, but a moderate contrast in line and color. Thus, the BSPP creates a weak to moderate contrast depending on the design element. The dominant landscape composition is of a panoramic desert landscape punctuated by prominent mountains in the background. The BSPP does not detract from this landscape composition due to the distance and low angle of view, and would not attract the attention of the casual observer, except during times when the solar arrays generate substantial glint (bright spot reflection). The simulation for this KOP demonstrates conformance with Class III Interim VRM objectives; however, at times when the solar fields generate glint, the BSPP would be a major focus of viewer attention, and would not conform to VRM Class III objectives. The visual contrast created by the BSPP shall be reduced by applying Mitigation Measures TRAN-9, VIS-1, VIS-2, VIS-4, and BLM-VIS-1. Mitigation Measure TRAN-9 would prevent bright flashes due to movement in or out of stow position, but would not fully mitigate the effects of glint and glare.

KOP-2: LTVA Entrance Kiosk. This KOP represents the view for motorists and day-use visitors of the Midland LTVA (Figure 49). KOP-2 is located approximately 4.4 miles northeast of the site; approximately 5.7 miles north of the nearest power block facilities and 7.5 miles northeast of the transmission line. The Midland LTVA accommodates visitors who wish to camp for as long as seven consecutive months or for short periods during the season of its operation (which runs from September 15 through April 15). Thus, while the number of users is generally low, they could experience views of the BSPP for extended periods of time.

The visual contrast created by the BSPP is largely similar as described above for KOP-1, except that KOP is located two miles closer. Perspective foreshortening still greatly diminishes the scale and dominance of the BSPP in the view, but because the proposed action is in closer proximity, individual power block buildings become distinguishable. The high voltage transmission lines, however, remain out of view. While power block structures are quite small at the distance viewed, they create a moderate contrast in form, line and color with the flat horizon line of the valley floor. The light, uniform colors of the structures are uncharacteristic of the colors and textures apparent in the natural landscape.

While seen from a distance and reduced in scale, the power block structures could possibly attract the attention of observers who are highly sensitive to changes in the landscape, such as users of the LTVA who have become accustomed to the largely unmodified landscape setting. However, it is unlikely that the contrast created by the power block structures would attract the attention of the casual observer. The simulation for this KOP demonstrates conformance with Class III Interim VRM objectives; however, at times when the solar fields generate glint, the BSPP would be a major focus of viewer attention, and would not conform to VRM Class III objectives. The visual contrast created by the BSPP shall be reduced by applying Mitigation Measures TRAN-9, VIS-1, VIS-2, VIS-4, and BLM-VIS-1. Mitigation Measure TRAN-9 would prevent bright flashes due to movement in or out of stow position, but would not fully mitigate the effects of glint and glare, resulting in non-conformance with VRM Class III objectives when glint is observed. Implementation of Mitigation Measure VIS-1 and BLM-VIS-1 would paint the buildings and the back of the parabolic mirrors in colors compatible with the surrounding landscape, reducing the color contrast of the power block buildings and solar fields. Mitigation Measure VIS-2 and VIS-4 would also aid in reducing the visual contrast of the BSPP through restoration of temporarily disturbed areas and proper design fundamentals.

KOP-3: Mesa Bluffs Golf Community. This KOP represents the view for users of the Mesa Bluffs Gold Community, which would include users of the golf course in addition to residences with views of the affected area (Figure 50). KOP-3 is located approximately four and 6.2 miles northeast of the site and transmission line, respectively, and is intended to approximate the views that could be experienced by the golf community. This community area consists of approximately 400 residential dwellings. In 2008, the course had approximately 30,000 rounds of golf. The community and golf course is described as “situated high on a bluff surrounding the Blythe Municipal Golf Course. Views from the bluff are spectacular, offering not only golf course views, but also views of the distant mountains, Colorado River, and the green patchwork of irrigated farmland below” (Mesa Bluffs Development Company, LLC, 2010). This indicates that the primary visual attraction is the elevated view of the Palo Verde Valley to the southeast, rather than the area affected by the BSPP (which is in the opposite direction). More generally, however, the golf community is likely to place value on the visual setting and could be sensitive to visual changes in the landscape caused by the BSPP. Existing cultural modifications visible in middleground views of this KOP have already detracted slightly from the natural landscape character.

The visual contrast created by the BSPP in Figure 50 is greater than the simulations for KOPs 1 and 2, because this view is located closer, and the solar fields create a greater line contrast with the surrounding landforms. Relative to KOPs 1 and 2, the visual contrast is increased in intensity, but it remains weak to moderate depending on design element. The simulation for this KOP demonstrates conformance with Class III Interim VRM objectives; however, at times when the solar fields generate glint, the BSPP would be a major focus of viewer attention, and would not conform to VRM Class III objectives. The visual contrast created by the BSPP shall be reduced by applying Mitigation Measures TRAN-9, VIS-1, VIS-2, VIS-4, and BLM-VIS-1. Mitigation Measure TRAN-9 would prevent bright flashes due to movement in or out of stow position, but would not fully mitigate the effects of glint and glare, resulting in non-conformance with VRM Class III objectives when glint and glare are observed. Implementation of Mitigation Measure VIS-1 and BLM-VIS-1 would paint the buildings and the back of the parabolic mirrors in colors compatible with the surrounding landscape, reducing the color contrast of the power block buildings and solar fields. Mitigation Measure VIS-2 and VIS-4 would also aid in reducing the visual contrast of the BSPP through restoration of temporarily disturbed areas and proper design fundamentals.

KOP-4: Palo Verde Community College. This KOP represents the view for students, teachers and visitors at the Palo Verde Community College (Figure 51). KOP-4 is located approximately three miles east of the site, 4.2 miles east of the nearest power block facilities, and five miles east of the nearest transmission line. Last academic year, the Community College served 7,735 students, dispersed between three locations (out of town, in town, and Needles Campus). Additionally, there are approximately 236 staff/faculty/maintenance personnel, dispersed between the three locations. Potential viewers at Palo Verde Community College could be exposed to views of the BSPP for moderate periods of time, but would not be as sensitive to visual changes in the landscape because the purpose of their visit is not recreation or scenic quality.

The conclusions on visual contrast, conformance with VRM objectives, and mitigation strategies are the same as discussed above for KOP-3.

KOP-5: Blythe Airport. This KOP represents the view for users on the ground at the Blythe Airport (Figure 52). KOP-5 is located approximately 2.4 miles south of the site; 3.6 miles southeast of the nearest power block facilities and 1.8 miles east of the nearest transmission line. This is a general aviation airport located to the southeast of the proposed solar facility location. There are an average of 69 operations per day (2006 data), 50 percent transient and 50 percent local.

The assessment and conclusions on visual contrast, conformance with VRM objectives, and mitigation strategies are the same as discussed above for KOP-1.

KOP-6: I-10 Westbound near the Project Transmission Line. This KOP represents the view of the transmission line for motorists traveling westbound on I-10 (Figure 53). KOP-6 is located approximately 0.2 miles east of the transmission line. The transmission line is approximately 150 feet high and would add industrial features with prominent vertical and curvilinear lines to the foreground landscape. Although the strong vertical lines of the steel poles would contrast with the prevailing horizontal lines of the mesa and the irregular ridgelines of the mountains beyond, nearby transmission line structures do exhibit similar linear characteristics, though at a smaller and less noticeable scale. The resulting visual contrast caused by these industrial characteristics and contrasting features would be moderate to strong, and would be only briefly experienced by motorists.

The high voltage power line in KOP-6 has a moderate to strong contrast, and is quite prominent in the view, and thus may momentarily attract the attention of some highway travelers as the power line comes into view. Due to the straight and flat nature of I-10, the transmission structure could be in motorists' view for several minutes. I-10 is a utility corridor, is paralleled by an existing transmission line, and contains scattered structures similar to the right side of the road in Figure 53. The transmission line is thus not wholly out of character with the visual features of the highway corridor. However, because of the strong line contrast generated by the transmission line, and because galvanized towers may often generate glare (if not properly treated), the structure would not be in conformance with Class III objectives (for the area along and south of I-10) or with Class II objectives (for the area north of I-10). Mitigation measure VIS-1 would ensure that transmission line conductors shall be non-specular and non-reflective, and the insulators shall be non-reflective and non-refractive. The surface treatment would reduce glare, but the strong line contrast created by the structure would remain, and thus the transmission line would remain in non-conformance with Class II and Class III objectives.

KOP-7: I-10 Eastbound near the Project Transmission Line. This KOP represents the view of the transmission line for motorists traveling eastbound on I-10 (Figure 54). KOP-7 is located approximately 0.2 miles west of the transmission line. The proposed transmission line would add industrial features with prominent vertical and curvilinear lines to the foreground landscape. Such characteristics are not prominently visible in the existing landscape in the vicinity of the span. Although nearby transmission line structures south of I-10 do exhibit similar linear characteristics, the strong vertical lines of the steel poles would contrast with the prevailing horizontal lines of the mesa and the irregular ridgelines of the mountains beyond. The resulting visual contrast caused by these industrial characteristics and contrasting features would also be moderate, and would be only briefly experienced by motorists.

For the same reason described in KOP-6, the BSPP transmission line, as seen from KOP-7, would not be in conformance with Class III objectives for areas north of I-10, but would conform to Class III objectives for areas along and south of I-10.). Mitigation measure VIS-1 would ensure that transmission line conductors shall be non-specular and non-reflective, and the insulators shall be non-reflective and non-refractive. The surface treatment would reduce glare, but the strong line contrast created by the structure would remain, and thus the transmission line would remain in non-conformance with Class II objectives for areas north of I-10.

KOP 8: McCoy Mountains. This KOP represents the view of the BSPP for dispersed recreational users in the McCoy Mountains (Figure 55). KOP-8 is located approximately two miles from the nearest portion of the BSPP. While the number of viewers who could experience the exact perspective presented in Figure 55 is low, this KOP is included to represent the appearance of the BSPP from elevated viewpoints, where the scale and extent of the BSPP is not so greatly diminished by the low angle of view. Elevated views of the affected area would also be available from the Big Maria and Little Maria Mountains, which can be accessed from several open NECO routes. Because dispersed recreational users in the mountains could experience the views for long periods of time, and value the visual quality of the surroundings, they are considered a user group with a high sensitivity level.

From this elevated perspective, the scale and dominance of the BSPP begins to become apparent. The contrast in form is weak, because the BSPP continues the flat shape of the valley floor and does not impair the forms displayed by the surrounding mountains. However, the contrast in line, color and texture is strong. In the context of the landscape unit (SQRU No. 19 - Chuckwalla Valley), the straight lines created by the outer edges of the solar fields contrast sharply with the curvilinear lines imparted by the numerous desert washes emanating from the mountains. The light, reflective color of the solar panels would be in sharp contrast with the brown and tan hues of the valley; and the repeated lines of parabolic troughs would be in contrast with the scattered patchworks of vegetation on the valley floor. The contrast in color would increase when glare is produced (during times of the day when the viewer, the sun and the solar arrays are in line).

The BSPP would attract the attention of even a casual observer of the landscape from this perspective. The level of change to the landscape would be strong, and the existing character would be significantly altered. For these reasons, the BSPP would not be in conformance with the Interim VRM Class III objective, which is to retain the existing character of the landscape. Several mitigation strategies are available to aid in reducing the adverse effects, including VIS-1 through VIS-4, BLM-VIS 1 and TRAN-9, but they cannot feasibly reduce the scale and contrast created by the BSPP with respect to the design elements of line, color and texture. For this reason the effect on the BSPP from KOP-8 is considered adverse and unavoidable.

Impacts to Special Designations (Wilderness Areas)

Figure 23 shows designated wilderness areas overlain on a viewshed map of the proposed action. While views of the BSPP would generally be from elevated viewpoints similar to KOP 8, the areas of designated wilderness from which the BSPP could be seen would be located much farther away, greatly diminishing the portion of views occupied by the BSPP.

The Palen/McCoy Wilderness is approximately four miles northwest of the BSPP site boundary. Approximately 1,020 acres of the Palen/McCoy Wilderness is within the BSPP viewshed. These areas are generally elevated with a favorable topographic orientation. Visitors to this wilderness area would have views of the BSPP as they travel through areas within the BSPP viewshed. However, the BSPP is unseen from the vast majority of wilderness land due to intervening mountain ranges (such as the McCoy and Little Maria Mountains). For these reasons, impacts would be minor.

The Big Maria Mountains Wilderness and Rice Wilderness are located approximately seven miles to the northeast, and 13 miles to the north of the BSPP site boundary, respectively. Approximately 4515 acres of the Palen/McCoy Wilderness and about 696 acres of the Rice

Wilderness are within the BSPP viewshed. Users of these areas would be able to view the BSPP, but opportunities for solitude and unconfined recreation would not be greatly impacted due to the small fraction of the wilderness area from which the BSPP could be seen and the distance of the BSPP from the wilderness area. Where visible, the BSPP area would constitute a small portion of the views, which would be open, unobstructed, and dominated by natural landscape features (e.g. mountain ranges, broad valleys, open sky). For these reasons, impacts would be minor.

The Little Chuckwalla Mountains Wilderness is located 14 miles to the southwest from the BSPP site boundary. Because of intervening topography, only the offsite linear facilities of the BSPP would be visible from the Little Chuckwalla Mountains Wilderness. At such great distances, the linear alignment would be barely noticeable and would only be visible from a small fraction of the total wilderness area. For these reasons, adverse effects would be minor.

Decommissioning

The purpose of decommissioning is to remove BSPP-related structures and infrastructure so that affected lands could naturalize. However, until vegetative restoration is achieved, adverse visual impacts would be similar to those described in the operation-phase impacts, because large areas would be devoid of desert scrub vegetation. Visual effects from the proposed transmission lines would be likely to remain, however, since it seems likely that, once in use, such lines would remain in use regardless of whether the energy they transfer is generated by the BSPP or another project. The impacts of decommissioning would be somewhat reduced in intensity, however, as compared to construction, because the contrast in color created by the power block structures and solar arrays would be removed. The contrast in the design elements of form and line would remain. Implementation of VIS-2 and VIS-4 would aid greatly in reducing the visual effects of decommissioning. VIS-2 would require the Closure, Revegetation and Rehabilitation Plan to include reclamation of the area of disturbed soils used for laydown, project construction, and siting of the other ancillary operation and support structures. Further, VIS-4 would reduce the amount of disturbed area and blend the disturbed areas into the characteristic landscape. It would require replacement of soil, brush, rocks, and natural debris over disturbed areas. Newly introduce plant species would be of a form, color, and texture that blends with the landscape. These measures would ensure the visual impacts of decommissioning are minor and short-term.

4.18.2.2 Alternatives

Reconfigured Alternative

The Reconfigured Alternative would not substantially reduce the visual effects of the BSPP. In fact, the same number of solar fields would be scattered over a greater land area, thereby potentially increasing the portion of the horizon occupied by the BSPP in KOPs 1 though 5. However, the increased portion of the horizon line occupied by the BSPP would not be substantial enough to change the contrast determinations. The Reconfigured Alternative would result in no change to the conclusions drawn in the analysis of the proposed action.

Reduced Acreage Alternative

This alternative would not substantially reduce the visual effects of the BSPP. From the perspectives presented in KOPs 1 through 5, the portion of the horizon line occupied by the BSPP would not change in any visually apparent way, due to the geometry of the Reduced Acreage Alternative. For KOPs 6 and 7, there would be no change because the transmission lines would remain under this alternative. For KOP 8, the area occupied by the BSPP would be reduced, thereby reducing the size and scale of the project; however, the degree of visual contrast created in the landscape, in terms of color, line and texture, would remain the same. Thus, the conclusions on visual contrast for the reduced acreage alternatives would be the same as the proposed action.

No Action Alternative A

Because there would be no amendment to the CDCA Plan and no solar project approved for the site under this alternative, it is expected that the site would continue to remain in its existing condition, with no new structures or facilities constructed or operated on the site. As a result, none of the construction- or operation-related visual resources impacts from the proposed action would occur.

No Action Alternative B

Because the CDCA Plan would be amended to make the area unavailable for future solar development, it is expected that the site would continue to remain in its existing condition, with no new structures or facilities constructed or operated on the site. As a result, the visual resources of the site would not be expected to change noticeably from existing conditions and, as such, No Action Alternative B would not result in visual resources impacts.

No Action Alternative C

Under No Action Alternative C, future solar energy development could be expected to affect visual resources to the same degree and extent as referenced in the proposed action. For example, if the acreage of the solar energy developed is 50 percent less than the proposed action, then impacts to visual resources would be 50 percent less intense.

4.18.3 Discussion of Cumulative Impacts

Impacts resulting from construction, operation, maintenance and decommissioning of the BSPP could result in a cumulative effect on visual resources with other past, present, or reasonably foreseeable future actions. The geographic scope of the cumulative effects analysis for visual resources consists of the I-10 corridor (where visual impacts could be synergistic), and locations from which a viewer could see the proposed action along with views of other projects (where visual impacts could be additive). This geographic scope of cumulative impacts analysis was established based on the natural boundaries of the affected resource, i.e., potential shared viewsheds, and not on jurisdictional boundaries. Potential cumulative effects on visual resources could occur during the BSPP's proposed 69-month construction period (e.g., from cumulative construction disturbances), during the projected 30-40 year lifespan of the proposed action (e.g., project contrast with the landscape, glint and glare), or result from closure and decommissioning (e.g., until restoration efforts return the landscape to its original condition).

Existing conditions within the area of cumulative effects analysis reflect a combination of the natural condition and the effects of past actions and are described in FEIS chapter 3. Direct and indirect effects of the BSPP are analyzed above. Past, present and reasonably foreseeable future actions making up the cumulative scenario are identified in Section 4.1. Among them, projects such as the Genesis, Rice, Palen and Desert Sunlight solar power projects are expected to result in synergistic visual impacts for travelers along I-10, as well as visual impacts to dispersed recreational users in the surrounding mountains.

4.18.3.1 Motorists on I-10

Visual changes as a result of other projects in the cumulative scenario would not be within the line of sight for travelers along I-10 viewing the BSPP. However, the combined effect of large-scale landscape alterations that would be visible along the length of I-10 within the CDCA Plan area could substantially degrade the visual character and the general scenic appeal of the landscape.

Numerous existing cultural modifications are visible from the I-10 corridor, including transmission lines, pipelines, 4-wheel drive tracks, and widely scattered facilities and structures; however, the general character is of an unimpaired, isolated desert landscape. The cumulative scenario includes many large-scale solar plants whose scale, potential glare, and pervasiveness would have adverse cumulative effects. If all the cumulative projects included in Section 4.1 were to be implemented (which is considered unlikely), they would convert about 123,592 acres along the I-10 corridor between roughly Desert Center and Blythe (approximately 50 miles) from an undeveloped desert viewshed to a more industrialized appearance (mostly with large solar array fields using both thermal and photovoltaic technologies).

In many cases, the apparent scale of the projects from motorists’ perspective would be diminished greatly by favorable topographic relationships. The cumulative projects are at the same or similar elevation as the highway, and are reduced in prominence due to their distance from the highway and low angle of view. In many cases, the other projects in the cumulative scenario would blend in with the horizon line of the valley floor, and the rugged mountains would remain the dominant visual features in the landscape. In spite of this, because the landscape is currently undeveloped and valued by visitors for its isolated and unspoiled condition, the addition of numerous new large-scale solar projects would substantially degrade the scenic experience for many travelers along I-10, due to the projects’ industrial character and visual contrast. Mitigation measures are available that reduce the color contrast of structures, or the line contrast of vegetation clearing; but the measures reduce the contrast of certain features of the projects at various distances. No mitigation measure is available that would be sufficient to address features of the project that result in the most contrast in the landscape: the large-scale, color and reflectivity of the BSPP’s solar fields. Thus, the cumulative scenario would present an unavoidable and adverse impact for travelers along I-10.

4.18.3.2 Dispersed Recreational Users in Surrounding Mountains

Dispersed recreational users in the Palen-McCoy and Big Maria Mountains Wilderness surrounding the BSPP—due to their elevated position and access to unencumbered, panoramic views of the valley below—could experience both additive and synergistic impacts in the cumulative scenario. The BSPP, along with other projects in the cumulative scenario, would not result in direct visual alteration to BLM wilderness areas; but the scale and contrast created by numerous renewable energy projects would greatly alter views of the valley floor experienced by wilderness users. Existing cultural modifications on the valley floor are largely limited to linear alignments (e.g., roads and transmission lines), or other structures that are diminished in importance due to the considerable distance from which they are viewed. However, the cumulative scenario presents numerous large-scale renewable energy projects that would be readily apparent to most wilderness users. The BSPP, in combination with other projects, would make the valleys surrounding the Palen-McCoy and Big Maria Mountains Wilderness appear increasingly industrialized, and could substantially diminish the remote and isolated character of the landscape. While use levels in the mountains and wilderness surrounding the BSPP are generally low, the remote and isolated character of the landscape is highly valued by its users, and could represent the primary attraction.

Available mitigation measures could not feasibly reduce the scale and contrast created by the projects in the cumulative scenario, especially from elevated viewpoints. Thus, the cumulative scenario presents an unavoidable and adverse impact for dispersed recreational users in surrounding, higher-elevation wilderness areas.

4.18.3.3 Alternatives

Cumulative impacts would vary by alternative to the BSPP only to the degree to which direct and indirect impacts would vary by alternative.

4.18.4 Summary of Mitigation Measures

The implementation of mitigation measures imposed by the Energy Commission as Conditions of Certification for the BSPP also would avoid or reduce impacts on the quality of the human environment. These mitigation measures are set forth in Appendix G. The following address impacts on visual resources.

VIS-1, VIS-2, VIS-3, VIS-4, TRAN-9, AQ-SC3

In addition, the following mitigation measure would be imposed by the BLM to avoid or reduce impacts on the quality of the human environment. The following mitigation measures would avoid or minimize impacts on visual resources:

BLM-VIS-1: The project owner shall paint power blocks structures and other vertical construction shadow gray as shown on the BLM Color Chart. The backs of solar troughs shall also be color treated to minimize color contrasts.

4.18.5 Residual Impacts after Mitigation Measures were Implemented

Residual impacts of the BSPP after implementation of mitigation measures would come from effects on the size and scale of the project. While mitigation measures VIS-1 through VIS-4 and BLM-VIS-1 would be helpful in reducing the level of contrast in form, line, color and texture for individual project features; the ability of these measures to reduce visual impacts decreases as the size and scale of the project increases. Thus, very few of the identified impacts are altogether eliminated through application of the proposed measures; however, the contrast in color and texture would be substantially reduced from several of the KOPs, with application of VIS-1 and BLM-VIS-1. Further, the impact of lighting, while not eliminated, also would be reduced substantially by implementation of VIS-3. The impact of glare is not fully mitigated with implementation of measure TRAN-9, but it is effective at preventing glint in the mornings and evenings due to movement of the mirrors in and out of stow position. Generally however, as the angle of view increases, the size and scale of the BSPP solar arrays would become the dominant contrasting factor because the surface of the parabolic mirrors could not be treated or painted to blend in with the landscape.

4.18.6 Unavoidable Adverse Impacts

The BSPP would cause three adverse impacts that cannot be mitigated; as such, these impacts would be unavoidable. These are discussed under the analysis of the proposed action, and summarized below:

1. Visual impacts to surrounding viewer groups (all KOPs) from sunlight reflected off of the parabolic mirrors (glare).

2. Visual impacts to dispersed recreational users in the McCoy, Big Maria, and Little Maria Mountains due to the size and scale of the BSPP. Non-conformance with VRM Class II objectives from KOP No. 8.

3. Unavoidable and adverse cumulative impacts for travelers along I-10 and dispersed recreational users in the McCoy, Big Maria, and Little Maria Mountains and wilderness.

4.19 Impacts on Water Resources

4.19.1 Impact Assessment Methodology

This analysis is based, in part, upon information from the following sources: the Application for Certification (AFC) (Solar Millennium 2009a), Supplement to the AFC (Solar Millennium 2009b); the Staff Assessment and Draft Environmental Impact Statement (CEC/BLM 2010) and the Revised Staff Assessment (CEC 2010). Additionally, technical reports and studies associated with these documents were also reviewed and considered in the preparation of this analysis.

4.19.2 Discussion of Direct and Indirect Impacts

Proposed Action

The flowing text provides an overview of groundwater supply and groundwater levels as relevant to both construction and operation of the BSPP, followed by a discussion of specific construction-period impacts, and finally specific operation-period impacts.

Groundwater Supply

The BSPP proposes to utilize underlying groundwater to supply water needs during construction. There is a concern that the water demand of the BSPP would exceed the groundwater basin budget and lead to overdraft conditions. The Palo Verde Mesa Groundwater Basin (PVMGB) lies in an area that is influenced by the Colorado River system. Currently, the PVMGB is in balance whereby inflow (approximately 6,700 acre-feet per year (ac-ft/yr)) to the basin equals outflow. As discussed in Section 3.19, inflow into the PVMGB occurs from the Palo Verde Valley Groundwater Basin, the Colorado River, and the Coachella Valley Groundwater Basin. It is anticipated that groundwater extraction during construction (about 820 ac-ft/yr) and operation (600 ac-ft/yr) would exceed the subsurface inflow from these sources and could thus place the basin into overdraft conditions if not balanced via increased subsurface inflow from the Colorado River. Total groundwater expected to be extracted from the PVMGB by the BSPP from construction through operation is approximately 22,100 ac-ft. The PVMGB has approximately 5,000,000 acre-feet in storage. The total amount extracted equates to approximately 0.44 percent of the available water in storage. This impact to the basin groundwater storage is minor. However, the BSPP’s pumping would have an effect on the Colorado River by inducing subsurface flow from the river into the PVMGB.

The Applicant did not provide an analysis of the proportion of water originating from storage, from natural recharge, and/or from Colorado River underflow. The Applicant did provide analysis that demonstrates that the PVMGB is in dynamic contact with the Colorado River and its aquifer. Sufficient analysis was also provided to determine that McCoy Wash and all ephemeral streams within the PVMGB are tributary to the Colorado River. Therefore, it should be noted that the water in the Colorado River is fully appropriated, according to the Consolidated Decree of the Supreme Court of the United States in the case of *Arizona v. California, et al*. entered Match 27, 2006, (547 U.S. 150 (2006)), which states, “Consumptive use from the mainstream within a State shall include all consumptive uses of water of the mainstream, including water drawn from the mainstream by underground pumping." The mainstream was indicated as "the mainstream of the Colorado River downstream from Lee Ferry within the United States, including the reservoirs thereon." "Tributaries" are defined in the Consolidated Decree to "mean all stream systems the waters of which naturally drain into the mainstream of the Colorado River Below Lee Ferry." The Colorado River Compact, 1922, upheld by this decree, defines the "Colorado River System" to mean "that portion of the Colorado River and its tributaries within the United States of America." The Colorado River Compact, 1922, further defines the "Colorado River Basin" to mean "all of the drainage area of the Colorado River System and all other territory within the United States of America to which the waters of the Colorado River System shall be beneficially applied." The Consolidated Decree goes on to state that the State of California is enjoined "from diverting or purporting to authorize the diversion of water from the mainstream the diversion of which has not been authorized by the United States for use in the respective States; provided, however, that no party named in this Article and no other user of water in said States shall divert or purport to authorize the diversion of water from the mainstream the diversion of which has not been authorized by the United States for its particular use."

The U.S. Geological Survey has indicated that the PVMGB lies within a basin tributary to the Colorado River and wells drawing groundwater will be considered withdrawing water from the Colorado River (Wilson et al., 1994). The USGS developed an accounting surface for determination of whether water was being drawn from the mainstream of the Colorado River. The accounting surface for the BSPP site ranged from 248 to 252 feet above mean sea level (amsl). Groundwater levels at the BSPP site were reported in 2009 at approximately 253 feet amsl (AECOM, 2010) and are anticipated to drop below the accounting surface during BSPP operations by between 4-15 feet. Correspondingly, all or a portion of the groundwater production at the site will be considered Colorado River water. Consequently, the BSPP has the potential to divert Colorado River water and that part, if not all of the water, would come from the Colorado River Basin. At least one current owner of water rights has proposed selling Colorado River water for use on this project.

Groundwater Levels

An existing numerical groundwater model developed by the US Geologic Survey (Leake et al., 2008) was used by AECOM (2010) to evaluate potential impacts from proposed BSPP pumping. The basis for use of the model included that:

1. The model included the BSPP site and was of sufficient detail and complexity to adequately evaluate impacts from the modest pumping proposed for the BSPP.

2. It had undergone review by the USGS and USBR. As such, the model had undergone significant peer review prior to being published.

The regional model used by AECOM (2010) is a two-dimensional superposition model developed using MODFLOW code (Harbaugh, 2000) for the Parker-Palo Verde-Cibola area, which includes the PVMGB and the BSPP site. The model employed a simple vertical geometry and a large grid spacing to evaluate the impacts from groundwater pumping on the Colorado River. Major features of the model include:

1. Two statistically derived low (conservative) and average transmissivity values (6,300 feet squared per day [(ft^2/d)] and 26,000 ft^2/d, respectively).

2. A constant storage coefficient or specific yield (0.2).

3. A uniform saturated thickness of the aquifer (500 feet).

4. Non-uniform grid spacing:

    a. Near-pumping-well grid spacing of 30 feet within 300 feet of well;

    b. 100 feet grid spacing within 1 mile of well;

    c. Gradually increasing grid spacing, from 100 feet to 1,320 feet, for the remainder of the model domain.

The existing USGS model was customized by AECOM (2010) using the site specific data from an aquifer test conducted during onsite investigations. Two newly constructed pumping wells were assumed to be located within the BSPP site, with both wells located on site. The area of the impact zone from the pumping well was determined based on results from sensitivity model runs. The entire model domain was divided into two zones: one that represented the well impact area and the other that represented the remainder of the model area. For Zone 1, both site specific and existing hydraulic parameters were used for simulations; for Zone 2, however, only existing hydraulic parameters were used because there are no additional data available at the time of this investigation.

The USGS model employed to evaluate impacts in the August 2009 AFC assumes a homogeneous aquifer in which aquifer parameters (i.e., transmissivity and specific yield) are uniformly applied across the model domain. In the evaluation conducted in the AFC, the model was used to conduct an analysis of the potential impacts from proposed groundwater pumping to supply water for the BSPP. At the time, no site specific aquifer data were available, so the aquifer property values determined by USGS were used across the model domain.

Subsequent to the submission of the AFC, additional site investigation was conducted and a pumping test completed on the BSPP site by the Applicant (AECOM 2010). In addition, information was provided through the BLM on the proposed activities within the PVMGB such that the cumulative impacts assessment provided in the AFC could be refined using the numerical groundwater model. To reflect these additional data, the USGS model was updated in response to the data requests providing:

1. An update to BSPP-only pumping impacts using site specific and regional aquifer characteristics;

2. An update to an assessment of cumulative impacts from other proposed activities within the Chuckwalla Valley Groundwater Basin using recent information provided by BLM on proposed water supply; and

3. A sensitivity analysis expanding beyond what was provided in the AFC to include additional transient simulations varying the transmissivity and storativity.

The aquifer test used a former water supply well onsite and two observation wells to assess aquifer characteristics below the BSPP site. The values from the testing tended to be well within the range of prior values reported by others and those used by the USGS. The transmissivity values were estimated to be between 10,000 square feet per day (ft^2/d) and 28,000 ft^2/d. Some of the storage estimates were within the range reported by Leake et al. (2008), though some were well outside the range used by the USGS in their model (0.05 to 0.2). The variation in some of the estimates could be a function of the partial penetration of the observation wells and variation beyond some of the bounding assumptions for application of the equations to estimate storage.

To incorporate the aquifer testing data, the model domain was portioned into zones, with the zone incorporating the pumping well inclusive of the range of aquifer characteristics from the testing and the zone outside this area incorporating those transmissivity and storage values used by the USGS in their modeling. Zone 1 is delineated based on the most conservative radius of influence obtained from sensitivity analysis. In doing so, the more conservative impact can be assessed. For example, in the analysis conducted for the AFC, the lowest transmissivity value (i.e., 10,000 ft^2/d) applied near the BSPP site test well is identical with the other areas of the model domain. Using the aquifer testing data in this update, two of three additional simulations were conducted using lower transmissivity value from the recent aquifer test (i.e., 10,000 ft^2/d) around the well. The zone established using the lower transmissivity value to the distance of a drawdown of one foot was used to set the extent of Zone 1 in all model runs.

Zone 1 is bounded by an area that centers at the BSPP well with a radius of about 26,000 feet, the large radius of influence at one-foot drawdown from the sensitivity analysis (see Table 4.19-1, *Results of Numerical Modeling for Proposed BSPP*, Model Runs 17 through 19, below). As discussed in Chapter 3.20, Water Resources, no springs or other surface water features are located in the vicinity of the BSPP site. McCoy Spring is located on the other side of the McCoy Mountains, to the west of the BSPP site. However, the intervening McCoy Mountains are expected to function as an impermeable barrier to groundwater movement, and therefore the BSPP would not affect any seeps or springs on the opposite side of the mountains. There are 15 surface water sites that are located in the PVVGB, within 10 miles to the east of the BSPP site. According to the National Water Information System Database of Water Resources of the United States, these features are likely canals or streams that collect agricultural runoff from adjacent farmlands. However, due to their relative distance from BSPP wells, and because they are likely supplied primarily by agricultural water return flows, these sites are expected to be only minimally affected by BSPP related groundwater pumping.

The modeling results suggest that during the life of the BSPP, groundwater level declines of five feet or more would be located at a distance of less than 1,100 feet from the proposed production well. The closest existing well is located a distance of 9,000 feet from this well.

Construction

Surface Water Drainage and Water Quality

Construction of the BSPP would require the use of heavy machinery for vegetation grubbing, grading, and installation of roads, pipelines, generation facilities, transmission facilities,

TABLE 4.19-1
RESULTS OF NUMERICAL MODELING FOR PROPOSED BSPP

Model Scenario	Objective	Zone 1		Zone 2		Year[a]	Maximum Draw-down (feet)[b]	Distance (in feet) from Production Well Field to one-foot Contour[c]	Distance (in feet) from Production Well Field to five-ft Contour[c]	Storage Change (acft)	Storage Change (percent of Recover-able)[d]
		Trans-missivity (ft^2/d)	Storativity (unitless)	Trans-missivity (ft^2/d)	Storativity (unitless)						
Run 1	BSPP only impacts assessment using only the single well on the BSPP site.	10,000	0.2	6,300	0.2	2015	7.9	10,000	<2,500	5,000	0.10%
						2029	4.4	---	---	13,400	0.30%
						2043	5.2	20,000-24,000	<2,500	22,200	0.49%
Run 2	BSPP only impacts assessment using only the single well on the BSPP site.	28,000	0.2	26,000	0.2	2015	3.3	~6,000	0	5,000	0.11%
						2029	1.7	---	0	12,600	0.28%
						2043	1.9	14,000-20,000	0	19,500	0.43%
Run 17	Determines relative sensitivity of the aquifer parameters and a conservative radius of influence for Zone 1 delineation	28,000	0.02			2015	7.08	42,839	95	3,100	0.06%
						2029	4.82	69,295	0	5,200	0.10%
						2043	4.91	69,295	0	6,300	0.13%
Run 18	Determines relative sensitivity of the aquifer parameters and a conservative radius of influence for Zone 1 delineation	28,000	0.2			2015	5.83	5,005	15	3,900	0.08%
						2029	3.83	7,227	0	11,500	0.23%
						2043	4.02	18,424	0	17,700	0.35%
Run 19	Determine relative sensitivity of the aquifer parameters and a conservative radius of influence for Zone 1 delineation	10,000	0.2			2015	15.19	8,133	903	4,000	0.08%
						2029	9.83	21,234	408	12,300	0.25%
						2043	10.24	26,136	595	20,200	0.40%

NOTES:
[a] Plan of Development assumes 69 month (5.75 years) construction period with total water usage during construction to be 4,100 acft and 600 ac-ft/yr usage during operational phase. Construction water usage averaged over a period of five years starting in 2011 (proposed construction start is 4th quarter 2011). Year 2029 represents 14 years into operation. Year 2043 represents the end of operational life of the BSPP.
[b] Three wells are proposed to supply water needs during construction and four wells (up to a maximum of 10 wells) during operations. The value represents the maximum drawdown observed at any one well.
[c] See Appendix J of the Palo Verde Solar I AFC August 2009– Numerical Groundwater Modeling: Assessment of Impacts from a revision in the well configuration for the proposed construction water supply.
[d] The storage change is based on a recoverable storage of 5,000,000 acre-feet as reported by the DWR (2004)

SOURCE: Derived from AECOM, 2010.

administration buildings, the solar field, and other facilities as discussed previously. Construction of these facilities would involve the use of bulldozers, graders, semi-trucks, and various other heavy machinery, and would involve changes to on site topography. These activities would potentially loosen existing surface soils and sediments, increasing the potential for erosion during storm events. Additionally, the use of construction equipment may involve the accidental release of fuel, oils, brake dust, lubricants, antifreeze, HTF, and other potentially hazardous substances at the construction site. These water quality pollutants could become entrained in surface water during storm events, and/or be infiltrated into groundwater and the underlying aquifer, resulting in the degradation of water quality. However, compliance with the requirements of an NPDES General Permit for Construction Activities would be required during BSPP construction, and would include implementation of best management practices (BMPs) and other measures for retaining or otherwise minimizing the release of potential water quality pollutants.

Groundwater Quality

There is a potential that significant groundwater quality impacts could occur during construction if contaminated or hazardous materials used during construction were to be released and migrate to the groundwater table. However, given proposed implementation of a hazardous material management plan during construction, along with adherence to the conditions of an NPDES General Permit for Construction Activities (see above), the potential for such impacts to groundwater quality appears low.

Operation

Surface Water Hydrology

The impacts of the BSPP on the local surface water hydrology would be directly related to proposed onsite grading and the construction and operation of a network of engineered collector/conveyance channels. These channels would be designed for the purpose of protecting the BSPP from flooding and erosion related to the conveyance of runoff from watersheds outside the BSPP. Onsite runoff would be controlled through appropriate grading and a network of engineered channels designed to collect and convey flow through the BSPP for discharge to one of the larger peripheral channels, which ultimately would discharge offsite. The BSPP would change both the extent and physical characteristics of the existing floodplain within the BSPP site and downstream of the BSPP site, as well as change the sediment transport and depositional characteristics of the BSPP site.

The Project Drainage Report (AECOM, 2010a) provides a summary of discharges at the downstream property boundary, which compares existing total outflows with post-development outflows at the BSPP boundary. There is a large disparity reported between the two conditions as summarized in Table 4.19-2. The differences between the pre- and post-development peak discharges appear too great to be accounted for by changes in on-site flow conditions. In addition, the total runoff volumes reported in the Drainage Report for pre- and post-development conditions do not seem to be well-correlated. Detailed explanation and documentation of this disparity has not been provided in the Project Drainage Report (AECOM, 2010a). Additionally,

TABLE 4.19-2
SUMMARY OF EXISTING AND PROPOSED PEAK FLOW RATES AT DOWNSTREAM BSPP BOUNDARY

Channel ID	Existing Flowrate at Outlet of Site (cfs)			Proposed Flowrate at Outlet of Site (cfs)		
	Q_{10}	Q_{25}	Q_{100}	Q_{10}	Q_{25}	Q_{100}
North	2,269	3,487	5,665	1,431	2,458	4,547
Central	1,960	3,257	5,661	60	118	973
West	2,076	3,190	5,192	1,165	1,823	2,049
Southeast	136	251	503	121	219	1,147
South	93	184	398	229	392	706

SOURCE: CEC RSA June 2010Soil and Water Table 18

figures clearly documenting the HEC-HMS analysis were not provided in the drainage report and digital HEC-HMS input files were not provided as requested in the BSPP data request. As a result, it is presumed that the existing Drainage Report is insufficient for final design. Discussion of additional requirements for a revised and updated drainage report is included below. The magnitude of the combined onsite and rerouted offsite discharges exiting the downstream property boundary would have a direct impact on the adequacy of the proposed drainage design to prevent erosion at the points of discharge.

Engineered drainage channels would be constructed along the BSPP boundary wherever the potential for the interception of offsite surface flows exists. These channels would intercept offsite flows and convey them around and through the BSPP for discharge at four discreet locations along the downstream BSPP boundary. Onsite flows would be discharged into these channels at discreet locations. Discharge of flow along the downstream BSPP boundary would be through the use of what the preliminary Grading and Drainage Plans for the BSPP refer to as “end diffuser” structures. The intent of these structures would be to reduce flow velocities and allow flow to spread out in a manner that mimics existing sheet flow conditions downstream of the BSPP.

Releasing flow back to native ground in a manner similar to existing conditions would be of concern for two primary reasons. The first is that flow collected from a large area and discharged in a more concentrated area could result in the potential for increased erosion. The second potential concern is that the significant change in flow patterns could essentially “dry-up” discreet areas downstream of the BSPP and, thereby, could affect existing biological resources beyond the BSPP boundary.

During decommissioning, the BSPP site would be restored to its existing condition. Flood control structures surrounding the site would be removed, and on site drainage facilities would be removed. The site would be graded so as to be as consistent as possible with adjacent natural drainage areas. Washes and channels that currently exist on site would not be restored precisely to their current shapes and locations, but would be allowed to naturally re-form following completion of the decommissioning process.

Onsite Drainage

All existing washes and floodplains within the BSPP boundary would be completely eliminated by the grading of approximately 7,000 acres to provide flat, uniform and vegetation-free topography required for the construction and operation of the solar mirror array. The existing natural drainage system would be replaced with a system of constructed swales and channels designed to collect and convey onsite flows to designated points of discharge from the BSPP. Onsite stormwater from the BSPP would be discharged directly offsite without the use of detention basins or any other means to capture, control, or retain onsite flows. The BSPP site would contain areas of compacted soils (access roads), pavement, mirrors, and other surfaces that would be impervious or would have reduced infiltration capacity as compared to undisturbed native soils. Therefore, it is expected that implementation of the BSPP could result in a net increase in the generation of stormwater flows on site. These flows would be discharged from the site during storm events into the peripheral flood control channels, possibly resulting in an increase in water downstream during major storm events.

As noted previously, it is presumed that the existing Drainage Report is insufficient for final design. The existing Drainage Report indicates reduced flows following BSPP construction, but does not disclose methodology, and does not indicate how directly discharging water from the BSPP site could result in a reduction in flows during a storm event. Therefore, additional revisions to the drainage report and associated documentation have been required as mitigation.

Along the transmission line corridor, there would likely be localized grading at the drainages that cross the transmission line corridor alignment to allow vehicular access during construction and operation of the facility. Localized grading along linear facilities could impact offsite portions of the existing drainages if not properly stabilized. Diversion and/or channelization of existing drainages should not occur along this corridor.

Offsite Drainage

The BSPP does not include any plans for alteration of the existing natural drainage system upstream of the BSPP boundary - there are no plans for any diversions, basins, dams or other surface water controls beyond the upstream limits of the BSPP. However, there is potential for erosion upstream of the BSPP due to the formation of headcuts, which could migrate laterally from the engineered channels if they are not stabilized and protected. Headcuts could result from improperly designed or maintained drainage facilities which, during a substantial storm event, could result in substantial erosion lateral to the improperly stabilized facility.

At the BSPP site, existing drainages would be routed around or across the BSPP site, along channelized floodways that would convey stormwater and flood waters across or around the BSPP site, and release those waters along the downstream edge of the BSPP site. Thus, natural flows would be concentrated into channels on the upstream side of the BSPP, conveyed across or around the BSPP in engineered channels, and released downstream of the BSPP along an engineered diffuser structure. Physical modifications downstream of the engineered diffuser structures are not proposed.

However, there would be changes to both the existing drainage patterns and sediment transport characteristics as the result of the upstream diversion of flows and the subsequent release of those flows at discreet locations on the downstream side of the BSPP. Additionally, potentially increased discharges from on the BSPP site (as discussed above, due to a net increase in on site impervious surfaces) could also result in increased stormwater flows being released to downstream areas. Certain downstream areas would receive more flow than under existing conditions, while other areas may no longer receive any surface flow beyond what may be the result of direct precipitation. The concentration of flows at the proposed diffuser structures could increase erosion up to half a mile downslope of those locations, based on erosion patterns downstream of I-10 bridges and culverts in the area.

The assessment of the impacts to the existing surface flow patterns requires a detailed analysis utilizing FLO-2D or a similar model to clearly delineate the pre- and post-BSPP conditions. The Applicant has provided the graphical results of a pre-development FLO-2D analysis, as well as a Technical Memorandum for the post-development FLO-2D analysis. The methodology and results of these analyses were sufficient to allow for assessment of the order and magnitude of potential drainage and flood related impacts. However, the methodology and results of these analyses were not well documented, and as presented, did not allow for a thorough, fine scale review of the changes in existing flow characteristics downstream of the BSPP. Therefore, an updated FLO-2D analysis needs to be prepared as identified under mitigation measure WATER-11.

Flood Hazards

The BSPP would be protected from flooding from offsite sources through the construction of engineered channels along upstream BSPP boundaries. These channels would capture and convey up to the 100-year flow through and around the BSPP and discharge it at four discreet locations on the downstream (east) BSPP boundary. The Drainage Report (AECOM, 2010a) and Preliminary Grading and Drainage Plans (AECOM, 2010a) for the BSPP provide information on the design and performance of the proposed collector and conveyance channels, including preliminary plan and profile layout and hydraulic analysis using the HEC-RAS computer program. In general, the preliminary plans were incomplete and inconsistent between the plan view, profiles, and typical sections. The plans as provided did not present a fully developed conceptual drainage design based on site specific conditions. Of particular concern were the channel profiles and typical sections which did not adequately reflect how the engineered collector channels would tie into existing grade. Therefore, Mitigation Measure WATER-10 would be required, which would require completion and adherence to a revised and updated drainage report.

A summary of the proposed channel geometry and hydraulic characteristics as provided in the preliminary Grading and Drainage Plans and Drainage Report (AECOM, 2010a) is provided in Table 4.19-3 below. The data provided indicate that portions of several of the channels do not meet established guidelines for allowable channel velocities and Froude number, which may result in erosion of unprotected banks due to a critical (turbulent) flow regime along discreet channel reaches.

TABLE 4.19-3
SUMMARY OF COLLECTOR AND CONVEYANCE CHANNEL HYDRAULIC CHARACTERISTICS

Channel ID	Length (ft)	Bottom Width (ft)	Channel Depth (ft)	Side Slopes (H:V)	10-Year Velocity Range (ft/s)	10-Year Froude No.
North	29,256	100-150	3’ to 21’	3:1	0.3 to 11.4	0.1 to 2.5
Central	22,780	50	3’ to 23’	3:1	0.1 to 1.5	0.1 to 1.1
West	26,885	170	5’ to 15’	3:1	1.5 to 9.2	0.2 to 2.0
Southeast	9,310	40	5’ to 10’	3:1	1.5 to 2.4	0.3 to 0.4
South	5,436	30	10’ to 20’	3:1	2.0 to 7.4	0.2 to 1.4

* Does not include velocity and Froude numbers at the proposed drop structures which are not representative of general channel conditions.

SOURCE: CEC RSA June 2010Soil and Water Table 19.

Protection of the facility from flooding and erosion related to onsite runoff would be accomplished through appropriate grading and the construction of engineered swales and channels. The preliminary Grading and Drainage Plans (AECOM, 2010a) indicate finished grades within the solar array ranging from 0.4-1.0 percent.

The relatively flat slopes and grading would prevent runoff from concentrating, resulting in shallow sheet flow that would minimize the potential for surface erosion and sediment transport. Drainage swales would be placed approximately every 289 feet to collect the onsite flows. These swales would be constructed at a slope of approximately 0.10 percent, which should result in non-erosive velocities. Swales would discharge into onsite collector channels, which subsequently would discharge into the major channels on the periphery of the BSPP that disperse flow back to the existing ground. The preliminary Drainage Report provided hydraulic analysis for the onsite collector channels that indicated 100-year flow velocities below 5.0 feet per second (ft/s) would occur in all channels—and in most cases would be significantly lower, indicating that flows would be non-erosive in a 100-year design event. A conceptual onsite post-development drainage plan was provided in the preliminary Drainage Report (AECOM, 2010a).

During operation, the proposed collector and conveyance channels around the periphery of the BSPP would be exposed to incoming side flows along much of their extents. This would be of most significance concern along the North, West and South channels. These inflows would include concentrated runoff at the more defined drainages, shallow sheet flow across much of the BSPP boundary, and smaller localized flows. All of these elements would have the ability to cause significant erosion of unprotected channel banks as well as create headcutting, which would extend roughly perpendicular from the outer channel bank into the adjacent floodplain. These headcut features could achieve the same depth as the main collector channel and could extend upstream for several hundred feet over time due to numerous smaller flow events, or could occur very quickly from a single large event depending on the magnitude of flow at a given location.

Impacts to areas beyond the BSPP boundaries could occur due to these erosional features. Appropriate bank stabilization measures would need to be implemented to ensure that headcutting is prevented at all locations where flow enters the engineered channels. The preliminary Grading and Drainage Plans (AECOM, 2010a) for the BSPP do not provide any provisions for the protection of the collector channel banks from incoming flows and potential erosion. The Project Drainage Report (AECOM, 2010a) refers to protection of the outside bank on the North Channel but does not provide specifics or address the West and South channels, which would actually collect most of the offsite flows.

Along portions of the North Channel, flow appears to occur in a direction primarily parallel to the channel alignment. Full lining of the north bank with soil cement or other approved method may not be required along this reach as it would be if flow is more perpendicular to the channel. It could be acceptable along this reach to discharge into the North Channel at discrete locations, with the remainder of the north bank remaining earthen. This approach would require the use of compacted earthen berms located parallel to the North Channel to guide flow to discrete and stabilized openings and spillways. Preliminary analysis indicates that the use of berms and spillways would adequately mitigate potential erosion impacts. However, this preliminary investigation needs to be supported by a FLO-2D analysis during final design that demonstrates flow patterns, peak discharges and flow velocities are appropriate for the use of earthen berms. Armoring of the outside of the berms could be required to ensure stability.

Operation of the proposed offsite and onsite channels would require significant inspection and maintenance over the life of the facility to ensure that the channels are operating as intended and that potential and observed erosion issues are addressed promptly to minimize damage to the facility and areas beyond the BSPP boundary. Relatively small problems and erosional features which develop during smaller more frequent events could become the focal point for problems during larger events. The Applicant has prepared a Draft Channel Maintenance Plan, which addresses some of the potential issues associated with long term operation of the channels. However, the plan does not adequately address the issue of the collection of offsite flows or the use of soil cement along areas subject to inflows from offsite watersheds. The document also references the use of riprap for erosion mitigation; however, riprap would not be allowed on the BSPP site due to its incompatibility with biological resources in the area.

Channel Maintenance Program

The Applicant shall develop and implement a Channel Maintenance Program that provides long term guidance to implement routine channel maintenance projects in a feasible and environmentally-sensitive manner. The Channel Maintenance Program would be a process and policy document prepared by the Applicant and reviewed by the Compliance Project Manager (CPM). The main goals of the Channel Maintenance Program would be to maintain the diversion channels to meet their original design intent to provide onsite and offsite flood protection, support the BSPP mitigation, and maintain groundwater recharge.

Surface Water and Groundwater Quality

Potential threats to surface water and groundwater quality related to operations include: potential accidental releases from the evaporation ponds that include auxiliary equipment cooling blowdown and RO reject water, accidental releases of HTF from treatment areas, leaching of treated wastewater from the proposed septic fields, potential increases in sediment loads to adjacent washes; and accidental spills of hydrocarbon fuels and greases (including HTF fluid) associated with operations equipment.

Each 250 MW unit would have two evaporation ponds, which would be double-lined to protect against leaks, which could otherwise affect groundwater quality. Each pond would have a minimum evaporative surface area of 3.5 acres resulting in a total of seven acres of evaporation ponds for each unit or a total of 28 acres of ponds for the entire BSPP.

The ponds would be designed and permitted as Class II Surface Impoundments in accordance with CRBWQCB requirements, as well as the requirements of the California Integrated Waste Management Board (CIWMB). Multiple ponds are planned to allow plant operations to continue in the event that a pond needs to be taken out of service for some reason (*e.g.*, needed maintenance). Each pond would have enough surface area so that the evaporation rate would exceed the input rate at maximum design conditions and annual average conditions. However, this proposed design may not sufficiently account for storm events, which would result in additional water entering the ponds via rainfall. Therefore, BLM would require implementation of an additional mitigation measure, measure WATER-18, which would require that the evaporation ponds be sized to accommodate project flows plus a 25-year storm event, with at least 1 foot of freeboard. Implementation of this mitigation measure would minimize risk of spillage of water from the evaporation ponds onto adjacent areas during major storm events.

The pond liner system would consist of a 60-mil high-density polyethylene (HDPE) primary liner and a secondary 40-mil HDPE liner. Between the liners would be a synthetic drainage geonet and collection piping to be used as part of the leachate detection system (LDS), which would be directed back to the pond. There would be a hard surface protective layer on top of the 60 mil HPDE that would consist of a hard surface such as roller-compacted concrete. The hard surface would provide protection against accidental damage to the HDPE from falling objects, varying climatic conditions, and worker activities during cleanout and maintenance. Monitoring of the evaporation ponds would be required to detect the presence of liquid and/or constituents of concern. It is expected the constituents of concern for this monitoring would include chloride, sodium, sulfate, TDS, biphenyl, boron, diphenyl oxide, fluoride, potassium, selenium, and phosphate. Due to the aforementioned construction and operational procedures of the surface impoundments, combined with the groundwater monitoring prescribed under Mitigation Measure WATER-16, groundwater quality is not anticipated to be affected as a result of disposal of this waste stream.

The average pond depth would be five feet and residual precipitated solids would be removed at the end of operations (approximately 30 years) or as needed to maintain function of the evaporation ponds. The precipitated solids would be sampled and analyzed to meet the characterization requirements of the receiving disposal facility. The characteristics of the precipitated solids would determine the transportation and disposal methodology. It is anticipated the pond solids and other non-hazardous wastes would be classified as Class II Designated Waste, a non-hazardous industrial waste. The Applicant would test the pond solids using appropriate test methods in advance of removal from the evaporation ponds to confirm this determination. A total estimated amount of solids accumulated is 23,000 tons over 30 years.

The Land Treatment Unit (LTU) would be located on the BSPP site near the power blocks and associated facilities. The material that would be placed in the LTU would consist of soil contaminated with Therminol® VP1 HTF as a result of minor leaks or spills occurring during the course of daily operational or maintenance activities. At ambient temperatures, HTF is a highly viscous material that is virtually insoluble in water. Therefore, operation of an LTU is not expected to impact surface water downslope or groundwater quality beneath the site. The LTU would be surrounded on all four sides by berms that would protect the LTU from upslope surface water flow. Because of the viscous and insoluble nature of HTF, it is not likely to mobilize from the soil downwards to the water table.

The LTU would be constructed with a two-foot-thick clay layer on the floor (underlain by three-feet of native soil that has been compacted to 95 percent compaction) that would serve as a protective barrier to the downward movement of contaminants from the LTU. Moreover, should any contaminants escape the LTU, the water table is approximately 195 feet beneath the LTU. In summary, because of the viscosity of HTF at ambient temperatures, the low solubility of HTF, the depth of the water table, and the placement of protective berms around the LTUs, it is expected that surface water and groundwater quality beneath the site would not be impacted by LTU operation. The LTU would be operated under the requirements of 23 CCR Division 3, Chapter 15; 27 CCR 2000 et seq.; and 23 CCR 2510 et seq.

The use and application of septic fields is a long established practice as a method of wastewater treatment. The closest septic field to the privately owned parcel of land is in excess of one-half mile from the parcel. The septic systems would have no affect on the surface water in or around the BSPP site. The septic systems would be installed approximately five to six feet deep. These types of systems result in wastewater constituents being non-detectable within three feet of the bottom of the leach field. In addition, the Riverside County Department of Environmental Health has a Technical Guidance manual for Onsite Wastewater Treatment Systems, which requires a setback of 100 feet between this type of system and the nearest groundwater well. There is no groundwater well within this distance, and the nearest property is in excess of 0.5 mile away.

Individual septic systems and leach fields are planned for each of the four power blocks and the BSPP's maintenance facility for a total of five septic systems and leach fields. The septic systems and leach fields for the maintenance facility and Solar Units #1 and #4 (the northeastern and southeastern power blocks of the BSPP) would be hydraulically cross gradient from the southernmost privately owned parcel. Therefore, operation of the septic systems and leach fields from these three areas is not expected to impact surface and groundwater quality at the privately-owned parcel where (according to USGS topographic map), a well may exist (this well was not listed on USGS or DWR databases of wells).

In contrast, Solar Units #2 and #3 (the northwestern and southwestern power blocks) would be located hydraulically up-gradient from the privately-owned parcel. The leach field at Solar Unit #3 would be the closest leach field to the privately-owned parcel. The time it would take for effluent from the leach field to infiltrate through the soil to the water table below can be estimated using the vertical permeability of the soil (at Solar Unit #3) that was measured as part of the geotechnical investigation of BSPP site soils (Kleinfelder 2009).

The septic system and leach fields for the BSPP would be constructed in accordance with the requirements of Riverside County:

1. Ordinance 650.5 (the Riverside County that amends Ordinance 650 that regulates the discharge of sewage in unincorporated areas of the County of Riverside and incorporates by reference Ordinance 725);

2. Title 15 Section 15.24.010 (the Uniform Plumbing Code) Appendix K for Private Sewage Disposal – General and Disposal Fields; and

3. Title 8 Section 8.124.030 (Approval and Construction Permit for Sewage Discharge) and Section 8.124.050 (Operation Permit for Sewage Disposal).

Table 4.19-4 below lists septic system and leach field minimum setbacks as required by the County of Riverside and the setbacks for the BSPP site.

TABLE 4.19-4
SANITARY FACILITY SET-BACKS REQUIREMENTS

County of Riverside Requirement	Minimum Set Back	BSPP Set Back	Reference
Minimum Distance Between Groundwater and Leach Lines	5 feet	175 feet	Riverside County Ordinance 650.5 (& OWTS Guidance Manual)
Minimum Horizontal Distance From Water Supply Wells	50 feet	250 feet	2007 California Plumbing Code (adopted by Reference as Riverside County Title 15, Chapter 15)

SOURCE: AECOM, 2010.

The Applicant proposes to implement operation period BMPs for managing potentially harmful stormwater to protect water quality. Water quality impacts could occur during operations if contaminated or hazardous materials (oils, greases, fuels, HTF, etc.) used during operations were to contact stormwater and drain offsite. The BSPP would alter natural stormwater drainages and use BMPs to reduce potentially significant impacts related to concentrated drainage and ensuing soil erosion and sediment transport offsite. A Drainage Erosion and Sedimentation Control Plan would be required prior to onsite operations and would reduce the potential for increased sediment loads. Potential spills would be managed through hazardous materials management.

Alternatives

Reconfigured Alternative

Soil Erosion

Soil erosion at the Reconfigured Alternative site could be impacted as a result of the construction and operation of the Reconfigured Alternative. Impacts related to implementation of mitigation measures to minimize soil erosion from wind and surface water are anticipated to be similar to those associated with the BSPP. Reconfigured Alternative construction activities would disturb site soils at the site and along the linear facilities route(s). It is at the time of this disturbance that there would be the highest potential for erosion, as well as associated effects including soil loss and increased sediment yields downstream from disturbed areas.

Groundwater Basin Balance

Groundwater basin storage in the vicinity of the Reconfigured Alternative site could be impacted as a result of the construction and operational water use. The potential impact would be similar to that of the proposed BSPP.

Groundwater Levels

Groundwater levels in the vicinity of the Reconfigured Alternative site could be impacted as a result of the construction and operational water use. The potential impact would be similar to that of the proposed BSPP.

Groundwater Quality

Groundwater quality in the vicinity of the Reconfigured Alternative site could be impacted as a result of the operation of the LTU and septic fields. The potential impact would be similar to that of the proposed BSPP.

Surface Water Hydrology

The impacts and mitigation measures of the Reconfigured Alternative would be similar to the proposed BSPP, except that flow from a significantly larger watershed would need to be collected and conveyed around the Reconfigured Alternative site. All existing washes within the smaller developed portion of the site would be eliminated by onsite grading and replaced with a system of engineered swales and channels. Mitigation of potential channel erosion and headcutting would still be required. The changes to the floodplain downstream of the site resulting from the Reconfigured Alternative would impact a larger area due to the shifting of Unit 3 to the south.

Surface Water Quality

Surface water quality in the vicinity of the Reconfigured Alternative site could be impacted as a result of surface grading. In addition, potentially significant water quality impacts could occur during operations if contaminated or hazardous materials used during operations were to contact stormwater and drain offsite. Moreover, the Reconfigured Alternative would alter a larger number of natural stormwater drainages than in the proposed action, and would impact surface water quality accordingly.

Reduced Acreage Alternative

Soil Erosion

Soil erosion could be impacted as a result of the construction and operation of the BSPP. Impacts related to implementation of mitigation measures would minimize soil erosion from wind and surface water. As a result, soil erosion impacts under this alternative are anticipated to be similar to but somewhat less than those associated with the proposed action.

Groundwater Basin Balance

Groundwater basin storage in the vicinity of the BSPP site could be impacted as a result of the construction and operational water use. The potential impact would be approximately 25 percent less than in the proposed action, since this alternative would use approximately 25 percent less water than the proposed action.

Groundwater Levels

Groundwater levels in the vicinity of the BSPP site would be impacted as a result of construction and operational water use. The potential impact is expected to be approximately 25 percent less than the proposed action, as this alternative would use approximately 25 percent less water than the proposed action.

Groundwater Quality

Groundwater quality in the vicinity of the BSPP site could be impacted as a result of the operation of the LTU and septic fields. The potential impact would be similar to, though somewhat less than, that of the proposed BSPP.

Surface Water Hydrology

The impacts and mitigation measures of this alternative would be similar to the proposed BSPP, except proportionately smaller in scale with regards to overall natural area lost to mass grading. All existing washes within the smaller developed portion of the site would be eliminated by onsite grading and replaced with a system of engineered swales and channels. Mitigation of potential channel erosion and headcutting would still be required and the volume of offsite flow that would need to be collected and conveyed around the BSPP would be essentially the same due to fact that Units 1, 2,and 3 would remain in place. The changes to the floodplain downstream of the reduced acreage alternative would be essentially the same as for the proposed action.

Surface Water Quality

Surface water quality in the vicinity of the BSPP site could be impacted as a result of surface grading. In addition, water quality impacts could occur during operations if contaminated or hazardous materials used during operations were to contact stormwater and drain offsite. Moreover, the BSPP would alter natural stormwater drainages and significantly impact surface water quality. Impacts for this Alternative are anticipated to be similar to those for the proposed action.

No Action Alternative A

Because there would be no amendment to the CDCA Plan and no solar project approved for the site under this alternative, it is expected that the site would continue to remain in its existing condition, with no new structures or facilities constructed or operated on the site. As a result, the impacts to soils and water from the construction and operation of the proposed BSPP would not occur. However, the land on which the BSPP is proposed would become available to other uses that are consistent with BLM's land use plan, including another solar project requiring a land use plan amendment. In addition, in the absence of this BSPP, other renewable energy projects may be constructed to meet State and Federal mandates, and those projects would have similar impacts in other locations.

No Action Alternative B

Because the CDCA Plan would be amended to make the area unavailable for future solar development, it is expected that the site would continue to remain in its existing condition, with no new structures or facilities constructed or operated on the site and no soil erosion impacts or impacts to jurisdictional waters. As a result, this No Action Alternative would not result in the impacts to soils and water under the proposed action. However, in the absence of this BSPP, other renewable energy projects could be constructed to meet State and Federal mandates, and would have similar impacts in other locations.

No Action Alternative C

Because the CDCA Plan would be amended, it is possible that the site would be developed with the same or a different solar technology. As a result, impacts to soils and waters would result from the construction and operation of the solar technology and resulting ground disturbance, and would likely be similar to the impacts to soils and waters from the proposed action--including groundwater extraction, erosion impacts, and impacts to jurisdictional waters. Different solar technologies require different amounts of grading; however, it is expected that all solar technologies would require grading and maintenance. As such, this No Action Alternative could result in impacts to soils and waters similar to the impacts of the proposed action.

4.19.3 Discussion of Cumulative Impacts

Impacts resulting from construction, operation, maintenance and decommissioning of the BSPP could result in a cumulative effect on water resources with other past, present, or reasonably foreseeable future actions. The geographic scope of the cumulative effects analysis for water resources consists of the PVMGB and the PVVGB. Potential cumulative effects on water resources could occur at any point during the lifespan of the proposed BSPP's lifespan, i.e., from the initiation of construction through and including completion of decommissioning activities.

Water usage rates that comprise the cumulative scenario are identified in Table 4.19-5. The cumulative scenario includes the proposed Genesis Solar Energy Project, even though it primarily overlies the Chuckwalla Groundwater Basin, because it appears that pumping associated with the Genesis project could reduce groundwater inflow to the PVMGB by between 71 ac-ft/yr and 320 ac-ft/yr as of 2043.

TABLE 4.19-5
FORESEEABLE PROJECTS AND ANTICIPATED WATER USE

Project	Proponent	BLM Serial ID	Technology	Source	Use	Water Use – Solar and Other Renewable Projects (ac-ft)							Comments
						2010	2011	2012	2013	2014	2015	2015-2043	
Palo Verde Mesa Groundwater Basin													
Big Maria Vista Solar Project	Bullfrog Green Energy, LLC	CA 49702	Photovoltaic (500MW)	Groundwater	Construction	--	8	7	7	--	--	--	No construction water use provided in POD; assume total 22 ac-ft over three years construction.
					Operation	--	--	--	--	0.22	0.22	0.22	
Blythe Airport Solar 1	US Solar	--	Photovoltaic (100MW)	Groundwater	Construction	--	1.6	1.6	--	--	--	--	No water usage given in POD. Assume water usage to be 20% of water usage for similar PV Operation
					Operation	--	--	--	0.04	0.04	0.04	0.04	
Blythe Energy Project II	Blythe Energy, LLC	--	Combined Cycle (520MW)	Groundwater	Construction	--	60	60	--	--	--	--	ACFTC (2004) indicates construction to last up to 22 months (76 acres) - no volume specified; Operational usage of 3,300 ac-ft/yr. Assume construction water usage 60 gal/cubic yard (cy). Further, assume grading encompasses entire site (76 acres) to an average depth of five feet (~620,000 cy).
					Operation	--	--	--	3,300	3,300	3,300	3,300	
Blythe PV Project	First Solar	--	Photovoltaic (7.5 MW)	Groundwater	Construction	--	0.1	0.1	--	--	--	--	Assumes 24 month construction period. No water amount specified. Given small output, assume minimal water usage for construction and operational use.
					Operation	--	--	--	0.01	0.01	0.01	0.01	
Desert Quartzite Solar Farm	First Solar (formerly OptiSolar)	CA 49377	Photovoltaic (601MW)	Groundwater	Construction	2	7	7	7	4	--	--	POD assumes construction period beginning mid-2010 with facility startup in 2013 or 2014. Assumes 27 acft total water for construction and 3.8 ac-ft/yr for operational use thereafter.
					Operation	--	--	--	--	3	3.8	3.8	
McCoy Soleil Project	enXco	CA 49490	Photo Tower (136MW)	Groundwater	Construction	--	1,000	150	75	--	--	--	POD assumes 30-month construction period with facility startup at end of 2013. Assumes water use of 1,225 ac-ft over total construction period and 600 ac-ft/yr for operational use thereafter.
					Operation	--	--	--	75	600	600	600	

TABLE 4.19-5 (Continued)
FORESEEABLE PROJECTS AND ANTICIPATED WATER USE

Project	Proponent	BLM Serial ID	Technology	Source	Use	Water Use – Solar and Other Renewable Projects (acft)							Comments
						2010	2011	2012	2013	2014	2015	2015-2043	
Palo Verde Mesa Groundwater Basin (cont.)													
Blythe Solar Power Project	Palo Verde Solar I, LLC	CA 48811	Parabolic Trough (484MW)	Groundwater	Construction	--	820	820	820	820	820	--	POD assumes 69 month (5.75 years) construction period with total water usage during construction to be 4,100 ac-ft and 600 ac-ft/yr usage during operational phase. Construction water usage averaged over a period of five years starting in 2011 (proposed construction start is 4th quarter 2011).
					Operation	--	--	--	150	300	450	600	
Total						***2***	***1,897***	***1,046***	***4,434***	***5,027***	***5,174***	***4,504***	
Chuckwalla Valley Groundwater Basin													
Genesis Solar Energy Project	Genesis Solar LLC	CACA 48880	Parabolic Trough (250MW)	Groundwater	Construction	--	1,368	616	616	--	--	--	Based on Application to Energy Commission
					Operation	--	--	--	--	1,644	1,644	1,644	

SOURCE: Derived from AECOM 2010.

Groundwater Basin Balance

Existing conditions for groundwater basin balance, including inflow and recharge from the Colorado River and adjacent groundwater basins reflect a combination of the natural condition and the effects of past actions, and are described in detail in FEIS Chapter 3.20. Briefly summarized, groundwater resources in the region supported a variety of agricultural ventures in the 1980's. As previously stated, the groundwater levels in the PVMGB have generally remained stable over recent history. The relatively stable groundwater levels that have been measured over the decades-long period of time suggest that groundwater withdrawal from the underlying aquifer has not significantly changed the water balance within the PVMGB. This is probably in large part due to recharge of groundwater from the Colorado River (AECOM, 2009). The majority of the agricultural ventures that were present in the 1980s-1990s were abandoned in the 1990's, returning groundwater resources to a balanced inflow and outflow.

It is anticipated that extraction of groundwater from the PVMGB during construction of the proposed BSPP would be approximately 4,100 ac-ft over 69 months, dropping to approximately 600 ac-ft/yr during the operation phase. Total groundwater use for the foreseeable future projects within the region is anticipated to be 17,580 ac-ft (Table 4.19-5, including the proposed BSPP) for the projected construction period of the proposed BSPP. The storage capacity of the PVMGB is approximately 5,000,000 ac-ft. The amount of cumulative groundwater extraction anticipated for construction of the proposed BSPP and the future/foreseeable projects amounts to 0.35 percent of the total stored groundwater within the PVMGB. Taken alone, the proposed BSPP would be expected to account for 0.08 percent of the total stored groundwater. These reductions in basin storage could result in locally reduced groundwater levels. However, in terms of the overall basin storage capacity, these depletion volumes are minor.

As discussed previously, groundwater flows readily across the boundary between the PVVGB and the PVMGB, and groundwater extraction in the PVMGB can result in water being drawn directly from the Colorado River and into the underlying aquifer. Therefore, the indicated reductions in groundwater in storage discussed above would likely be offset, at least partially, by increased subsurface inflow from the Colorado River into the PVVGB and the PVMGB.

When groundwater levels are reduced as a result of groundwater pumping, compaction of aquifer sediments can occur, which can result in a long term degradation in water storage capacity for the aquifer. Within the PVMGB, historic agricultural pumping drew the aquifer down substantially below its present levels, and compaction of aquifer sediments was not observed. Therefore, the PVMGB does not appear to be substantially susceptible to storage capacity loss or subsidence, and the proposed rates of groundwater extraction are not expected to result in aquifer storage capacity loss.

Extracted groundwater to support operation of the proposed BSPP and the construction and operation of the foreseeable projects defined in Table 4.19-5 is expected to approach 5,000 ac-ft/yr. Total groundwater expected to be extracted from the PVMGB over the life of all these projects would be approximately 143,000 ac-ft, or approximately 3 percent of the total estimated groundwater in storage in the PVMGB. The foreseeable projects, however, would likely induce additional subsurface inflow from the Colorado River. As previously stated, the Colorado River Basin is fully appropriated and any groundwater production from the PVMGB will come from the mainstream of the Colorado River, the Colorado River aquifer, or tributary waters of the Colorado River. Operation of any of the foreseeable projects would have an impact on inflows to the PVVGB.

Groundwater Levels

The regional model used by AECOM (2010) is a two-dimensional superposition model developed using MODFLOW code (Harbaugh, 2000) for the Parker-Palo Verde-Cibola area, which includes the PVMGB and the BSPP site. The model employed a simple vertical geometry and a large grid spacing to evaluate the impacts from groundwater pumping on the Colorado River.

The modeling results (see Table 4.19-6) suggest that during the life of all of the foreseeable projects, groundwater level declines of five feet or more would be located at a distance of more than 22,000 feet from the BSPP site. The closest known existing well is located at a distance of 9,000 feet. Operation of all of the foreseeable projects would have an impact on groundwater levels throughout the PVMGB and the PVVGB. As discussed previously, the BSPP is not expected to result in direct effects on spring and other regional surface water features. However, operation of all of the foreseeable projects would also have an impact on springs and other surface water features.

Groundwater Quality

There is potential for cumulative groundwater quality impacts to occur during construction if contaminated or hazardous materials used during construction or operation were to be released and migrate to the groundwater table. However, as described previously for direct impacts to groundwater quality, compliance with applicable regulations, implementation of proposed BSPP elements such lined evaporation ponds, and application of the applicant proposed and prescribed mitigation (would minimize this risk. Therefore, the BSPP is expected to contribute only minimally to possible cumulative impacts related to groundwater quality.

Other projects included in the cumulative assessment would be expected to result in similar minor effects on groundwater quality, and would also be expected to implement similar mitigation measures and project design criteria as compared to the BSPP, thereby minimizing potential effects on groundwater quality. Therefore, cumulative groundwater quality impacts are anticipated to be minor, and degradation of groundwater quality from the BSPP is not expected to substantially contribute to cumulative groundwater quality reduction.

Surface Water Hydrology

The cumulative impacts of the BSPP on the local surface water hydrology would be directly related to onsite grading and the construction and operation of a network of engineered collector/conveyance channels designed for the purpose of protecting the various projects from flooding. The cumulative projects would potentially change both the extent and physical

TABLE 4.19-6
RESULTS OF NUMERICAL MODELING FOR PROPOSED BSPP AND FORESEEABLE PROJECTS

Model Scenario[a]	Objective	Zone 1		Zone 2		Year	Drawdown (feet)	Distance from Production Well to 1-foot Contour	Distance from Production Well to 5-foot Contour	Storage Change (acre-feet)	Storage Change (percent of Recoverable)[b]
		Transmis-sivity	Storativity	Transmis-sivity	Storativity						
Run 9	Cumulative impacts assessment following the projects listed on Table 4.01-1	10,000	0.2	6,300	0.2	2015	15.44	17,402	1,015	16,570	0.33%
						2029	12.37	35,745	5,845	79,253	1.59%
						2043	15.16	54,204	22,545	139,540	2.79%
Run 10	Cumulative impacts assessment following the projects listed on Water Table 19-5	28,000	0.2	26,000	0.2	2015	6.19	11,701	30	16,473	0.33%
						2029	6	58,245	60	71,606	1.43%
						2043	7.31	59,802	2,645	114,751	2.30%
Run 17	Determine relative sensitivity of the aquifer parameters and a conservative radius of influence for Zone 1 delineation	28,000	0.02	---	---	2015	7.08	42,839	95	3,123	0.06%
						2029	4.82	69,295	0	5,233	0.10%
						2043	4.91	69,295	0	6,280	0.13%
Run 18	Determine relative sensitivity of the aquifer parameters and a conservative radius of influence for Zone 1 delineation	28,000	0.2	---	---	2015	5.83	5,005	15	3,948	0.08%
						2029	3.83	7,227	0	11,503	0.23%
						2043	4.02	18,424	0	17,735	0.35%
Run 19	Determine relative sensitivity of the aquifer parameters and a conservative radius of influence for Zone 1 delineation	10,000	0.2	---	---	2015	15.19	8,133	903	3,986	0.08%
						2029	9.83	21,234	408	12,279	0.25%
						2043	10.24	26,136	595	20,227	0.40%

NOTES:
[a] The pumping schedule for the water supply well onsite and those used for the cumulative impacts analysis are provided in Water Table 21 (FEIS Section 3.21)
[b] The storage change is based on a recoverable storage of 5,000,000 acre-feet as reported by the DWR (2004)

SOURCE: AECOM, 2010.

characteristics of the existing floodplain within each project site as well as downstream of each project site, as well as change the sediment transport and depositional characteristics of each project sites. Grading/construction plans and collector/conveyance channel designs have not been finalized for any of the renewable energy projects listed. The impacts of the cumulative projects on the local surface water hydrology would be directly related to proposed operation of networks of engineered collector/conveyance channels designed for the purpose of protecting the various projects from flooding. The projects would change both the extent and physical characteristics of the existing floodplain within each project site as well as downstream of each project site, and would change the sediment transport and depositional characteristics of each of the project sites. Similarly, operation of the BSPP would result in permanent changes at the BSPP site related to stormwater runoff, including sedimentation. However, implementation of Mitigation Measures WATER-10 through WATER-14, which would be required as conditions of certification for the BSPP (see Appendix F), would ensure that flows generated on site are retained or otherwise maintained on site. Therefore, the BSPP would not cumulatively contribute to long term operational cumulative impacts associated with changes in drainage, sedimentation, or flooding/hydrology within the PVMGB, the PVVGB, or other downstream areas.

Surface Water Quality

Stormwater generated during construction or operation on the various project sites, including the BSPP, could encounter soil or chemicals that are deleterious to aquatic and terrestrial plant and wildlife. Potential water quality pollutants could include oils, greases, antifreeze, HTF, and other potential fluids and pollutants that could be accidentally released during BSPP construction and operation. It is expected that all of the projects would be required to implement BMPs for managing potentially harmful stormwater and protect water quality.

Potential water quality impacts could occur during operations if contaminated or hazardous materials used during operations were to come into contact with stormwater and drain offsite. All of the projects are expected to have Hazardous Material Management Plans to reduce this potential impact. All of the proposed projects would alter natural stormwater drainages, though the expected use of BMPs would reduce potential impacts related to concentrated drainage and ensuing soil erosion and sediment transport offsite. As discussed previously, the proposed BSPP would include similar measures for the protection of water quality. Therefore, it is not expected to measurably contribute to possible short-term or long term cumulative impacts to water quality.

Decommissioning

The decommissioning of the proposed BSPP is expected to result in impacts related to water resources similar to construction impacts. It is unlikely that the construction or decommissioning of any of the cumulative projects would occur concurrently with the decommissioning of this BSPP, because the decommissioning is not expected to occur for approximately 30-40 years. As a result, there may not be cumulative impacts on water resources during decommissioning of the proposed BSPP generated by the cumulative projects. Therefore, the BSPP is not expected to contribute to cumulative impacts related to water resources.

4.19.4 Summary of Mitigation Measures

The implementation of mitigation measures imposed by the Energy Commission as Conditions of Certification for the BSPP also would avoid or reduce impacts on the quality of the human environment. These mitigation measures are set forth in Appendix G. The following address impacts on water resources:

> WATER-1, WATER-2, WATER-3, WATER-4, WATER-5, WATER-6, WATER-7, WATER-8, WATER-9, WATER-10, WATER-11, WATER-12, WATER-13, WATER-14, WATER-15, WATER-16, and WATER-17

Additionally, BLM would require implementation of the following mitigation measure, which is in addition to the mitigation measures set forth in Appendix G:

> **BLM-WATER-18:** The proposed evaporation ponds shall be sized so as to maintain no less than one foot of freeboard during storm conditions. Specifically, the ponds shall be sized to accommodate operational discharges plus a 25-year storm event, with no less than one foot of freeboard.

4.19.5 Residual Impacts after Mitigation Measures are Implemented

Implementation of the mitigation measures identified above would address potential BSPP-related impacts on water resources. However, a small degree of residual impacts could remain even following implementation of the proposed mitigation measures. The following text reviews the efficacy of the proposed mitigation measures, and discusses potential for residual impacts, as relevant.

Colorado River Effects (WATER-1 and WATER-15): Implementation of the proposed mitigations would ensure that either (1) potential effects on the Colorado River hydrology are avoided entirely, or (2) the applicant applies for and receives an allocation of water from the Colorado River. No residual impact would occur.

Groundwater Level Mitigation (WATER-2, WATER-3, WATER-4, WATER-5, WATER-8): Implementation of these mitigation measures would ensure that wells are properly sited and installed; ensure that no more than 22,100 acre-feet of water is pumped over the BSPP lifetime; ensure implementation of a groundwater level monitoring, mitigation, and reporting plan during construction and operation; provide monetary or other reimbursement for potential impacts to wells; and provide for groundwater production reporting. These measures would ensure that potential reductions in groundwater levels are minimized. However, a relatively minor degree of residual groundwater level reduction would occur as a result of BSPP implementation, as discussed previously.

Water Quality (WATER-6, WATER-7, WATER-16, WATER-17, WATER-18): These mitigation measures ensure compliance with applicable laws and other requirements related to on-site stormwater discharges, design and operational requirements for the proposed septic system and leach field, and drinking water standards. WATER-16 requires documentation of groundwater quality during operations. Compliance with these measures would ensure that levels of construction-related sediment loading, erosion, and other water quality pollutants would be minimized, and that potential degradation of groundwater quality associated with the proposed septic system would be minimized. Although residual surface and groundwater quality impacts are not considered significant, a very small degree of residual surface and groundwater quality reduction is expected, in comparison to the No Project Alternative, due primarily to the introduction of treated leachates from the proposed septic system.

Drainage and Flooding (WATER-10, WATER-11, WATER-12, WATER-13, WATER-14, WATER-18): These mitigation measures ensure that potential BSPP drainage and flooding related impacts would be minimized. They include completion of a revised and updated Drainage Report that would include updated analysis and considerations for climate change related updates to the current Drainage Report, an updated hydraulic analysis, compliance with Riverside County guidelines for conveyance channels, revisions to preliminary grading and drainage plans, and implementation of a channel maintenance program during BSPP operations. These mitigation measures would ensure that potential impacts related to drainage and flooding are reduced to insignificant levels. Residual effects would be minor, but could include minor fluctuations in sediment transport along washes adjacent to and downstream of the BSPP.

4.19.6 Unavoidable Adverse Impacts

As discussed previously, implementation of the BSPP and associated permit requirements and mitigation strategies would result in minor adverse impacts for the following categories: (1) surface water quality: minor reduction in water quality during construction, operation, and decommissioning; (2) groundwater quality: minor reduction in groundwater quality during construction, operation, and decommissioning; (3) groundwater level: relatively minor degree of reduction in water levels is expected during construction and operation; (4) drainage and flooding: minor changes during construction, operation, and decommissioning.

4.20 Impacts on Wildland Fire Ecology

4.20.1 Impact Assessment Methodology

Impacts of fire on the wildlands in the vicinity of the BSPP would be related to the changes to the footprint size of the proposed action. The incidence of human-vehicle-caused wildfire would be related to the numbers of vehicles accessing the site for construction, operations, and maintenance activities, as section 3.23 documents the primary causes of fire in the area are lightning and vehicles. For the No Action Alternatives, Proposed Action, Reconfigured Alternative, and Reduced Acreage Alternative, differences in fire incidence and therefore impacts in the BSPP Area would also vary by the relative ability and relative numbers of vehicles accessing the BSPP Area in the short and long term. These estimates come from Section 4.18, *Transportation and Public Access*.

4.20.2 Discussion of Direct and Indirect Impacts

Proposed Project

Direct impacts of wildfire would include mortality of plants and wildlife and loss of forage and cover. Annual plants and burrowing wildlife would be less affected in the short term because seeds in the soil and animals under the soil would not likely be consumed. Indirect impacts would result in changes to the vegetation communities and the wildlife supported by the communities. The spread of invasive plants, especially annual grasses, creates an increased potential for wildfires which can result in disastrous ecological change. Historically in the planning area, the occurrence of wildfires has been low. Repeated fires are known to decrease the perennial plant cover and to aid some invasive annual plants. In turn, where they gain widespread propagation, these invasive plants would provide fuel to carry flames, potentially resulting in larger fires in the future. Surface disturbing activities and vehicle use that promotes the introduction of invasive plants would increase the likelihood of larger fires in the future. Fires have not been common or large in the NECO planning area in the past, but could increase as the invasive, non-native grass cover increases.

Wildfires (caused by construction or downed transmission lines) are rare but the increase in daily vehicle use in the area from an anticipated 200 new jobs during operation and up to 1000 jobs during construction could increase the risk of ignition. Climate change would result in a small but general increase in temperature, and could also result in an increase in the frequency of extreme weather events that could generate wildfires, such as increased frequency of drought and heat waves, during operation and maintenance of the BSPP.

Brooks (1998) performed the most in-depth analyses of the correlations between invasive annual plants and environmental impacts. He found that, despite comprising only five percent of the annual plant species in the desert, two invasive annual grasses--red brome (*Bromus madritensis ssp. rubens*) and Mediterranean split grass (*Schismus spp.*)--and one invasive forb--fileree (*Erodium cicutarium*)--accounted for 66 percent of total plant biomass during a high rainfall year.

Biomasses of each were positively correlated with disturbances from off-highway vehicles and sheep grazing combined. He concluded that invasive annual grasses out-competed native species. Invasive annual grasses contributed greatly to fire fuels, and combustion of dry red brome produced flame lengths and temperatures sufficient to ignite perennial shrubs. He cited other literature (e.g., pp. 11-12) showing that around the world plant invasions are promoted by human disturbances. He also showed that soil nutrients played a significant role and that nitrogen deposition may enhance the rate of invasion.

Wildfire suppression efforts would result in reduced particulate (PM10) production and visibility impairment from smoke and wild-blown dust. Short term impacts from fire suppression potentially would increase levels of particulate from surface disturbance of fire fighting equipment and operations. Fire fighting efforts would use minimal ground distributing techniques such as aerial fire suppression and ground crews with hand tools. Successful fire suppression efforts minimize the number of acres burned, and result in less vegetative loss, and thereby, less wind erosion of particulate matter.

Alternatives

Although the Proposed Action, Reconfigured Alternative, and Reduced Acreage Alternative would involve different acreages and configurations, the generating capacity and construction, operations, and maintenance vehicle use would be the same between these three alternatives. Long term operations and maintenance phases of these three alternatives would tend to decrease recreation-related vehicle access to and through the BSPP Area, resulting in a reduced incidence of fire compared to No Action Alternative B.

With No Action Alternatives A and C, vehicle access to and through the BSPP Area would be similar and, therefore, fire incidence and size would be similar in the short and long term, because future solar development would not necessarily be precluded. No Action Alternative B would result in potentially greater recreation-related vehicle access in the long term as solar energy development projects would be precluded from the BSPP Area. Such vehicle access in the long term would increase along present trends and increase the incidence of vehicle-related wildfires compared to No Action Alternatives A or C.

The chance for exotic annual weeds to establish and change the fire regime in the BSPP Area would vary with the slightly different footprint size of the Proposed Action, Reconfigured Alternative, and Reduced Acreage Alternatives; 7,233 acres, 7,383 acres, and 4,750 acres, respectively.

4.20.3 Discussion of Cumulative Impacts

Incremental impacts of the BSPP could result in a cumulative effect on wildland fire risk in combination with other past, present, or reasonably foreseeable future actions. For purposes of this analysis, the geographic scope of the cumulative effects analysis for fire resources consists of eastern Riverside County, which includes about 2,800 square miles (about 1,792,000 acres). Although potential fires would not be constrained by political boundaries, the natural conditions and existing fire response infrastructure are such that it would be reasonable to assume that a fire could be contained within this area. This boundary also is consistent with the California Department of Forestry and Fire Protection's Fire Hazard Severity Zone boundaries. (CDF 2010; CDF 2007). Potential cumulative wildfire effects could occur over the course of 40 or more years, encompassing the entire lifespan of the BSPP, from construction and operation and maintenance, through closure and decommissioning.

Existing conditions within the cumulative impacts area reflect a combination of the natural condition and the effects of past actions and are described in FEIS chapter 3. Direct and indirect effects of the BSPP are analyzed above. Past, present and reasonably foreseeable future actions making up the cumulative scenario are identified in Section 4.1. The installation and operation of transmission lines (such as the existing Devers-Palo Verde Transmission Line and lines proposed as part of the BSPP) and the use of equipment (including motor vehicles) that could spark or otherwise provide an ignition source could combine to cause or create a cumulative impact. Further, renewable energy projects that use or would use solar trough technology (such as the BSPP, Palen and the NextEra McCoy project) are expected to use heat transfer fluid (HTF) that would be heated to a high temperature (about 750 degrees Fahrenheit); management of this and other hazardous materials on site could complicate any necessary firefighting efforts. For example, in 1999, a 900,000 gallon HTF storage tank exploded at a solar power plant in the Mojave Desert, causing fire and related concerns about adjacent containers that held sulfuric acid and caustic soda. Additionally, the increased human presence and disturbance caused by the construction, operation and overall development that would occur under cumulative scenario could advance the rate of invasion by non-native vegetation and, thereby, contribute to fire fuel-loading that would burn with higher flames and hotter temperatures. Cumulative impacts would vary by alternative only to the degree to which direct and indirect impacts would vary by alternative. In this case, the incremental impact of the action alternatives is not expected to vary materially from the proposed action, because similar types of construction, operation and maintenance and closure and decommissioning activities would occur. However, to the extent that development of the site for utility-scale power generation would preclude some OHV use, wildfire risks associated with recreational uses would diminish. Solar energy development of the site also could occur under No Action Alternative B; therefore, the incremental impact of this alternative is not expected to be materially different than the proposed action. For No Action Alternatives A and C, wildfire risks would continue to be associated with OHV and other recreational use of the area.

4.20.4 Summary of Mitigation Measures

No additional mitigation measures would be needed because fire protection, vegetation treatment and weed management plans are incorporated into the Proposed Action, Reconfigured Alternative, and Reduced Acreage Alternative. The Applicant would be required install a fire protection/control system on site in including a fire water supply system and associated infrastructure, and to comply with State and Federal regulations regarding worker safety and training. Additionally, under Mitigation Measure WORKER SAFETY-7, the Applicant would be required to provide funding to the Riverside County Fire Department to ensure available resources to fight potential fires on site. Although the risk of wildfire that could affect the BSPP could increase as a result of climate change, these potential increases in risk are expected to be offset by ongoing compliance with the worker safety and fire protection regulations and mitigation measures. Mitigation Measures BIO-6, 7, 8, 14 (a weed management plan), 19, and 23, which reduce exotic weeds, would reduce the incidence and size of wildfires and would tend to maintain the natural vegetation communities.

4.20.5 Residual Impacts after Mitigation Measures were Implemented

Despite the Fire and Weed Control Programs that would be incorporated into any of the Action alternatives, the changes in vehicle use accessing the area for construction, operation, and maintenance and recreational vehicle access would increase the likelihood of wildfires in the BSPP Area to a slight, but unknown degree.

4.20.6 Unavoidable Adverse Impacts

The residual impacts described above would be unavoidable consequences of development.

4.21 Impacts on Wildlife Resources

4.21.1 Impact Assessment Methodology

This analysis is based, in part, upon information from the following sources: the Application for Certification (AFC) (Solar Millennium 2009a) and Supplement to the AFC (Solar Millennium 2009b); responses to CEC staff data requests (AECOM 2010a); CEC staff workshops held on December 9 and 18, 2009, January 7, 10, 14 and 25, 2010, and April 28, 2010; site visits by CEC staff on October 7, 2009, November 3, 2009 and January 25, 2010; communications with representatives from the California Department of Fish and Game (CDFG), the Bureau of Land Management (BLM), and the U.S. Fish and Wildlife Service (USFWS); and information contained within the Northern and Eastern Colorado Desert Coordinated Management Plan (NECO). Additionally, new information was obtained between the SA/DEIS publication and development of the PA/FEIS. This information primarily relates to Nelson’s bighorn sheep, western burrowing owl, and golden eagles (AECOM 2010v, AECOM 2010w, and AECOM 2010x); this information does not affect any of the conclusions made in the PA/FEIS. The BLM was integrally involved in the preparation of this analysis with the CEC and other natural resource agencies.

This section analyzes potential impacts to wildlife resources from the construction and operation of the BSPP. This analysis addresses potential impacts of the BSPP (including ancillary facilities) to special-status wildlife species and other significant wildlife resources. Direct, indirect, and cumulative impacts are analyzed and quantified, if possible. See Appendix H for a more detailed cumulative analysis.

Direct impacts are those resulting from the BSPP and occur at the same time and place. Indirect impacts are caused by the BSPP, but can occur later in time or farther removed in distance while still reasonably foreseeable and related to the proposed action. The potential impacts discussed in this analysis are those most likely to be associated with construction and operation of the BSPP.

Impact analyses typically characterize effects to plant communities as temporary or permanent, with a permanent impact referring to areas that are paved or otherwise precluded from restoration to a pre-BSPP state. In the desert ecosystems the definition of permanent impacts to wildlife habitat needs to reflect the slow recovery rates of its plant communities. Natural recovery rates from disturbance in these systems depend on the nature and severity of the impact. For example, creosote bushes can resprout a full canopy within five years after damage from heavy vehicle traffic (Gibson et al. 2004), but more severe damage involving vegetation removal and soil disturbance can take from 50 to 300 years for partial recovery; complete ecosystem recovery could require over 3,000 years (Lovich and Bainbridge 1999). In this analysis, an impact is considered temporary only if there is evidence to indicate that pre-disturbance levels of biomass, cover, density, community structure, and soil characteristics could be achieved within five years.

4.21.2 Discussion of Direct and Indirect Impacts

Proposed Action

Desert Tortoise

Direct Impacts

The BSPP would cause permanent loss of low to moderate desert tortoise habitat acreage would occur by blading and development of the BSPP footprint. During construction of the BSPP desert tortoises could be harmed during clearing, grading, and trenching activities or could become entrapped within open trenches and pipes. Construction activities could also result in direct mortality, injury, or harassment of individuals as a result of encounters with vehicles or heavy equipment. Other direct effects could include individual tortoises being crushed or entombed in their burrows, collection or vandalism, disruption of tortoise behavior during construction or operation of facilities, disturbance by noise or vibrations from the heavy equipment, and injury or mortality from encounters with workers' or visitors' pets. Desert tortoises also could be attracted to the construction area by application of water to control dust, placing them at higher risk of injury or mortality. Increased human activity and vehicle travel would occur from the construction and improvement of access roads, which could disturb, injure, or kill individual tortoises. Also, tortoises could seek shade and thermal cover by taking shelter under parked vehicles and be killed, injured, or harassed when the vehicle is moved.

Impacts of Relocation/Translocation. Capturing, handling, and relocating desert tortoises from the proposed site after the installation of exclusion fencing could result in harassment and possibly death or injury. Tortoises could die or become injured by capture and relocation if these methods are performed improperly, particularly during extreme temperatures, or if they void their bladders. Averill-Murray (2001) determined that tortoises that voided their bladders during handling had significantly lower overall survival rates (0.81-0.88) than those that did not void (0.96). If multiple desert tortoises are handled by biologists without the use of appropriate protective measures, pathogens could be spread among the tortoises, both resident and relocated or translocated animals. For those tortoise near but not within the BSPP Disturbance Area, removal of habitat within a tortoise's home range or segregating individuals from their home range with a fence would likely result in displacement stress that could result in loss of health, exposure, increased risk of predation, increased intraspecific competition, and death. Tortoises moved outside their home ranges would likely attempt to return to the area from which they were moved, therefore making it difficult to isolate them from the potential adverse effects associated with BSPP construction.

The risks and uncertainties of translocation to desert tortoise are well recognized in the desert tortoise scientific community. The Desert Tortoise Recovery Office (DTRO) Science Advisory Committee (SAC) has made the following observation regarding desert tortoise translocations (DTRO 2009, p. 2):

> "As such, consensus (if not unanimity) exists among the SAC and other meeting participants that translocation is fraught with long-term uncertainties, notwithstanding recent research showing short-term successes, and should not be considered lightly as a

> management option. When considered, translocation should be part of a strategic population augmentation program, targeted toward depleted populations in areas containing “good” habitat. The SAC recognizes that quantitative measures of habitat quality relative to desert tortoise demographics or population status currently do not exist, and a specific measure of “depleted” (e.g., ratio of dead to live tortoises in surveys of the potential translocation area) was not identified. Augmentations may also be useful to increase less depleted populations if the goal is to obtain a better demographic structure for long-term population persistence. Therefore, any translocations should be accompanied by specific monitoring or research to study the effectiveness or success of the translocation relative to changes in land use, management, or environmental condition.”

Indirect Impacts

Indirect Impacts include increased risk of predation from ravens, coyotes, feral dogs; disturbance from increased noise and lighting; introduction and spread of weeds; increased road kill hazard. Development would also fragment surrounding habitat.

Ravens, Coyotes, and Other Predators. Construction and operations activities associated with the BSPP could provide food or other attractants in the form of trash, road-killed animals, and water, which would draw unnaturally high numbers of desert tortoise predators such as the common raven, kit fox, and coyote to the BSPP area. BSPP structures would also provide new nesting and perching sites for ravens, increasing their presence in the vicinity of the BSPP and eventually increasing their population. Common raven populations in some areas of the Mojave Desert have increased 1,500 percent from 1968 to 1988 in response to expanding human use of the desert (Boarman 2002). Since ravens were scarce in this area prior to 1940, the current level of raven predation on juvenile desert tortoises is considered to be an unnatural occurrence (BLM 1990, USFWS 2008a) and one of many anthropogenic contributors to desert tortoise population declines.

In addition to ravens, feral dogs have emerged as major predators of the tortoise. Dogs could range several miles into the desert and have been found digging up and killing desert tortoises (USFWS 1994; Evans 2001). Dogs brought to the BSPP site with visitors could harass, injure, or kill desert tortoises, particularly if allowed off leash to roam freely in occupied desert tortoise habitat. The worker environmental awareness training (BIO-6) and restrictions on pets being brought to the site required of all personnel (BIO-8) would reduce or eliminate the potential for these impacts.

Construction and operation of the BSPP would increase raven and coyote presence in the BSPP area. Ravens capitalize on human encroachment and expand into areas where they were previously absent or in low abundance. Ravens habituate to human activities and are subsidized by the food and water, as well as roosting and nesting resources that are introduced or augmented by human encroachment. The City of Blythe and the nearby airport provide food, water features, and roosting/nesting substrates (buildings, signs, lamps, and utility poles) that otherwise would be unavailable. This development adjacent to the proposed BSPP provides year-round water and trash subsidies for the raven as well as nesting opportunities.

Small mammal, fox, coyote, rabbit, lizard, snake, and tortoise road kill along I-10 provides an additional attractant and subsidy for opportunistic predators/scavengers such as ravens. Road kills would mount with increased BSPP construction and operations traffic, further exacerbating the raven/predator attractions and increasing desert tortoise predation levels.

Increased Risk from Roads/Traffic. Vehicle traffic would increase as a result of construction and improvement of access roads, increasing the risk of injuring or killing desert tortoise. The potential for increased traffic-related tortoise mortality is greatest along paved roads where vehicle frequency and speed is greatest though tortoises on dirt roads also could be affected depending on vehicle frequency and speed. Census data indicate that desert tortoise numbers decline as vehicle use increases and that tortoise sign increases with increased distance from roads (Nicholson 1978; Hoff and Marlow 2002). Additional unauthorized impacts that could occur from casual use of the access roads in the BSPP area include unauthorized trail creation.

Impacts from Noxious Weeds. Sahara mustard (Brassica tournefortii) is regarded as one of the most invasive wildland pest plants in the Colorado and Mojave deserts, one of the most common invasive plants in desert tortoise habitat, and capable of dominating entire desert landscapes if no control actions are taken. Left uncontrolled, it out-competes and ultimately replaces native wildflowers that provide valuable forage for the desert tortoise. It forms dense thickets that can increase the frequency, intensity, and size of desert fires, increasing the threat to native plant communities, the desert tortoise, and other wildlife (Brooks 2010 as cited in the CEC RSA June 2010). In areas where Sahara mustard is particularly dense it also could impede desert tortoise movement (Berry pers. comm. as cited in CEC RSA June 2010). In the Colorado and Mojave Deserts, a single tortoise was necropsied that had died from renal failure, related to renal oxalosis, and the crystals present in the kidneys were identified as oxalates (Jacobson et al. 2009). One additional tortoise was later necropsied that died of oxalosis in the same region (Berry pers. comm. 2010). Many native plants in the Mojave and Colorado deserts contain oxalates; however, the oxalate-containing weed Sahara mustard is one of the most common invasives in desert tortoise habitat and is a suspected cause of the renal failure (Berry pers. comm.).

Sahara mustard spreads explosively during wet years but even during a 12-year drought in Riverside County (1989-1991), the population of Sahara mustard increased by nearly 35 times. Densities equivalent to as high as three million plants per acre have been recorded at Lake Mead National Recreation Area (Graham et al. 2003 as cited in the CEC RSA June 2010).

Mojave Fringe-toed Lizard

Direct impacts to Mojave fringe-toed lizards during construction of the transmission line and associated access road would result from a permanent loss of occupied habitat, accidental disturbance to protected habitat adjacent to the BSPP site, and mortality from vehicle strikes. Indirect impacts include the introduction and spread of invasive plants; erosion and sedimentation of disturbed soils; fragmentation and degradation of remaining habitat; increased road kill hazard from operations traffic; harm from accidental spraying or drift of herbicides and dust suppression chemicals, and; an increase in access for avian predators (such as loggerhead shrikes) due to new perching structures.

Sahara mustard, in particular, is a noxious weed of high concern in the Colorado Desert. Sahara mustard could affect wildlife by altering the availability of forage plants and characteristics of their habitat structure. The Coachella Valley fringe-toed lizard (Uma inornata) is a dune-dependent species that requires fine, loose, windblown sand for survival (Zeiner et al. 1990). Barrows et al. (2009) found the Coachella Valley fringe-toed lizard to be the only animal species of five vertebrates evaluated to demonstrate a negative response to Sahara mustard abundance. Coachella Valley fringe-toed lizard abundance on weeded plots showed an increase in while lizard abundance on the control plots showed a decrease (Barrows et al 2009). This negative impact was short-lived and declined no more than a year after the mustard's dominance waned. This indicates that Sahara mustard removal would improve habitat quality for fringe-toed lizards. An indirect effect of Sahara mustard on fringe-toed lizard is that it could increase sand compaction within aeolian sand (active dune) communities (Barrows et al 2009). Over time sand compaction could lead to a change in habitat from an aeolian sand community to a stabilized sand community.

Permanent loss of occupied Mojave fringe-toed lizard habitat is considered a major impact since this habitat is declining in availability in the region. In addition, indirect impacts that degrade habitat and increase the risk of mortality are also considered major impacts to this species.

Couch's Spadefoot Toad

Direct effects to Couch's spadefoot toads could include loss of breeding habitat and direct mortality during grading or construction. Disturbance to breeding ponds, including to new ponds incidentally created during construction activities, could also impact this species. In addition, construction, maintenance, and operation traffic could result in direct mortality on BSPP area roads, particularly Black Rock Road, where the three ponds are located. Indirect impacts could result from hydrology changes that reduce flow to breeding areas. In addition, construction noise could trigger emergence when conditions are not favorable.

Three ponds potentially suitable for Couch's spadefoot toads occur within the BSPP site, and nine more ponds, also suitable, exist within a mile of the site (AECOM 2010u). This species requires aquatic habitat for breeding and upland habitat for burrowing. Because the species does not breed every year, potential breeding habitat does not necessarily need to sustain surface water for an extended period of time (minimum approximately nine days) every year. Burrowing habitat is considered any area with friable soil within the dispersal distance for this species. The dispersal distance is largely unknown, though there is one record from Mayhew (1965) of a juvenile 0.25 miles from the closest breeding pond, and other observations place them at least one mile from ponds (Dimmitt, pers. comm.). Therefore, in the absence of more conclusive information, upland Couch's spadefoot toad habitat is considered to be all areas with friable soils within 0.25 miles of a potential breeding pond. While little is known about the location and proximity of subterranean refuge sites, there is some indication that they are widely distributed and that breeding pond habitat is the limiting factor in the species distribution (Dimmitt, pers. comm.).

Without species-specific survey results and with limited occurrence information, it is difficult to assess the potential for direct and indirect impacts to Couch's spadefoot toads. However, based on known occurrence information along I-10 to the east and west of the BSPP area (Dimmit 1977), and because the BSPP is within an area NECO mapped as Couch's spadefoot toad habitat, we conclude that the three ponds are potential breeding habitat for Couch's spadefoot toad.

Migratory Birds

The Applicant proposes to build eight 4-acre evaporation ponds, which pose a risk to waterfowl, shorebirds, and other resident or migratory birds that drink or forage at the ponds because they could be harmed by selenium or hyper-saline conditions resulting from high total-dissolved-solids concentrations in the water.

Direct impacts include permanent loss of breeding and foraging habitat, including loss of Sonoran creosote bush scrub and of desert dry wash woodland; potential loss of eggs and young; disturbance of nesting and foraging activities for populations on and near the plant site and linear facilities; degradation and fragmentation of remaining adjacent habitat from edge effects; hazards from evaporation ponds

Indirect Impacts would include increased road kill hazard from operations traffic and collision with mirrors; increased predation from ravens; disturbance from operations.

The BSPP area does not provide breeding habitat for Swainson's hawks, northern harriers, ferruginous hawks, or yellow warblers but these species could occur there during migration or in the winter. The BSPP impacts to Sonoron creosote bush scrub and desert dry wash woodland would contribute to loss of foraging habitat, cover, and roost sites for these species on their migratory or wintering grounds, but would not contribute to loss of breeding habitat. The BSPP would have more substantial adverse effects to the resident breeding birds at the site, which include loggerhead shrike, California horned lark, and black-tailed gnatcatcher among others. These species would be adversely affected by the loss of desert dry wash woodland, vegetated ephemeral swales, and Sonoran creosote bush scrub. Black-tailed gnatcatchers, loggerhead shrikes and other wash-dependent species would in particular be affected by the loss of the cover, foraging and nesting opportunities provided by the structurally diverse and relatively lush desert dry wash woodland. Dry washes contain less than 5 percent of the Sonoran Desert's area, but are estimated to support 90 percent of Sonoran Desert birdlife (CalPIF 2006).

The loss of active bird nests or young is regulated by the federal Migratory Bird Treaty Act and California Fish and Game Code section 3503, which protects active nests or eggs of California birds.

Golden Eagle

Direct and indirect impacts include loss of foraging habitat; potential disturbance to nesting golden eagles during construction if active nests occur within 1 mile of BSPP boundaries. Golden eagles can be extremely susceptible to disturbance during the breeding season (Anderson et al. 1990; USFWS 2009b), and adverse effects are possible from various human activities up to (and in some cases exceeding) one mile from a nest site (Whitfield et al. 2008). While golden eagles are known to occur in the region, there are no known active nests within 10 miles of the BSPP site (BLM 1999) and this species was not incidentally observed during field surveys conducted for other plant and wildlife species (Solar Millennium 2009a). The 2010 surveys also found no active golden eagle nests within 10 miles of the BSPP (AECOM 2010x).

BSPP construction activities could injure or disturb golden eagles if nests were established sufficiently close to BSPP boundaries to be affected by the sights and sounds of construction. These potential impacts are unlikely, however, because suitable nesting substrate (i.e., cliff ledges, rocky outcrops, or large trees) do not occur within one mile of the proposed BSPP area. In the remote possibility golden eagles were to reoccupy the old nest three miles away, this is sufficient distance to prevent agitation behavior (displacement, avoidance, and defense) at the nest; increased vigilance behavior at the nest; or nest site abandonment. A reasonable buffer to adequately minimize potential indirect impacts from construction disturbance for the golden eagle is one mile and a range has been presented for energy projects of 0.25 to 2 miles (AECOM 2010x). Because there is no nesting habitat within at least one mile, and no existing nests (active or inactive) are present closer than three miles, no impacts are anticipated to golden eagle nesting as a result of project construction or operation activities. Due to the distance between the project boundary and the closest active territories, the project area is not expected to be used for foraging by any active golden eagle pairs. However, the BSPP may affect golden eagle foraging habitat at a regional level.

Record of Decision, Decision Record, and Notice to Proceed:

The BLM must consult with the USFWS to determine if the Service considers the proposed action likely to take eagles. If take is anticipated, further consultation with USFWS would be required to determine if an Avian Protection Plan (APP) would sufficiently minimize impacts to eagles. If the USFWS indicates that an APP is not sufficient to avoid or minimize likely take resulting from the proposed action, the BLM authorized officer would not issue a Record of Decision or Decision Record approving the project. If the applicant wishes to proceed, the applicant must then identify an alternative project design to reduce the likely take to a level that is compatible with the preservation of eagles, and receive USFWS concurrence for the revised APP. If, after coordination with the USFWS, an APP is deemed appropriate and needed to sufficiently avoid and minimize take by the proposed action, the BLM authorized officer may issue a Record of Decision or Decision Record approving the project; however, the BLM authorized officer would not issue a Notice to Proceed until the USFWS letter of concurrence for the APP is received for the project.

Western Burrowing Owl

Burrowing owls and their active burrows within the BSPP Disturbance Area could be crushed during construction activities. The potential for direct impacts to burrowing owls include the loss of nest sites, eggs, and/or young; permanent loss of breeding and foraging habitat; and disturbance of nesting and foraging activities for burrowing owl pairs within the site, buffer, or immediately surrounding area. Indirect impacts to burrowing owls during construction and operation could include increased road kill hazards, modifications to foraging and breeding activities, and loss of prey items and food sources due to a decreased number of fossorial mammals.

American Badger and Desert Kit Fox

American badgers and desert kit fox occur throughout the BSPP area, and construction activities could crush or entomb kit fox and American badger.

Direct Impacts include permanent loss of occupied habitat; fragmentation and degradation of remaining habitat, loss of foraging grounds, death or injury of American badgers by crushing with heavy equipment or entombing them within a den; increased risk of road kill hazard, harassment, or injury from construction traffic. Indirect impacts include disturbance from increased noise and lighting; introduction and spread of weeds; increased risk of road kill from operations traffic.

Construction of the BSPP could kill or injure desert kit fox by crushing with heavy equipment, or could entomb them within a den if avoidance measures are not implemented. Construction activities could also result in disturbance or harassment of individuals.

The BSPP would permanently remove foraging and denning habitat for American badgers and kit fox and would fragment and reduce the value of foraging and denning habitat adjacent to the BSPP site. This habitat loss and degradation could adversely affect American badger and kit fox populations within the NECO planning area.

Nelson's Bighorn Sheep

The intermountain valley floor within the BSPP site could serve as an important movement corridor for bighorn sheep attempting to move from one mountain range to another during seasonal migration or dispersal (AECOM 2010a). The proposed BSPP would not present a complete barrier to movement between mountain ranges as they still could disperse around the site to the west, north, and south. There would be sufficient open space in the valley floor for wildlife movement to the north of the project area and a corridor would be maintained at the base of the McCoy Mountains to the west of the site. The areas to the west and north of the site, which abut mountain ranges, would be avoided by the BSPP and would have a higher probability of being utilized based on higher quality forage. Cumulative impacts of other projects could eventually make movements much more difficult. Corridors described in the NECO (BLM CDD 2002) identify potential for bighorn sheep movement from the McCoy Mountains northeast to the Little Maria Mountains and west to the Palen Mountains. Further, the BSPP site, due to the width of the valley in which the solar facility would be located, has limited value as a movement corridor.

Extirpation of the McCoy Mountain Nelson's bighorn sheep deme (a local population of organisms of one species that actively interbreed with one another and share a distinct gene pool) does not preclude future occupancy. Repopulation in the McCoy Mountains could happen naturally or it could happen deliberately via translocation and development of new water sources. The CDFG has successfully re-established bighorn in some ranges in the past. The Applicant has indicated it believes the BSPP area has the potential to be used by bighorn sheep as seasonal foraging habitat (AECOM 2010a) and, if reestablished, bighorn sheep could use areas near the BSPP site as spring foraging habitat. The BSPP would result in the loss of 922 acres of spring foraging habitat (desert dry wash woodland, vegetated swales, and unvegetated washes), and have a minor impact on a regional connectivity corridor for the bighorn sheep because the corridor is maintained to the west, north, and east of the BSPP.

Additional Operation Impacts to Wildlife

Nighttime Lighting and Nocturnal Collisions

Lighting plays a substantial role in collision risk because lights can attract nocturnal migrant songbirds and major bird kill events have been reported at lighted communications towers (Manville 2001) with most kills from towers higher than 300 to 500 feet (Kerlinger 2004). Many of the avian fatalities at communications towers and other tall structures have been associated with steady-burning, red incandescent L-810 lights used at communications towers that seem to attract birds (Gehring et al. 2006). Longcore et al. (2008) concluded that use of strobe or flashing lights on towers resulted in less bird aggregation, and, by extension, lower bird mortality, than use of steady-burning lights. BSPP operations would require onsite nighttime lighting for safety and security and the effects on visual condition during nighttime lighting would be moderate to high. Due to the lack of man-made structures and lack of artificial light sources in the BSPP area, the overall change in ambient lighting conditions following BSPP construction could be substantial. Night lighting close to the ground at the BSPP site could also attract bats and disturb wildlife that occurs adjacent to the BSPP site (e.g., nesting birds, foraging mammals, and flying insects). Security lighting in the BSPP power block and solar fields would operate during non-operating, non-sunlight hours, approximately 3,600 hours per year (AECOM 2010a).

The BSPP would result in the construction of four power blocks each with its own solar array field and other associated structures of varying heights. When the parabolic trough collector loop is at its lowest point of the day (trough is perpendicular to the ground) the entire structure would be 25 feet tall. The BSPP’s tallest structures would be the air cooled condenser (approximately 120 feet in height) and would be located centrally within the power block. Other tall structures associated with the BSPP are heat transfer fluid heaters (80 feet in height), cooling towers (32 feet in height), take-off towers (50 feet in height) and auxiliary boilers (32 feet in height) (Solar Millennium 2009a). Additionally, the BSPP would result in the construction of a three-phase 500-kV, a bundled double circuit 230 kV gen-tie transmission line consisting of a high-voltage line with monopoles that would range in height from 90 to 145 feet, which would pose a collision and electrocution hazard to perching raptors, migrating birds, and possibly bats described in further detail in the following section. The transmission line insulators would be made of a non-refractive material and of a neutral color, and the conductors would be non-specular (i.e., their surfaces would have a dulled finish so that they do not reflect sunlight).

To reduce lighting impacts, lighting at the facility would be restricted to areas required for safety, security, and operation. Exterior lights would be hooded and lights would be directed on site so that light or glare would be minimized. Low-pressure sodium lamps and fixtures of a non-glare type would be specified. Switched lighting would be provided for areas where continuous lighting is not required for normal operation, safety, or security; this would allow these areas to remain un-illuminated (dark) most of the time and thereby minimizing the amount of lighting potentially visible off site. Structure heights and corresponding span lengths would be selected to meet

Federal Aviation Administration (FAA) requirements for the nearby Blythe Airport located to the southeast of the BSPP facility. Along parts of the north-south run of the transmission line, pole heights would be no taller than 90 feet in accordance with FAA guidelines. Bird collisions with structures would be a minor impact since the tallest BSPP structure would be120 feet tall and major nocturnally migrating bird strikes occur with structures that are from 300 to 500 feet tall.

Daytime Lighting (Glare) and Collisions

The proposed solar mirrors and heat collection elements (HCEs or receiver tubes) are sources of bright light caused from the diffuse reflection of the sun. The diffuse light and spread reflection coming off the parabolic mirror troughs from most visible angles during most hours of the day would reflect the global irradiation of the sky including clouds. This leads to a lower intensity of light with respect to the sun itself. It is estimated that the diffuse reflections could vary from 200,000 candela per square meter in the morning and afternoon to as much as 700,000 depending on scattering due to cloud patterns. For a human observer, this would be in all cases less intense then staring it to the sky and not directly at the sun (AECOM 2010a).

It is possible that the back-reflected light or light not absorbed by both the envelope and steel annulus of Heat Collecting Element (HCE) can be seen in the reflection of the parabolic mirror at certain angles above the horizon, i.e. not viewable to a human observer on the ground, but visible by birds and bats in flight. The intensity 11 feet or farther from the front of the vertex of the collector would be fully diverged direct (not diffuse) incidence luminance of the sun, but with a worst-case intensity approximately 20 percent less than the direct luminance of the sun; this would be similar to a human observer viewing a body of water from the sky (AECOM 2010a).

However, glint and glare studies of solar trough technology found that pedestrians standing within 60 feet of the perimeter fence when the mirrors rotate from the stowed position to a vertical position could see a light intensity equal or greater to levels considered safe for the human retina (URS 2008). Any wildlife on the ground at a distance of 60 feet or closer could experience similar hazards from unsafe light intensity. Slatted fencing has been required in the Visual Resources section of this analysis to mitigate the problem of bright spots on motorists.

Bird collisions with structures typically result when the structures are invisible (e.g., bare power lines or guy wires at night), deceptive (e.g., glazing and reflective glare), or confusing (e.g., light refraction or reflection from mist) (Jaroslow 1979). Collision rates generally increase in low light conditions, during inclement weather (e.g., fog, which is rare in the desert), during strong winds, and during panic flushes when birds are startled by a disturbance or are fleeing from danger.

Solar facilities present a new and relatively unresearched risk for bird collisions and other injuries. The solar collectors would be oriented in a northern-southern fashion and would track the sun’s movement across the sky focusing the sun’s rays on the parabolic trough collector and thus would not produce significant lighting impacts during the day. Bird response to glare from the proposed solar trough technology is not well understood. Although the proposed BSPP facilities are significantly shorter than 350 feet (the height above which is considered a collision danger for migrating birds), there is concern that the mirrors could appear to a bird as a no-hazard flight area. The mirrors reflect light and take on the color of the image being reflected. When viewed from an angle near the current direction of the sun, at a distance or an elevated position, the solar field at its most reflective would mirror the sky and could appear like a lake at hours of the day when the mirrors are oriented toward the viewer (e.g., looking from the south with the sun behind the viewer on a sunny afternoon) (Solar Millennium 2009a). Diurnal birds could also be at risk of injury and fatality from burns if they flew into the reflected sunlight between parabolic troughs or landed on the collector tubes of heat transfer fluid.

The risk of such impacts is probably low, although very little research has been conducted on the risks of bird collisions at solar facilities. The only such research available is the bird fatality studies at the Solar One facility near Daggett, San Bernardino County (McCrary 1986). Results of that study indicated that much of the bird mortality consisted predominantly of collisions with mirrors, in large part resulting from increased numbers of birds attracted to the adjacent evaporation ponds and agricultural fields. For the BSPP, without such a nearby attractant bird numbers, and hence the likelihood of bird collisions would be low. The barren nature of the lands in the immediate vicinity of the mirrors would discourage bird use of the area, as would the 30-foot tall wind fence running the length of the eastern and western perimeter of each solar field.

Electrocution

Large raptors like golden eagles can be electrocuted by transmission lines when a bird's wings simultaneously contact two conductors of different phases, or a conductor and a ground. This happens most frequently when a bird attempts to perch on a structure with insufficient clearance between these elements. In addition, distribution lines that are less than 69 kV but greater than 1 kV pose an electrocution hazard for raptor species attempting to perch on the structure. Configurations less than 1 kV or greater than 69 kV typically do not present an electrocution potential, based on conductor placement and orientation (APLIC 1996). The proposed transmission lines would be 550 kV and would be fitted on top of monopole structures are expected to range in height from 90 feet to a maximum height of 145 feet and an average span length of in the range of 400 to 1,200 feet between poles (Solar Millennium 2009a). The transmission line and pole fitting would be constructed in accordance with the guidelines of Institute of Electrical and Electronics Engineers (IEEE) Guide 524 "Guide to the Installation of Overhead Transmission Line Conductors" and would also follow the Suggested Practices for Avian Protection on Power Lines (APLIC 2006). To minimize risk of electrocution, the BSPP should impose a "raptor-friendly" construction design for the transmission line with conductor wire spacing greater than the wingspans of large birds to help prevent electrocution as described in Suggested Practices for Raptor Protection on Power Lines: The State of the Art in 2006 (APLIC 2006).

Evaporation Ponds

The Applicant has proposed various modifications to the BSPP (Galati & Blek 2010), including the addition of eight double-lined four-acre evaporation ponds to receive industrial waste streams that would primarily come from the BSPP's auxiliary cooling tower and boiler.

A variety of waterfowl and shorebirds could seasonally use evaporation ponds as resting, foraging, and nesting areas. Evaporation ponds in the Sonoran Desert pose several threats to wildlife. First, creation of a new water source to an area where water is scarce would attract ravens to the BSPP, potentially increasing predation rates on juvenile desert tortoise in adjacent habitat. Second, waterfowl, shorebirds, and other resident or migratory birds that drink or forage at the ponds or Couch's spadefoot toads and their eggs could be harmed by selenium or hyper-saline conditions resulting from high total-dissolved-solids concentrations (EPTC 1999; Lemly 1996; Windingstad et al. 1987). Biologists and agencies such as CDFG, and USFWS are concerned about these threats to wildlife posed by evaporation ponds.

Alternatives

Differences between alternatives are quantified, when possible, by the acreage that would be impacted for special status species in Table 4.21-1. Since indirect impacts are include effects such as fragmentation and inhibition of movement across the area, indirect effects often could be quantified as the remaining acreage in the study area for a given species minus the area of direct impacts.

4.21.3 Discussion of Cumulative Impacts

Appendix H includes an extensive analysis of cumulative impacts from other past, present, and reasonably foreseeable future actions to special status wildlife, plants, and movement corridors (Figure 56). Cumulative impacts from the BSPP are detailed below. Cumulative impacts would not vary greatly by alternative. Cumulative impacts would vary by alternative only to the degree to which direct and indirect impacts would vary by alternative.

Special-Status Wildlife

Desert Tortoise	**Cumulative Impacts**: Contributes to cumulative loss of low to moderate value desert tortoise habitat (2.7 percent to 0.1 habitat value, 3.8 percent to 0.2 habitat value, 6.1 percent to 0.3 habitat value, and 2 percent to 0.4 to 0.5 habitat value from future actions in the NECO planning area
Mojave Fringe-Toed Lizard	**Cumulative Impacts**** Contributes only nominally to the permanent loss of stabilized and partially stabilized dunes (<4 ac)
Western Burrowing Owl	**Cumulative Impacts**: Contributes 1.9 percent to cumulative loss from future actions within the NECO planning area
Golden Eagle	**Cumulative Impacts**: Contributes 1.8 percent to cumulative loss of foraging habitat from future actions within the NECO planning area
American Badger & Desert Kit Fox	**Cumulative Impacts**: Contributes 1.9 percent to cumulative loss of habitat from future actions within the NECO planning area.
Nelson's Bighorn Sheep	**Cumulative Impacts**: No impacts to WHMA or connectivity corridors
Burro Deer	**Cumulative Impacts:** Contributes 0.2 percent to cumulative loss of habitat from future actions within the NECO planning area.
Couch's spadefoot toad	**Cumulative Impacts:** Contributes 5.3 percent to cumulative loss of habitat from future actions within the NECO planning area

TABLE 4.21-1
COMPARISON OF DIRECT AND INDIRECT IMPACTS TO WILDLIFE FROM PROPOSED ACTION, RECONFIGURED ALTERNATIVE, REDUCED ACREAGE ALTERNATIVE, AND NO ACTION ALTERNATIVES[a]

Wildlife Species or Species Group	Proposed Action[b] (acres or #)		Reconfigured Alternative (acres or #)		Reduced Acreage Alternative (acres or #)		No Action A, B, C (acres or #)	
	Direct	Indirect	Direct	Indirect	Direct	Indirect	Direct	Indirect
Desert Tortoise	7,027 More habitat than other alternatives but of lower quality than Reconfigured or Reduced Acreage Alternatives	13,850	Approximately 23 percent less habitat than Proposed action but higher quality/ density than Proposed Action	Similar to Proposed Action	Approximately 40 percent less habitat than Proposed Action but higher quality/ density than	Similar to Proposed Action	0	0
Mojave fringe-toed lizard	4 acres of stabilized and partially stabilized dunes	650	Similar to Proposed Action	Similar to Proposed Action	Similar to Proposed Action	Similar to Proposed Action	0	0
Couch's spadefoot toad	3 ponds	9 other ponds	Similar to Proposed Action	Similar to Proposed Action	Similar to Proposed Action	Similar to Proposed Action	0	0
Migratory Birds	7,027 Impacts to ephemeral drainages similar to Reconfigured	13,850	Approximately 23 percent less acreage than Proposed Action. Impacts to ephemeral drainages similar to Proposed Action	Similar to Proposed Action	Approximately 40 percent less acreage than Proposed Action. Impacts to ephemeral drainages half of the Proposed Action	Similar to Proposed	0	0
Golden Eagle	7,027 Foraging habitat	13,850 Remaining foraging habitat in study area	Approximately 23 percent less acreage than Proposed Action	Similar to Proposed Action	Approximately 40 percent less acreage than Proposed Action	Similar to Proposed Action	0	0
Western Burrowing Owl	7,027	13,250	Approximately 23percent less acreage than Proposed Action	Similar to Proposed Action	Approximately 40 percent less acreage than Proposed Action and avoids best habitat	Similar to Proposed Action	0	0
Desert Kit Fox & American Badger	7,027	Similar to Proposed Action	Approximately 23 percent less acreage than Proposed Action	Similar to Proposed Action	Approximately 40 percent less acreage than Proposed Action	Similar to Proposed Action	0	0
Nelson's Bighorn Sheep	Slight impact to future use as migration corridor in future; loss of 922 acres of spring foraging habitat	Unknown	Slight impact to future use as migration corridor in future; loss of 644 acres of spring foraging habitat	Unknown	Slight impact to future use as migration corridor in future; loss of 382 acres of spring foraging habitat	Unknown	0	0
Burro Deer	550	600	Impacts to ephemeral drainages similar to Proposed Action	Similar to Proposed Action	Impacts to ephemeral drainages half of the Proposed Action	Similar to Proposed Action	0	0

[a] Acreages for the Proposed Action Disturbance Area (AECOM 2010q) have been rounded. Acreages are approximate for the alternatives. It is assumed herein, that all of the vegetation for the alternatives would be impacted. Either No Action Alternative A or C could have similar impacts to Proposed Action, Reconfigured, or Reduced Acreage in the long term if a project is approved.
[b] Does not include direct impacts from the transmission line and substation sites.

Wildlife Movement and Connectivity

Connectivity refers to the degree to which organisms can move among habitat patches and populations. Individuals must be able to move between patches to meet their resource needs, while populations must be connected to allow for dispersion, gene flow, and re-colonization. The site does not overlap with designated Areas of Critical Environmental Concern (ACECs), WHMAs, or DWMAs, nor has it been proposed by the public for designation as wilderness. In addition, the eastern portion of the BSPP site was included in the Solar Programmatic EIS recommendations for the Riverside East Solar Energy Study Areas (SESA) by the Wilderness Society and Natural Resources Defense Council because of its low potential for substantial resource conflicts, relative to other project sitings.

The cumulative effects of all proposed future actions are likely to remain substantial after mitigation, even after action-specific mitigation is considered. The substantial cumulative impact is due to the residual effects of fragmentation, impaired connectivity, degradation of the function and values of remaining habitat from predators, invasive plants, fire, and disease. Ongoing collaborative efforts by federal and state agencies to develop a Desert Renewable Energy Conservation Plan and BLM’s Solar Energy Development Programmatic EIS provide an appropriate vehicle for mitigation for the substantial cumulative effects of all proposed future actions on general wildlife movement and connectivity between WHMAs and DWMAs.

This analysis utilized the NECO Plant Communities and Landforms datasets to describe the type of habitat affected within each separate WHMA. In all three WHMAs, the BSPP does not contribute to the cumulative effects of existing and future projects on habitat loss within the WHMAs, and is located well outside the WHMA boundaries. It is located approximately one to two miles southwest of the nearest WHMA—the Big Maria Mountains WHMA—between the WHMA and the Palen-McCoy Wilderness to the west. The BSPP, when combined with other proposed solar projects in the McCoy Wash valley, could obstruct movement for any wildlife movement across the valley floor. Movement along the mountain slopes between the two site would remain unimpeded; however, movement along the toe slopes of the McCoy Mountains could be disrupted by the effects of operation (noise, lighting, human disturbance, and an increase in avian predators from new structural perching sites. The contribution of the BSPP to future cumulative impacts on the Palen-Ford WHMA, Big Maria Mountains WHMA, and the DWMA Continuity WHMAs would be nil.

Table 4.21-2 compares the desert tortoise habitat compensation required under the differing action alternatives for the BSPP.

TABLE 4.21-2
COMPARISON OF COMPENSATORY MITIGATION REQUIREMENTS FOR PROPOSED ACTION, RECONFIGURED ALTERNATIVE, AND REDUCED ACREAGE ALTERNATIVES[a]

Habitat	Mitigation Ratio	Proposed Action (acres)	Reconfigured Alternative (acres)	Reduced Acreage Alternative (acres)
Desert tortoise habitat (state waters and Sonoran creosote bush scrub)	1:1	7,027	5,439	4,165
Total desert tortoise compensatory mitigation Mitigation Measure BIO-12		***7,02***	***5,439***	***4,165***

[a] Does not include impact acreage from construction of transmission line and substation.

SOURCE: CEC RSA June 2010 Biological Resources Table 8

4.21.4 Summary of Mitigation Measures

The mitigation measures imposed by the Energy Commission as Conditions of Certification for the BSPP would avoid or reduce impacts on the quality of the human environment. Moreover compensation would be required as well. These mitigation measures are set forth in Appendix G. The following mitigation measures would avoid or minimize impacts on wildlife resources[1]:

> BIO-1, BIO-2, BIO-3, BIO-4, BIO-5, BIO-6, BIO-7, BIO-8, BIO-9, BIO-10, BIO-11, BIO-12, BIO-13, BIO-15, BIO-16, BIO-17, BIO-18, BIO-20, BIO-21, BIO-23, BIO-24, BIO-25, BIO-26, BIO-27, BIO-28

To address potential impact to Climate Change, the BLM would require, as discussed in Section 4.17 Vegetation, in concert with BIO-7, the following:

> **BLM BIO-7a:** The Applicant shall ensure that monitoring accomplished under BIO-7 and other mitigating measures use available climatalogical data when analyzing project effects or resource trends.

To address potential impacts to Nelson's Big Horn Sheep, the BLM would require, in concert with BIO-21, the following:

> **BLM BIO-21:** The Project owner shall be responsible for providing adequate funding to install a water source, complete with an environmental assessment analyzing the impacts of the guzzler installation and operation, monitor and manage the water source for the life of the project. $100,000 is required to fulfill the terms of this condition; the excess shall be refunded to the Project owner. The Project owner shall provide financial assurances to the CDFG with copies of the document(s) to BLM, to guarantee that an adequate level of funding is available to implement the mitigation measures described in this condition. Security shall be in the amount of the initial estimate of $100,000.

1 The CEC document intertwined vegetation and wildlife resources in the mitigation measures and these have not be modified because as a whole they mitigation the impacts to vegetation and wildlife resources.

4.21.5 Residual Impacts after Mitigation Measures were Implemented

The BSPP would eliminate all habitat for wildlife within the BSPP site. The BSPP would also directly and indirectly affect an extensive network of desert washes in the disturbance area, and would alter the hydrology of the area by re-routing these waterways through five engineered channels. Mitigating measures to avoid, minimize, or compensate for the loss would lessen the impacts to varying, but unquantified degrees but would not completely offset those losses. Routes of wildlife movement along washes would be cut off and wildlife movement from the mountainous southwest to the northeast would be severely curtailed due to perimeter fencing and the impacted washes. Wildlife trailing along the fence to find a suitable route would be subject to increased vulnerability to predation. Gaps in fencing, if not maintained to standards could trap desert tortoises, badgers, kit foxes, burro deer, or Nelson's bighorn sheep.

In addition to direct loss of habitat, the BSPP would fragment and degrade adjacent native wildlife communities, and could promote the spread of invasive non-native plants and increase the presence of desert tortoise predators such as ravens. These habitats provide foraging, cover, and/or breeding habitat for a variety of resident wildlife, including the state and federally-listed desert tortoise, American badger, desert kit fox, golden eagle, migratory birds, burrowing owl, Nelson's bighorn sheep, burro deer, and Mojave fringe-toed lizard.

4.21.6 Unavoidable Adverse Impacts

Under the technology proposed in the three BSPP alternatives, the Proposed Action, Reconfigured Alternative, and Reduced Acreage Alternative, the native wildlife communities would be lost, totaling 7,027 acres, 5,439 acres, and 4,165 acres respectively. Habitat types impacted by the proposed BSPP include upland habitat types such as Sonoran creosote bush scrub and stabilized and partially stabilized sand dunes, as well as desert dry wash woodlands and vegetated ephemeral swales. The BSPP would result in loss of habitat for desert tortoise, of spring foraging habitat for Nelson's bighorn sheep, and would degrade and fragment adjacent wildlife communities, decreasing regional connectivity and dispersal of resident wildlife. Additionally, the BSPP is likely to promote the spread of invasive non-native plants, and subsidize desert tortoise predators such as common raven, coyotes, and feral dogs. Construction, operations, or maintenance activities could result in some death, harm, harassment, removal, or capture of wildlife, including eggs and nests which would constitute unavoidable loss of individual animals.

4.22 Irreversible and Irretrievable Commitment of Resources

The National Environmental Policy Act (NEPA) requires an analysis of the significant irreversible effects of a proposed action. Resources irreversibly or irretrievably committed to a proposed action are those used on a long-term or permanent basis. This includes the use of nonrenewable resources such as metal, wood, fuel, paper, and other natural or cultural resources. These resources are considered nonretrievable in that they would be used for a proposed action when they could have been conserved or used for other purposes. Another impact that falls under the category of irreversible and irretrievable commitment of resources is the unavoidable destruction of natural resources that could limit the range of potential uses of that particular environment.

The BSPP would irretrievably commit resources over the 30-40 year life of the project. After 30-40 years, the BSPP is planned to be decommissioned and the land returned to its pre-project state. This would indicate that potentially some of the resources on site could be retrieved. However, 30-40 years is a long time and many variables could affect the project over that period. In addition, it is debatable as to how well the site can recover to its pre-project state. Open desert lands and sensitive desert habitats can take a long time to recover from disturbances such as development. The BSPP site is not currently entirely undisturbed due to the presence of off-highway vehicle use.

The BSPP is a renewable energy project intended to generate solar energy to reduce reliance on fossil fuels. Over the 30-40 year life of the BSPP, this renewable energy project would contribute incrementally to the reduction in demand for fossil fuel use for electricity-generating purposes. Therefore, this incremental reduction in expending fossil fuels would be a positive effect of the commitment of nonrenewable resources to the BSPP.

4.23 Short-term vs. Long-term Productivity of the Environment

The short-term uses of the environment as a result of the BSPP and its built alternatives include those typically found with solar energy development. Short-term impacts associated with construction activities described elsewhere in Chapter 4, Environmental Consequences, include effects to the natural environment, cultural resources, and recreation resources. These can be compared to the long-term benefits of the proposed action and its built alternatives all of which would provide for the production of clean, renewable energy consistent with Federal and State goals to increase production of renewable energy to help reduce dependence on fossil fuels.

As discussed earlier in Section 4.22, Irreversible and Irretrievable Commitment of Resources, the proposed action and alternative could permanently damage sensitive desert habitats, which in turn could adversely affect the long-term productivity of the area. However, these built alternatives would all also provide a long-term benefit by providing electric power without any increase in the use of non-renewable resources such as fossil fuels, which would result in a benefit to air quality and a reduction in carbon-based emissions.

CHAPTER 5
Consultation, Coordination and Public Involvement

5.1 Interrelationships

BLM's authority for the proposed action includes Federal Land Policy and Management Act (FLPMA) of 1976 [43 United States Code (U.S.C.) 1701 et seq.], Section 211 of the Energy Policy Act (EPAct) of 2005 (119 Stat. 594, 600), and BLM's Solar Energy Development Policy of April 4, 2007. The FLPMA authorizes BLM to issue right-of-way (ROW) grants for renewable energy projects. Section 211 of the Energy Policy Act of 2005 states that the Secretary of the Interior should seek to have approved a minimum of 10,000 megawatts of renewable energy generating capacity on public lands by 2015.

The BLM coordinates its fire management activities with the actions of related federal and state agencies responsible for fire management. The Federal Wildland Fire Policy is a collaborative effort that includes the BLM, USFS, National Park Service (NPS), USFWS, Bureau of Indian Affairs, the National Biological Service, and state wildlife management organizations. The collaborative effort has formulated and standardized the guiding principals and priorities of wildland fire management. The National Fire Plan is a collaborative interagency effort to apply the Federal Wildland Policy to all Federal Land Management Agencies and partners in state forestry or lands departments. Operational collaboration between the BLM, USFS, NPS, and USFWS is included in the Interagency Standards for Fire and Fire Aviation Operations 2003. This federally-approved document addresses fire management, wildfire suppression, fuels management and prescribed fire safety, interagency coordination and cooperation, qualifications and training, objectives, performance standards, and fire management program administration.

5.1.1 Department of Defense

BLM coordinates with Department of Defense prior to approval of ROWs for renewable energy, utility, and communication facilities to ensure that these facilities would not interfere with military training routes.

5.1.2 U.S. Army Corps of Engineers

The U.S. Army Corps of Engineers (USACE) has jurisdiction to protect the aquatic ecosystem, including water quality and wetland resources under Section 404 of the Clean Water Act. Under that authority, USACE regulates the discharge of dredged or fill material into waters of the

United States, including wetlands, by reviewing proposed projects to determine whether they may impact such resources and, thereby, are subject to Section 404's permit requirement. Throughout the PA/DEIS process, the BLM has provided information to the USACE to assist the agency in making a determination regarding its jurisdiction and need for a Section 404 permit.

5.1.3 California Energy Commission

The Energy Commission has the exclusive authority to certify the construction, modification, and operation of thermal electric power plants 50 MW or larger. The Energy Commission certification is in lieu of any permit required by state, regional, or local agencies and by federal agencies to the extent permitted by federal law (Pub. Res. Code Section 25500). The Energy Commission must review power plant AFCs to assess potential environmental impacts including potential impacts to public health and safety, potential measures to mitigate those impacts (Pub. Res. Code Section 25519), and compliance with applicable governmental laws or standards (Pub. Res. Section 25523 (d)). The Energy Commission staff's analyses were prepared in accordance with Public Resources Code, sections 25500 et seq.; Title 20, California Code of Regulations, sections 1701 et seq.; and CEQA (Pub. Res. Code Section 21000 et seq.; 14 Cal. Code Regs. § 15000 et seq.).

5.1.4 California Department of Fish and Game

The California Department of Fish and Game (CDFG) protects fish and aquatic habitats within the State through regulation of modifications to streambeds, under Section 1602 of the Fish and Game Code. The BLM and the Applicant have provided information to CDFG to assist the agency in its determination of the impacts to streambeds, and identification of permit and mitigation requirements. The Applicant filed a Streambed Alteration Agreement with CDFG. The requirements of the Streambed Alteration Agreement will be included as a recommended Condition of Certification/Mitigation Measure.

CDFG also has the authority to regulate potential impacts to species that are protected under the California Endangered Species Act (CESA) (Fish and Game Code Section 2050, et seq.). Accordingly, the Applicant has filed the appropriate incidental take permit applications. The requirements of the Incidental Take Permits will be included as a recommended Condition of Certification/Mitigation Measure discussed in the Biological Resources section of this document.

5.1.5 Mojave Desert Air Pollution Management District

The BSPP site is located in the Mojave Desert Air Basin[1] and is under the jurisdiction of the Mojave Desert Air Pollution Management District (District). Based upon the authorities in 40 Code of Federal Regulations (CFR) Part 52 and 40 CFR Part 60, the District is responsible for issuing the federal New Source Review (NSR) permit and has been delegated enforcement of the applicable New Source Performance Standard (Subpart IIII).

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1 The Mojave Desert Air Basin lies inland southeast of the San Joaquin Valley Air Basin, and northeast of the South Coast Air Basin. The desert portions of Kern, San Bernardino, Riverside, and Los Angeles counties are within its boundaries.

5.1.6 California Department of Transportation

The California Department of Transportation (Caltrans) has jurisdiction over encroachments to Caltrans facilities and related easements and rights-of way.

5.1.7 Riverside County

The County of Riverside has jurisdiction to issue building permits to the BSPP. Building permits issued by the County are ministerial. The County also has jurisdiction to issue discretionary approvals for any easements, rights-of-way and or encroachment permits where County facilities are concerned.

5.2 Describe Consultation Processes for ESA Section 7, NHPA Section 106, and Indian Tribes

5.2.1 U.S. Fish and Wildlife Service

The U.S. Fish and Wildlife Service (USFWS) has jurisdiction over threatened and endangered species listed under the Endangered Species Act (ESA) (16 U.S.C. Section 1531 et seq.). Formal consultation with the USFWS under Section 7 of the ESA is required for any federal action that may adversely affect a federally-listed species. This consultation will be initiated through the preparation and submittal of a Biological Assessment (BA), which would describe the proposed action to the USFWS. Following review of the BA, the USFWS would be expected to issue a Biological Opinion (BO) that specifies mitigation measures, which must be implemented for any protected species.

5.2.2 Section 106 Compliance

Adverse effects that the proposed or alternative actions may have on cultural resources will be resolved through compliance with the terms of a Programmatic Agreement (PA) under Section 106 of the National Historic Preservation Act (NHPA) (16 USC Section 470). Analysis of impacts in this document and implementation of the terms of the PA would evidence BLM's compliance with NHPA Section 106 and NEPA.

In accordance with 36 CFR Section 800.14(b), PAs are used for the resolution of adverse effects for complex project situations and when effects on historic properties, resources eligible for or listed in the National Register of Historic Places (NRHP), cannot be fully determined prior to approval of an undertaking. The BLM would prepare a PA in consultation with the Advisory Council on Historic Preservation, the California State Historic Preservation Officer, Indian tribes, and other interested parties. The PA would govern the conclusion of the identification and evaluation of historic properties (eligible for the NRHP), as well as the resolution of any adverse effects that may result from the proposed or alternative actions.

Treatment plans regarding historic properties that cannot be avoided by project construction will be developed in consultation with stakeholders as stipulated in the PA. When the PA is executed and fully implemented, the proposed action would have fulfilled the requirements of NEPA and Section 106 of the NHPA. The PA would be executed prior to BLM's approval of the Record of Decision for the ROW grant for the action.

5.2.3 Tribal Consultation for the BSPP

The BLM consults with Indian tribes on a government-to-government level in accordance with several authorities including NEPA, the NHPA, the American Indian Religious Freedom Act, and Executive Order 13007. Under Section 106 of the NHPA, the BLM consults with Indian tribes as part of its responsibilities to identify, evaluate, and resolve adverse effects on cultural resources affected by BLM undertakings.

The BLM invited Indian tribes to consult on the BSPP on a government-to-government basis at the earliest stages of project planning by letter in November 2009, and has followed up with an additional correspondence, communication, and other information since then. To date, 15 tribes or related entities have been identified and invited to consult on the proposed action, including those listed below. Tribes were also invited to a general information meeting and site visit, held on January 25, 2009. Letters to request consultation to develop a Section 106 Programmatic Agreement with tribes, the State Historic Preservation Officer, and the Advisory Council on Historic Preservation were mailed out to the below-listed tribes on February 25, 2010.

1. Ramona Band of Cahuilla Mission Indians
2. Torres-Martinez Desert Cahuilla Indians
3. Augustine Band of Cahuilla Mission Indians
4. Agua Caliente Band of Cahuilla Indians
5. Morongo Band of Cahuilla Mission Indians
6. Cabazon Band of Mission Indians
7. Twentynine Palms Band of Mission Indians
8. Quechan Tribe
9. Colorado River Indian Tribes
10. Chemehuevi Tribe
11. San Manuel Band of Serrano Mission Indians
12. Fort Mojave Indian Tribe
13. Cocopah Tribe

5.3 Implementation, Monitoring and Enforcement

5.3.1 Implementation

BLM will continue to involve and collaborate with the public during implementation of this proposed action. Opportunities to become involved during implementation and monitoring could include development of partnerships and community-based citizen working groups. BLM invites citizens and user groups within the vicinity of the proposed action to become actively involved in implementation, monitoring, and enforcement of decisions. BLM and citizens could collaboratively develop site-specific goals and objectives that mutually benefit public land resources, local communities, and the people who live, work, or play on the public lands.

5.3.2 Monitoring

BLM would monitor activities throughout the life of the proposed action to ensure that decisions are implemented in accordance with the approved ROD and ROW grant. Monitoring would be conducted to determine whether decisions, BMPs and approved mitigation are achieving the desired effects. Effectiveness monitoring would provide an empirical data base on impacts of decisions and effectiveness of mitigation. Effectiveness monitoring also would be useful for improving analytical procedures for future impact analyses and for designing or improving mitigation and enhancement measures.

5.4 Scoping

The Notice of Intent was published in the *Federal Register (Volume 74, No. 224)* on November 23, 2009. On December 10, 2009 the BLM held a publicly-noticed Scoping Meeting at Blythe City Hall, Council Chambers in Blythe, California. On December 11, 2009, BLM held its primary Scoping Meeting at the University of California-Riverside, Palm Desert Campus. A draft scoping report was released for public review and comment in January 2010. The Final Scoping Report is included as Appendix C.

5.5 Public Comment Process

5.5.1 Introduction

The California Energy Commission (CEC) and the United States Bureau of Land Management (BLM) distributed the joint Staff Assessment/Draft Environmental Impact Statement (SA/DEIS) for the Blythe Solar Power Plant Project (BSPP) for public and agency review and comment on March 19, 2010. The comment period ended June 17, 2010. Ten comment letters were received.

This Section 5 is organized as follows:

5.5.1 Introduction

5.5.2 Format of the Responses to Comments: This section describes the format and organization of the comments received on the SA/DEIS and the responses to those comments.

5.5.3 Index of Comments Received: This section provides a list of the comments received on the SA/DEIS, by member of the public, agency, or organization, and lists the unique letter/number code for each comment.

5.5.4 Common Responses: This section provides consolidated responses for topics on which a number of similar and related comments were received.

5.5.5 Responses to the Comments: This section lists the individual comment numbers for each comment and provides a response for each comment.

5.5.6 Comments: This section contains all the comments received on the SA/DEIS, with the individual numeric code assigned to each individual comment within each comment letter/email.

5.5.2 Format of the Responses to Comments

The comments received on the SA/DEIS are organized by agency, organization, or member of the general public. Each comment letter/e-mail is assigned a unique number. Individual comments/issues within each comment letter/email are numbered individually along the right-hand margins. Comments, so delineated, are provided in Appendix I.

5.5.3 Index of Comments Received

Table 5-1 lists all individuals, agencies and organizations that provided written comments on the SA/DEIS. As described above, each comment letter, upon receipt, was assigned a unique number with each comment individually numbered as well. For example, comment 1-01 is the first substantive comment in Comment Letter 1. “1” represents the commenter; the “01” refers to the first comment in that letter.

TABLE 5-1
COMMENTER ON THE BLYTHE SOLAR POWER PROJECT
DRAFT ENVIRONMENTAL IMPACT STATEMENT

Comment Letter	Commenter	Letter Available in Appendix I, Page
1	Brendan Hughes, Individual	I-1
2	Brendan Hughes, Individual	I-2
3	Metropolitan Water District of Southern California	I-3
4	Defenders of Wildlife	I-13
5	The Wilderness Society and the Natural Resources Defense Council (NRDC)	I-25
6	California/Nevada Desert Energy Committee of the Sierra Club (Sierra Club)	I-37
7	Greenaction	I-64
8	Center for Biological Diversity	I-66
9	The Wildlife Society	I-96
10	Environmental Protection Agency	I-102

5.5.4 Common Responses

A number of the comments received on the SA/ DEIS discussed the same issues or environmental concerns. Rather than repeat responses, the Common Responses identified here and set forth below were prepared:

Common Response 5.5.4.1: BLM’s decision -making process

Common Response 5.5.4.2: Relationship of the Plan Amendment and PA/FEIS to BLM and non-BLM Policies, Programs, Land Use and LUP Conformance

Common Response 5.5.4.3: Consistency of the PA/FEIS with BLM Planning Procedures and NEPA

Common Response 5.5.4.4: Adequacy of Data Relied Upon

Common Response 5.5.4.5: Purpose and Need

Common Response 5.5.4.6: Alternatives

Common Response 5.5.4.7: Supplementation / Recirculation

Common Response 5.5.4.8: Biological Resources

Common Response 5.5.4.9: Climate Change / Greenhouse Gases

Common Response 5.5.4.10: Water Rights

Common Response 5.5.4.11: Water Quality

Common Response 5.5.4.12: Cultural Resources

Each of those sections lists the Comment Letter and number code for each comment for which the common response applies.

5.5.4.1 BLM's Decision-making Process

Commenters and Comments Addressed

Commenter	Comments
The Wilderness Society and the NRDC	5-01, 5-03, 5-04
Sierra Club	6-57

Summary of issues Raised

1. Comments suggest that the BLM's decision-making process was deficient, and encourage the BLM to balance the development of renewable energy resources with the protection of resources within the California Desert Conservation Area (CDCA) through a comprehensive, proactive planning process that not only includes the federal government and the State of California to identify solar energy zones and guide development to those zones, but also reflects siting criteria recommended by the commenter.

Response

The BLM's decision-making process for the BSPP is consistent with applicable statutes, regulations, plans and policies. The BLM will consider each proposed project, including each fast-track project, on its own merits.

BLM's Solar Energy Development Policy

The BLM processes solar energy right-of-way applications for lands in accordance with its Solar Energy Development Policy (Instruction Memorandum No. 2007-097) (BLM, 2007). Pursuant to this policy, applications for commercial solar energy facilities are processed as right-of-way authorizations under Title V of FLPMA and its implementing regulations (43 CFR Part 2804); they also must comply with the BLM's environmental, planning, and right-of-way application requirements. Consistency with FLPMA and NEPA is discussed in Common Response 5.5.4.3; consistency with applicable land use planning documents is discussed in Common Response 5.5.4.2.

Among other things, BLM's Solar Energy Development Policy describes options for generating electricity using solar power and the land characteristics that make a site suitable for locating solar facilities and projects; identifies some of the potential environmental impacts associated with the large land requirements; directs BLM Field Offices to consider renewable resources — specifically solar energy development — when undertaking the land use planning process; and places a priority on processing solar energy applications that are feasible and can reasonably meet environmental requirements. Further, the BLM's Solar Energy Development Policy states, "Right-of-way applications for solar energy development projects will be identified as a high priority Field Office workload and will be processed in a timely manner. This priority is consistent with the President's National Energy Policy of 2001 and the Energy Policy Act of 2005. . . . The BLM will apply sound business practices in expediting the application process." As provided in PA/FEIS Section 1.3.1, the BLM will consider the proposed BSPP within the framework of the Solar Energy Development Policy.

Solar PEIS

The BLM will not consider the proposed BSPP within the draft framework of the Solar PEIS. Although the BLM generally prefers to develop programmatic NEPA documentation and, thereafter, to use it as a basis for site-specific projects, the process of drafting, reviewing and considering the Programmatic Environmental Impact Statement to Develop and Implement Agency-Specific Programs for Solar Energy Development (Solar PEIS) is not yet final.

In response to direction from Congress under Title II, Section 211 of the Energy Policy Act of 2005, as well as Executive Order 13212, Actions to Expedite Energy-Related Projects, the BLM and the DOE are collaborating to prepare the Solar PEIS pursuant to NEPA and CEQ regulations. The Solar PEIS will evaluate utility-scale solar energy development in a six-state area, including that portion of the CDCA that is open to solar energy development in accordance with the provisions of the CDCA Plan. The planning area will not include lands within the CDCA that have special designations, such as National Monuments, Wilderness Areas, Wilderness Study Areas, Wild and Scenic Rivers, National Historic and Scenic Trails, Areas of Critical Environmental Concern, or other special management areas that are inappropriate for or inconsistent with extensive, surface-disturbing uses. The planning area for the Solar PEIS also will not include lands within the National Landscape Conservation System.

A Notice of Intent to Prepare the Solar PEIS was published in the Federal Register on May 29, 2008. Secretarial Order No. 3285, issued March 11, 2009 by the Secretary of the Interior, announced a policy goal of identifying and prioritizing specific locations best-suited for large-scale production of solar energy. In light of this Order, the BLM and the DOE agreed to postpone completion of the Draft Solar PEIS, and, on June 30, 2009, published a Notice of Availability of maps that preliminarily identify 24 tracts of BLM-administered land for in-depth study. The scoping period was extended. The schedule to complete the Draft Solar PEIS remains "to be determined." (Solar PEIS, 2010). The schedule to complete the Final Solar PEIS or adopt the ROD also is not yet known (Id.).

Because the Solar PEIS is under development, it, and any decisions the BLM's makes based on its analysis, will not govern BLM's decision-making efforts for the BSPP. The BLM has a responsibility to perform a timely environmental review in response to individual applications. For this reason, the BLM will consider the proposed BSPP pursuant to FLPMA, NEPA, and applicable planning documents, in accordance with the BLM's existing Solar Energy Development Policy.

Siting

Concerning siting decisions, the BLM's role in managing public lands includes facilitating land uses on lands under the BLM's jurisdiction while appropriately balancing and responding to multiple interests concerning federal mandates, collaborating agencies' directives, and BLM's own interests. As a result, the sites considered in the SA/DEIS and the PA/FEIS focus on actions by the BLM that would respond to the specific application for a ROW grant received by the BLM for the BSPP project.

The location of a project is determined by the applicant and must meet a number of requirements in order to be considered a viable location. During scoping and prior to acceptance of a project's plan of development (POD), a number of iterations regarding the project's siting are required. The POD is the culmination of meetings and information exchange and review between the BLM and the applicant to identify a suitable location to evaluate for a renewable energy project. In this process, the BLM's role is to ensure that each proposal is reviewed with the utmost scrutiny. Here, the Applicant's proposal to construct, operate, and ultimately to decommission the BSPP on the proposed site is evaluated, and alternatives proposed in the PA/FEIS, consistent with the BLM's role in managing the public lands subject to its authority.

The BLM appreciates the concerns raised regarding the potential authorization of solar energy developments on previously undeveloped sites. The BLM, the DOE, and the State of California have all identified commercial-scale solar energy as an integral component of a future energy system which is sustainable, while reducing the emission of greenhouse gases. The BLM agrees that locating commercial-scale solar energy facilities on previously disturbed sites is desirable. For example, the EPA's RE-Powering America's Land program has identified a number of contaminated lands and abandoned mine sites nationwide, including some sites on BLM-managed lands in California, that have the potential for renewable energy development. (See, e.g., EPA, 2010). However, the Applicant for the BSPP has not proposed to develop its project on such lands, and the BLM has not received any applications for commercial-scale solar energy projects on such lands. To access the innumerable benefits of solar energy, sites must be identified that meet a variety of technical criteria (such as high solarity and particular slope and grade), and that minimize impacts to environmental resources. For this proposed action, these requirements have dictated that the Applicant and the BLM consider sites that are either undeveloped, or which have limited development.

5.5.4.2 Relationship of the PA/FEIS to Policies and LUP Conformance

Commenters and Comments Addressed

Commenter	Comments
Sierra Club	6-03, 6-26, 6-27, 6-28, 6-29, 6-30, 6-56, 6-57
Center for Biological Diversity	8-04, 8-07, 8-10, 8-11, 8-12, 8-13, 8-14
EPA	10-22

Summary of Issues Raised

1. Comments question the relationship of the proposed action to BLM and non-BLM Policies, Programs and LUP Conformance relating to the BLM's master planning documents (e.g., the CDCA Plan and NECO Plan), and the Riverside County General Plan.

2. Comments question the adequacy of analysis, including analysis of resource impacts.

Response

A land use plan is a set of decisions that establish management direction for land within a BLM administrative area, as prescribed under the planning provisions of FLPMA; it is an assimilation of land-use-plan-level decisions developed through the planning process outlined in 43 CFR Part 1600, regardless of the scale at which the decisions were developed. BLM land use plans, including the CDCA Plan and NECO Plan, are designed to provide guidance for future management actions and development of subsequent, more detailed and limited-scope plans for specific resources and uses.

Long-range plans that cover large geographic areas such as the California Desert provide a framework for decision-making; they are "living" documents with the flexibility to address changing conditions over time as more detailed land use information is provided through amendments, special area plans, or other more focused planning documents. See., e.g., James B. Ruch, California State Director Bureau of Land Management, "Dear Reader" Letter [Introducing the CDCA Plan, as amended] (March 1999) (The CDCA Plan "is a statement of management guidance designed to be useful today and it contains an amendment process so that it is adaptable to tomorrow.")

CDCA Plan

The CDCA Plan is a comprehensive, long-range plan that was adopted in 1980; it since has been amended many times. As described in PA/FEIS Table 1-1, the CDCA is a 25-million-acre area that contains over 12 million acres of BLM-administered public lands within the area known as the California Desert. As described by BLM's California State Land Director in his letter presenting the CDCA Plan:

> The California Desert Plan encompasses a tremendous area and many different resources and uses. The decisions in the Plan are major and important, but they are only general guides to site-specific actions. The job ahead of us now involves three tasks: 1) Site-specific plans, such as grazing allotment management plans or vehicle route designation; 2) On-the-ground actions, such as granting mineral leases, developing water sources for

wildlife, building fences for livestock pastures or for protecting petroglyphs; and
3) Keeping people informed of and involved in putting the Plan to work on the ground, and in changing the Plan to meet future needs.

The CDCA Plan initially was prepared and continues to provide guidance concerning the use of the California desert public land holdings while balancing other public needs and protecting resources. More specifically, it establishes goals and specific actions for the management, use, development, and protection of the resources and public lands within the CDCA. It is based on the concepts of multiple use, sustained yield, and maintenance of environmental quality. The CDCA Plan's goals and actions for each resource are established in its 12 elements, each of which provides both a desert-wide perspective of the planning decisions for one major resource or issue of public concern and a more specific interpretation of multiple-use class guidelines for a given resource and its associated activities.

The Multiple Use Class (MUC) Guidelines in Table 1 of the CDCA Plan state that solar electrical generation facilities may be allowed in an MUC Limited (L) area after NEPA requirements are met and the CDCA Plan is properly amended. The proposed action, if approved, would amend the CDCA Plan following the process anticipated in the CDCA Plan to identify the site as suitable for the proposed solar energy use. As stated in the PA/FEIS, the CDCA Plan amendment would only apply to the BLM-administered land being evaluated for the BSPP. Accordingly, the proposed CDCA Plan amendment and the overall amendment process would be consistent with the CDCA Plan.

The CDCA Plan anticipated that renewable power generation facilities would be proposed in the California Desert. Accordingly, it made allowances for the review of such applications, including a provision that all proposed applications "associated with power generation or transmission not identified in the [CDCA] Plan will be considered through the Plan Amendment process." (See also, PA/FEIS Sections 1.4 and 4.6). The intention of this provision was to ensure that the BLM would take a planning view of all of the renewable energy applications proposed and that such projects would require an amendment to the CDCA to maintain consistency throughout the plan. Amendments to the CDCA Plan can be site-specific or global, depending on the nature of the amendment.

Concerns from the public regarding the multiple use mission of the BLM and the loss of this large section of public land to a single use are addressed in the strict enforcement of mitigation measures for habitat and other measures that ensure a one-to-one replacement of lands lost to a single use.

NECO Plan

The NECO Plan amended the CDCA plan in 2002 to make it compatible with desert tortoise conservation and recovery efforts. As described in FEIS Table 1-1, the BLM's NECO Plan is a landscape-scale planning effort that covers most of the California portion of the Sonoran Desert ecosystem, including over five million acres and two desert tortoise recovery units. No NECO Plan amendment is proposed as part of this action. However, through the California Desert Renewable Energy Conservation Plan (DRECP) process now underway, amendments to the NECO Plan are being considered.

California Desert Renewable Energy Conservation Plan (DRECP)

The DRECP is a Natural Community Conservation Plan that will help provide for effective protection and conservation of desert ecosystems while allowing for the appropriate development of renewable energy projects. The DRECP will provide long-term endangered species permit assurances, facilitate the California Renewables Portfolio Standard, and provide a process for conservation funding to implement the DRECP. It is anticipated that the DRECP also would serve as the basis for one or more habitat conservation plans (HCPs) under FESA and provide biological information necessary for consultation under FESA Section 7. This Planning Agreement is intended to explain generally the DRECP process and its purpose, and identify the responsibilities of the Parties in the DRECP process. The Parties intend that the DRECP will encompass development of solar, solar PV, wind, and other forms of renewable energy within the Mojave and Colorado Desert regions.

The DRECP is intended to advance federal and state conservation goals in the California desert region while facilitating the timely permitting of renewable energy projects under applicable federal and state laws. The federal government, State of California and others are committed to developing compatible renewable energy generation facilities and related transmission infrastructure to achieve requirements and goals established in the federal Energy Security Policy Act of 2005, the American Recovery and Reinvestment Act of 2009, the State Renewables Portfolio Standard (Pub. Util. Code Section 399.11, et seq.), and Executive Order S-14-08. They are equally committed to conserving biological and natural resources, including the desert regions of California, which support extraordinary biological and other natural resources of great value, including numerous threatened and endangered plant and animal species.

A joint Federal and State Renewable Energy Action Team (REAT) was established in 2008 by Executive Order S-14-08 and associated Memoranda of Understanding by and among several federal and state agencies. BLM is a voluntary participant in the REAT. See Secretary of the Interior’s Secretarial Order 3285 (March 2009), which directs all Department of the Interior agencies (including the BLM) to encourage the timely and responsible development of renewable energy, while protecting and enhancing the nation’s water, wildlife, and other natural resources. Other REAT members include representatives of the Fish and Wildlife Service, California Department of Fish and Game and the California Energy Commission. The REAT’s primary mission is to streamline and expedite the permitting processes for renewable energy projects, while conserving endangered species and natural communities at the ecosystem scale. Executive Order S-14-08 directs the REAT to achieve these twin goals in the Mojave and Colorado Desert regions through the DRECP.

On May 19, 2010, the REAT announced the signing of an agreement to enable renewable energy projects proposed in the California Desert to address mitigation requirements through the use of a deposit account rather than having to individually undertake mitigation for each project. The necessary amount of funds to mitigate a project’s impacts to wildlife and habitat will be determined on a project by project basis. It is expected that this process will expedite projects and ensure that a wider range of mitigation measures are available to address environmental impacts. This newly-established deposit account is one tool among several that renewable energy project proponents can use to mitigate impacts. The availability of this mechanism to address impacts in no way restricts the availability of other possible avenues to mitigate impacts. The Energy Commission's conditions of certification (PA/FEIS Appendix G) identify the deposit account as one possible avenue; other avenues remain available.

Local Land Use Planning Documents

Some comments suggest that compliance with other land use plans (including the Riverside County General Plan; Palo Verde Valley Area Plan, which is an extension of the Riverside County General Plan; and Blythe Airport Land Use Plan) as well as with other local LORS also is required. However, these plans pertain to non-federal land in the vicinity of the site and do not control federal actions on federal land. Accordingly, although consistency with related requirements is considered in the Energy Commission's CEQA process for the proposed BSPP and would be required by the BLM in the ROD, analyzing consistency of the BSPP and alternatives with these plans is beyond the scope of analysis for the BLM.

Other Land Use Planning Areas

The PA/FEIS considered impacts of the proposed action at an appropriate geographic scale; recognizing that existing land use plans apply in geographic contexts of various sizes. Analyzing impacts within too large an area tends to dilute the consequence of the impact; similarly, analyzing impacts within too small an area could tend to magnify them. In either instance, the impacts of the proposed action would be inaccurately characterized, which would lead to uninformed decision-making.

Some comments suggest that the BLM should have considered impacts in western Imperial Valley, the Imperial Valley as a whole, the Salton Trough, or the CDCA as a whole. For each issue area considered in the PA/FEIS, the BLM analyzed the direct, indirect and cumulative impacts of the proposed action and alternatives at the land use planning scales that provide the most meaningful context (see, PA/FEIS Ch. 4). In some cases the proper geographic scope of analysis (i.e., the area within which analysis neither overstates nor understates impacts) consists of the CDCA planning area; in other cases, it is the NECO planning area, eastern Riverside County or elsewhere. Given the issues, plans and resources of concern in the PA/EIS, western Imperial Valley, the Imperial Valley as a whole and the Salton Trough were determined not to provide the most meaningful planning contexts.

5.5.4.3 Consistency of the PA/FEIS with FLPMA, Energy Directives and NEPA

Commenters and Comments Addressed

Commenter	Comments
Defenders of Wildlife	4-09
Sierra Club	6-03, 6-06, 6-09, 6-37, 6-55, 6-58
Center for Biological Diversity	8-08, 8-09, 8-16, 8-18, 8-21
EPA	10-3, 10-7

Summary of Issues Raised

1. Several comments question whether the proposed action complies with FLPMA, the CDCA Plan and NECO Plan.

2. Other comments express concern about the NEPA process, including about segmentation, the identification of impacts (including cumulative impacts), and other requirements of NEPA.

Response

Consistency with FLPMA

As indicated in PA/FEIS Sections 1.1.1 and 1.3.1, Table 1-1 and elsewhere, the BLM processes applications for commercial solar energy facilities as right-of-way authorizations under Title V of FLPMA and Title 43, Part 2804 of the CFR. FLPMA establishes public land policy; guidelines for administration; and provides for the management, protection, development, and enhancement of public lands. In particular, the FLPMA's relevance to the proposed project is that Title V, Section 501, establishes BLM's authority to grant rights-of-way for generation, transmission, and distribution of electrical energy. The BLM is processing the Applicant's application within the FLPMA framework.

Consistency with Energy Directives

The National Energy Policy of 2001 and the Energy Policy Act of 2005 (Public Law 109-58, August 8, 2005) contribute to an overall strategy to develop a diverse portfolio of domestic energy supplies and encourage the development of renewable energy resources, including solar energy. In 2005, the federal Energy Security Policy Act renewed interest in developing utility-scale renewable energy facilities on federal public land. It established a target of approving 10,000 MW of non-hydropower renewable energy generation on public lands within 10 years of the Act. The United States Congress intensified the need for accelerated development of such projects when, in early 2009, it passed the American Recovery and Reinvestment Act, which confers economic benefits on renewable energy projects that begin construction before the end of 2010. Other applicable energy directives are identified in PA/FEIS Section 1.1. They include Executive Order 13212, dated May 18, 2001, which mandates that agencies act expediently and in a manner consistent with applicable laws to increase the "production and transmission of energy in a safe and environmentally sound manner" and Secretarial Order 3285 (March 11, 2009), which "establishes the development of renewable energy as a priority for the Department of the Interior." The proposed BSPP is consistent with and would further these energy policies.

Consistency with the CDCA Plan Amendment Process

The BLM received a number of comments expressing concerns about the scope, nature, and specifics of the proposed amendment to the CDCA Plan. The proposed CDCA Plan amendment is described in FEIS Section 1.4.2. As noted above, amendments to the CDCA Plan can be site-specific or global, depending on the nature of the amendment.

The construction and operation of a solar generating project on the proposed site would require the BLM to amend the CDCA Plan specifically to identify the site as suitable for such use; for the

BSPP, the requisite amendment would identify the proposed site as suitable for the proposed project, i.e., the BSPP. The CDCA Plan amendment for this project would not result in changes to the Class L (Limited Use) land use designation; instead, it would be site-specific, limited to the allowance of a solar energy use on the proposed site. Nonetheless, the PA/FEIS acknowledges an adverse cumulative impact on approximately one million acres of desert lands that are proposed for possible solar and wind energy development in the southern California Desert. Moreover, the proposed CDCA Plan amendment for the BSPP would be further limited by the accompanying right-of-way grant. The CDCA Plan amendment, if adopted, would not result in any changes in lands use designations or authorized lands uses anywhere else in the CDCA.

Consistency with NEPA

The BLM is required to take a "hard look" under NEPA, as well as to review all of the proposed rights-of-way under FLMPA. The BLM prepared this PA/FEIS because it expected the effects of the proposed action to be significant.

Public Participation. The CEQ regulations require that agencies "make diligent efforts to involve the public in preparing and implementing their NEPA procedures" (40 CFR 1506.6(a)). There are a wide variety of ways to engage the public in the NEPA process. For the BSPP's PA/FEIS, the BLM has invited public participation through a website set up specifically to keep interested parties apprised of the project,[2] a public scoping meeting held on December 11, 2009; circulation of the SA/DEIS for public comment in March 2010, Federal Register notices on April 6, 2010 and November 23, 2008; and these responses to comments.

Moreover, the public is being given an additional opportunity to review and comment on the environmental review following publication of the PA/FEIS. As indicated in the Dear Reader letter accompanying the issuance of the PA/FEIS, the BLM will accept comments for a 30-day period after the PA/FEIS notice is published in the Federal Register to allow the public and agencies additional time to consider and provide comments on the PA/FEIS. The results of studies completed subsequent to the SA/DEIS, and the Energy Commission's RSA may be reviewed in the context of the PA/FEIS during this time. These comments will be reviewed, analyzed and responded to if necessary in the Record of Decision (ROD).

Scope of Analysis. The gen-tie line, natural gas line, and other ancillary elements of the proposed action, including fiber optics and the distribution line, are identified in PA/FEIS Section 2.4, described in Chapter 3 and analyzed in Chapter 4. They are not "connected actions" pursuant to NEPA guidelines (40 CFR 1508.25(a)) or Section 6.5.2.1 of the BLM NEPA Handbook (p. 45). The anticipated development of these components was identified in the SA/DEIS; however, final locations and other details were not available at that time. This PA/FEIS provides further detail in relation to the information previously known with additional information developed since publication of the SA/DEIS. The revised staff assessment is not a federal/BLM document. In any event, the BLM is not, as part of this proposed action, proposing any NECO land use plan amendments. Therefore, no analysis of such changes is required in this PA/FEIS. Because these

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[2] U.S. Department of the Interior, Bureau of Land Management, Blythe Solar Power Project (rev. April 9, 2010) <http://www.blm.gov/ca/st/en/fo/palmsprings/Solar_Projects/Blythe_Solar_Power_Project.html>.

elements are analyzed as part of the proposed action, the PA/FEIS does not improperly segment the review of associated impacts.

Cumulative Impacts. Several comments question the adequacy of the PA/FEIS's assessment of cumulative impacts. A cumulative impact is "the impact on the environment which results from the incremental impact of the action when added to other past, present, and reasonably foreseeable future actions regardless of what agency (Federal or non-Federal) or person undertakes such other actions. Cumulative impacts can result from individually minor but collectively significant actions taking place over a period of time." 40 C.F.R. § 1508.7. The PA/FEIS considers the potential for incremental impacts resulting from construction, operation and maintenance, and closure and decommissioning of the BSPP to cause or contribute to a cumulative effect in each of the issue areas for which the BSPP could cause an impact.

The PA/FEIS for the BSPP identifies cumulative projects and provides quantified and detailed information about them. See Table 4.1-1 (Cumulative Scenario). On an issue-by-issue basis, PA/FEIS Chapter 4 identifies the geographic and temporal scope of the cumulative impacts analysis area, provides a basis for the boundaries of each, identifies existing conditions within each cumulative impacts assessment area, identifies the direct and indirect effects of the BSPP and alternatives, and identifies past, present and reasonably foreseeable future actions making up the cumulative scenario. See, for example, PA/FEIS Section 4.21.3 (discussion of cumulative impacts on wildlife resources), Table 4.21-1 (Comparison of Direct and Indirect Impacts to Wildlife from Proposed Action, Reconfigured Alternative, Reduced Acreage Alternative, and No Action Alternatives), and PA/FEIS Appendix H. The several renewable energy (solar and wind) projects being considered by the BLM's California Desert District are identified in Table 4.1-2, including the number of projects, acreage and total megawatts under consideration in the Palm Springs, Barstow, El Centro, Needles, and Ridgecrest Field Offices. Renewable energy projects on state and private lands are identified in Table 4.1-3. Also part of the cumulative scenario, existing projects along the I-10 corridor in eastern Riverside County are identified in Table 4.1-4 and future foreseeable projects in this area are identified in Table 4.1-5. The PA/FEIS's analysis of cumulative impacts is adequate. The PA/FEIS analyzes cumulative impacts of past, present and reasonably foreseeable future actions, including utility-scale renewable and other development projects, on each of the resource areas in Chapter 4, including mitigation measures to offset cumulative impacts.

Mitigation Measures. NEPA requires that an EIS include consideration of mitigation measures to reduce adverse environmental impacts. There is no requirement in NEPA to mitigate all impacts below a threshold as required under CEQA, but mitigation may be proposed and required as part of the approved project. The final mitigation measures that will be implemented as part of the project will be disclosed in the Record of Decision (ROD). The SA/DEIS and the PA/FEIS include extensive mitigation measures addressing the potential adverse project impacts of the BSPP. Many of these are measures that have been used extensively throughout the State and, therefore, are anticipated to effectively address the adverse project impacts. In addition, many of the measures include standards or other requirements that, if not met, would trigger the need for additional mitigation. Many of the mitigation measures require the preparation of detailed plans during final design and prior to any activity on the project site. This is consistent with the requirements of NEPA because these measures identify the impacts intended to be addressed by those plans and key activities that would be included in those plans to mitigate the identified impacts. In summary, the existing mitigation measures in the PA/FEIS are adequate to address the adverse project impacts. Where there are adverse impacts that mitigation measures cannot entirely mitigate, these impacts have been identified as unavoidable adverse impacts of the BSPP and other alternatives, as applicable.

5.5.4.4 Adequacy of Data Relied Upon

Commenters and Comments Addressed

Commenter	Comments
Wilderness Society and NRDC	5-09, 5-15, 5-17
Sierra Club	6-06, 6-08, 6-13, 6-15, 6-17, 6-38
Center for Biological Diversity	8-17, 8-24, 8-25, 8-26, 8-28, 8-39, 8-40, 8-41, 8-49, 8-52
EPA	10-13, 10-28

Summary of Issues Raised

1. Some comments suggest that the PA/FEIS is inadequate because new information has become available since issuance of the SA/DEIS, including the Energy Commission’s RSA and a number of surveys.

2. Other comments suggest that the PA/FEIS is inadequate because more information is needed to establish existing conditions (e.g., for sensitive species, habitat and connectivity corridors, including Nelson’s bighorn sheep, American Badger, other special-status wildlife, as well as for vegetation and cultural resources) or to update references used to define the need for the project.

Response

NEPA procedures ensure that “high quality” environmental information is available before actions are taken (40 CFR 1500.1). A “hard look” under NEPA consists of a reasoned analysis containing quantitative or detailed qualitative information. See, BLM NEPA Handbook H-1790-1 (Jan. 30, 2008). Further, the data and analyses provided in the PA/FEIS about the affected environment should be commensurate with the importance of the impact, with less important material summarized, consolidated, or simply referenced (40 CFR 1502.15). The PA/FEIS relies on quantitative data where possible, and detailed qualitative data under other circumstances. The BLM may rely on the best available information if it is sufficient to allow a reasoned analysis of particular impacts, and the BLM need not necessarily postpone its consideration of a proposal while additional data is being developed –the endless loop of analysis that might otherwise result surely would lead to significant regulatory delays. Data and other information relied upon in preparing the PA/FEIS are identified in the References section.

Energy Commission's RSA

The Energy Commission issued an RSA for the BSPP in June, 2010. The RSA is not a substantial change in the proposed action and does not constitute significant new information. Instead, it is the State's functional equivalent of this PA/FEIS. The BLM and Energy Commission cooperatively prepared the draft environmental analysis for the BSPP in accordance with NEPA and CEQA; they agreed to prepare stand-alone final documents, one for NEPA (this PA/FEIS) and one for CEQA (the RSA). The BLM reviewed and relied on the RSA in the preparation of this PA/FEIS because the substantive analysis and conclusions of the Federal and State environmental review processes are substantially similar even though the format of the documentation is different. For example, because the BLM and Energy Commission developed mitigation measures for the BSPP in concert with one another, the resulting measures apply equally to the Energy Commission's process as conditions of certification and the BLM's process as mitigation measures. Other agencies and the public have had an opportunity to review the RSA since its issuance in June.

To assure consistency between the State and federal approval processes for the BSPP, the Energy Commission also will prepare and publish a Supplemental Staff Assessment to incorporate information and address modifications to the BSPP that may occur as a result of the BLM's process. The Supplemental Staff Assessment will be made available to agencies and the public in accordance with Energy Commission requirements.

Subsequent Studies and Reports

A number of comments stated that new data in the form of reports, studies and plans that are required in the DEIS were not available or were insufficient at the release of the draft document. All studies or reports that were not available prior to the draft that subsequently have become available were analyzed in the preparation of the PA/FEIS. Each of the studies and reports clarified or complimented earlier understandings or assumptions; none has caused a substantial change in a proposed action, and none is "significant" for purposes of NEPA.

Additional surveys are anticipated to be required or completed as a result of other agencies' statutory or regulatory obligations, or within specific areas of expertise. For example, the FWS Endangered Species Act Section 7 consultation, ACOE Jurisdictional Delineation, and the Section 106 Programmatic Agreement all are in progress. Each of these processes is independent of and separate from the NEPA process, and will be prepared in accordance with the schedule and procedures established in the relevant regulatory regimes. Studies required or completed in satisfaction of other agencies' requirements that become available before the ROD is issued will be evaluated by the BLM. BLM is making every effort to complete these processes in coordination with NEPA, and to finalize these other processes before the issuance of the ROD. Other agencies and the public would have the opportunity to review such reports to the full extent of the relevant governing law.

Mitigation Measures and Further Study

Mitigation includes specific means, measures or practices that would reduce or eliminate effects of the proposed action or alternatives. Mitigation may be used to reduce or avoid adverse impacts, whether or not they are significant in nature. Reasonable, relevant mitigation measures that could improve the project are identified in Appendix G and are called out on an issue-by-issue basis in Chapter 4, regardless of agency jurisdiction. BLM-specific mitigation measures, developed consistent with CEQ guidance, also are identified and generally work in coordination with the Energy Commission's conditions of certification. See, e.g., PA/FEIS Sections 4.11, Public Health and Safety, 4.16, Transportation and Public Access, and, concerning BLM BIO-10, Common Response 5.5.4.8. Mitigation measures are identified to reduce or eliminate adverse effects to biological, physical, or socioeconomic resources even in instances where the precise extent of impacts is somewhat uncertain because of the complexity of the issues or variability. See, e.g., Mitigation Measure BIO-19 (special-status plant surveys to be focused broadly because of unknown potential for range extensions).

Multiple mitigation measures would require surveys. Surveys serve myriad purposes, including refining baseline information (see, e.g., Mitigation Measures BIO-4, CUL-6, and SOIL& WATER-5), defining parameters (see, e.g., Mitigation Measure CUL-5), assessing compliance (see, e.g., Mitigation Measure COMP-1), and identifying areas where adaptive management may be appropriate (see, e.g., Mitigation Measures BIO-8, BIO-15, BIO-24). As noted above, the BLM has used the best available science in the PA/FEIS, including site-specific data collected over appropriate timeframes, under the proper protocol, by the proper experts in the field, and recommends additional survey work to confirm assumptions and inform adaptive management. The purpose of such surveys is to avoid or more effectively mitigate possible impacts on the human environment.

Mitigation measures that would require supplemental plans would be developed in consort with the appropriate resource and regulatory agency. The Tortoise Relocation/Translocation Plan required by BIO-10, for example, would be developed in accordance with the performance standards established in the mitigation measure, would be consistent with current USFWS approved guidelines, would include all revisions deemed necessary by BLM, USFWS, CDFG and Energy Commission staff, and would be subject to agency approval. The information provided in the PA/FEIS about the Tortoise Relocation/Translocation Plan is detailed and of high-quality. In any event, other agencies and the public would have an opportunity to comment on the proposed plan pursuant to the approval process.

Similarly, where a mitigation measure allows for the acquisition of lands, any required studies would be performed according to FWS and CDFG protocol at the time that specific land is proposed for evaluation as habitat for mitigation. It would not be possible to provide such studies for agency or public review until the land has been identified.

Some comments suggest that the BLM should require the Applicant to develop additional information after project approval, in the form of pre-construction surveys, in order to avoid or further reduce impacts. In the context of the desert tortoise, the Energy Commission has recommended that additional areas be surveyed; however, the Applicant instead may elect, consistent with requirements, to presume that desert tortoises are present, forgo the survey, and acquire sufficient mitigation lands.

In this context, mitigation measures that predicate future actions and obligations on data, analysis and results of future studies do not improperly defer mitigation or deprive the public of a meaningful opportunity to comment on the adequacy of the mitigation measures. To the contrary, the mitigation measures proposed in the PA/FEIS provide performance standards that are sufficiently detailed to allow for meaningful agency and public review. Requirements for the timing, overage and contents of the surveys are established, as are standards for Surveyor Qualifications and Training. Requirements for operational plans that have yet to be developed also are established in great detail. See, e.g., BIO-13 (requiring the development and implementation of a Raven Monitoring and Control Plan) and BIO-14 (requiring the development and implementation of a Weed Management Plan).

5.5.4.5 Purpose and Need

Commenters and Comments Addressed

Commenter	Comments
Brendan Hughes	1-02
Defenders of Wildlife	4-04, 4-05
The Wilderness Society and the NRDC	5-10
Sierra Club	6-42, 6-43
Center for Biological Diversity	8-21, 8-22, 8-53, 8-57
EPA	10-13, 10-14

Summary of Issues Raised

1. Several comments suggested that the BLM’s statement of Purpose and Need is too narrow.
2. Other comments provided input concerning the DOE’s statement of purpose and need.

Response

The BLM’s Statement of Purpose and Need

As explained in Section 6.2.1 of the BLM’s NEPA Handbook, a carefully crafted purpose and need statement can “increase efficiencies by eliminating unnecessary analysis and reducing delays in the process.” The statement of purpose and need dictates the range of alternatives, because action alternatives are not “reasonable” if they do not respond to the purpose and need for the action. As correctly noted in several comments on the BSPP, the narrower the purpose and need statement, the narrower the range of alternatives that must be analyzed; the converse also is true. BLM has discretion in defining the purpose and need of the proposed action (40 CFR 1502.13). Several comments requested that the BLM substantially expand its statement to address more broad (and less specific) purposes in order to allow for consideration of a broader range of alternatives.

BLM’s purpose and need for the proposed action, as stated in Section 1.1 of the PA/FEIS, is based on two key considerations: (i) the potential action the BLM could or would take on the specific proposed action; and (ii) the response of the BLM in meeting specific directives regarding the implementation of renewable energy projects on federally-managed lands. The primary action that BLM is considering is a response to a specific ROW grant application from the Applicant to construct and operate a specific solar project on a specific site managed by the BLM. As a result, the BLM determined that a key purpose of this project was to determine whether to approve, approve with conditions, or deny that ROW application for the 1000 megawatt (MW) BSPP. A statement of this breadth led the BLM to consider two additional "build" or "action" alternatives on the same site, one no action alternative (No Action Alternative A) and two no project alternatives pursuant to which the CDCA Plan would be amended but the BSPP would not be approved (No Action Alternative B and No Action Alternative C) (see PA/FEIS Chapter 2).

The BLM declined requests to expand the statement to "focus on the need to generate...greater amounts of electrical energy from renewable energy sources so that dependency on carbon based fuels is reduced" because they are outside the purview of the BLM. The need for increased energy from renewable sources is not the responsibility of the BLM. However, the BLM can respond, within the context of specific directives under which it operates, to those needs by considering ROW grant applications for projects that would produce renewable energy on federally managed lands. As a result, the BLM purpose for the BSPP responds in part to the specific directives related to renewable energy production that are summarized in Common Response 5.5.4.3 (energy directives) and PA/FEIS Section 1.1. As noted above, these directives authorize the BLM to act expediently in increasing the production of nonrenewable energy within the bounds of its other authorities regarding the management of federal lands. The BLM is not in the business of developing and operating energy production facilities; its responsibilities are to consider and to approve, approve with modification, or deny issuance of a ROW grant to any qualified individual, business, or government entity and to direct and control the use of rights-of-way on public land in a manner that:

1. Protects the natural resources associated with public lands and adjacent lands, whether private or administered by a government entity.
2. Prevents unnecessary or undue degradation to public lands;
3. Promotes the use of rights-of-way in common considering engineering and technological compatibility, national security, and land use plans; and
4. Coordinate, to the fullest extent possible, all BLM actions under the regulations in this part with state and local governments, interested individuals and appropriate quasi-public entities.

As directed by Secretarial Order 3285, the BLM has identified renewable energy projects on federally managed lands as a priority throughout the lands it manages. As a result, the BLM is considering ROW grants for various renewable energy projects throughout California and other western states. Each of these projects is considered by the BLM on its own merits and with consideration of the impacts of the specific project on a specific site. Therefore, the statement of purpose and need for each project, including the proposed BSPP, is specific to each project within the broader scope of the directives prioritizing renewable energy development on federally managed lands. (The PA/FEIS considers other applications for energy projects in the cumulative impacts analyses provided in PA/FEIS Chapter 4.)

The BLM believes that the purpose and need for the BSPP, as discussed in PA/FEIS Chapter 1, is consistent with the directives described above and the requirements of Title V of FLPMA, and satisfies the requirements of NEPA. Therefore, the purpose and need for this project was neither revised in response to these comments nor replaced wholesale in favor of replacement statements proposed in comments.

Some comments focus on the DOE Purpose and Need statement including the appropriateness of the objective of timely approval of the proposed action. The amount of time required to prepare an EIS ranges depending on the complexity of the issues involved and the types and magnitude of improvements proposed, and can take as much as 24-36 months or more. The BLM identified certain “fast-track” projects for which the companies involved demonstrated to the BLM that they had made sufficient progress to formally start the environmental review and public participation process. The BSPP is one such project. The Applicant submitted a right-of-way (ROW) application to the BLM on September 21, 2006, and filed an application for certification with the Energy Commission on August 24, 2009. The environmental review process, including opportunities for public participation, commenced immediately. Like all renewable energy projects proposed for BLM-managed lands, the BSPP has received the full extent of environmental review required by NEPA and has included the same opportunities for public involvement as are required for all other land-use decision making by the BLM. Concerning consistency with NEPA generally, see Common Response 5.5.4.3.

Other comments suggest that, in light of the DOE’s statement of purpose and need, the SA/DEIS should have considered alternatives that would provide funding to other types of projects. It did so. The full range and variety of alternatives considered in the SA/DEIS is identified and discussed in PA/FEIS Chapter 2, including other solar technologies, other types of renewable energy, alternative methods of generating electricity and conservation and demand side management.

5.5.4.6 Alternatives

Commenters and Comments Addressed

Commenter	Comments
Brendan Hughes	1-01
Defenders of Wildlife	4-05, 4-06, 4-07, 4-08, 4-15, 4-16
The Wilderness Society and the NRDC	5-11, 5-12, 5-13, 5-14
Sierra Club	6-02, 6-07, 6-10, 6-39, 6-40, 6-41, 6-44, 6-45, 6-46, 6-47, 6-48, 6-49, 6-50, 6-51, 6-52, 6-53, 6-54, 6-59, 6-60, 6-61
Center for Biological Diversity	8-02, 8-05, 8-06, 8-53, 8-54, 8-55, 8-56
EPA	10-1, 10-18, 10-20

Summary of Issues Raised

1. Several comments suggested that the range of alternatives was unreasonably narrow, and should be expanded to include, for example, additional, more restrictive CDCA plan amendments.

2. Other comments alleged that the SA/DEIS failed to provide a sufficient foundation for rejecting alternatives from further consideration and proposed that certain of the alternatives should have been carried forward for more detailed analysis.

Response

NEPA directs the BLM to "study, develop, and describe appropriate alternatives to recommended courses of action in any proposal that involves unresolved conflicts concerning alternative uses of available resources" (NEPA Section 102(2)(E)). A discussion of alternatives need not be exhaustive. What is required is information sufficient to permit the BLM to make a "reasoned choice" among alternative so far as environmental aspects are concerned (40 CFR 1502.14).

In order to establish the reasonable range of alternatives to be considered, the defined project purpose and need functions as the first and most important screening tool. Thereafter, the range of alternatives is based on the applicant's proposed action, alternatives that would reduce or avoid adverse impacts of the applicant's project, and appropriate No Action Alternatives. The full range of possible alternatives may be narrowed to a "reasonable number" that covers the full spectrum of alternatives. In determining the alternatives to be considered, the emphasis is on what is "reasonable" rather than on whether the proponents or others like or are capable of implementing the alternative. See BLM NEPA Handbook H-1790-1 (Jan. 30, 2008) §6.6.1.

Alternatives Considered

The number and range of alternatives considered in the EIS is reasonable. In total, 24 alternatives to the proposed action were considered by the BLM. Five were carried forward, in addition to the proposed action, for more detailed review. Two of the five are action alternatives (the Reconfigured Alternative and the Reduced Acreage Alternative); one is a "no action" alternative, under which no project and no CDCA Plan amendment would be approved (No Action Alternative A); and two are "no project" alternatives under which the CDCA Plan would be amended but the proposed project would not be approved (No Action Alternatives B and C). A comparison of impacts by alternative is provided in Table 2-1. The 19 alternatives that were considered but eliminated from detailed analysis, including the rationale for their elimination (40 C.F.R. 1502.14(a)), are presented in FEIS Table 2-1. This is a reasonable number of alternatives given the breadth of the BLM's statement of purpose and need. Further, the alternatives carried forward for more detailed consideration in the PA/FEIS sufficiently cover the full spectrum of alternatives because the scope of impacts assessed went from none (no action) to some (reduced acreage) to lessened in some respects (reconfigured).

Some comments suggest that the presentation and evaluation of alternatives in PA/FEIS Section 4 should include a quantitative comparison, including comparison of life-cycle costs, energy output, greenhouse gas emissions, environmental impacts (such as tons of emissions or acres of wetlands impacted), and other criteria. The BLM agrees that quantitative comparison of alternatives can be a critical part of a detailed evaluation among feasible alternatives; however, quantitative comparison is not appropriate for all levels of an alternatives analysis. Further, because NEPA does not require the completion of a quantified lifecycle analysis in order to evaluate relative impacts and because no such analysis was provided for this project, Chapter 4 has not been revised to include one.

Alternatives Eliminated from Further Consideration

Because the range of alternatives considered in the PA/FEIS is reasonable and covers the full spectrum of concerns, NEPA does not require the BLM to consider additional alternatives. Nonetheless, the BLM agrees that additional detail could have been provided explaining the rationale for eliminating some alternatives from further consideration (40 CFR 1502.14(a)). PA/FEIS Section 2.9 has been clarified to provide the requested additional details.

For example, some comments suggested that the BLM should consider an all-private-lands alternative. However, the BLM did not carry forward such an alternative for further consideration because the BLM's role in managing its lands includes facilitating land uses on its lands while appropriately balancing and responding to multiple interests concerning federal mandates, collaborating agencies' directives, and BLM's own interests. As a result, the alternatives considered in the SA/DEIS and the PA/FEIS focus on alternatives that would require an action by the BLM and that respond to the specific application for a ROW grant received by the BLM for the BSPP (see, e.g. BLM NEPA Handbook H-1790-1, January 2008, Section 6.6.1 Reasonable Alternatives). Further, an all-private-lands alternative would present considerable challenges, including difficulties associated with obtaining sufficient site control from a number of different landowners who may or may not be motivated to allow utility-scale energy generation facilities to be developed on their property, the large number of acres that would be required for a viable project of this type, and the absence of any clear environmental benefit associated with development on private versus public land. Accordingly, BLM declined to accept suggestions that it consider the placement of the proposed utility-scale renewable energy projects on private lands. Suggestions that applicants must provide additional evidence of efforts to obtain site control on private lands are dismissed, since such evidence would not meaningfully inform or expand the range of alternatives.

Other comments suggested that sites closer to urban areas or on previously disturbed lands should have been considered. The BLM did not consider such alternatives in the SA/DEIS because the consideration of the three alternative sites described above was adequate in identifying and considering alternative sites. Further, locating a utility-scale renewable energy generating facilities in an urban area or on previously disturbed lands would present considerable challenges, such as those described above, relating to site control, negotiations with numerous landowners, and overall acreage needs. Alternative sites on other BLM managed lands were not considered because the BLM is responding to the application for the specific parcel identified in the applicant's ROW grant application. In addition, there are a very large number of other renewable energy projects which have submitted applications for the use of BLM managed lands. As a result, other possible BLM managed lands in the general area of the BSPP site are already subject to applications from other projects and, therefore, would not be considered by the BLM to be available for alternative projects until those applications are considered and either approved or rejected by the BLM. Finally, many of the areas that have previously been disturbed or are closer to urban areas are not within the jurisdiction of the BLM and, therefore, would require no action by the BLM.

In addition, the PA/FEIS includes more information with respect to the following alternatives that specifically were identified in comments on the SA/DEIS: a conjunctive public/private land alternative; Blythe Mesa Alternative (identified as a CEQA-only alternative); conservation and demand side management; distributed generation solar; and alternative technologies, e.g. thin film and PV. A reduced power alternative and a reduced acreage alternative each were considered in the analysis, as were alternative sites. The BLM has declined to consider an alternative Colorado Substation site because the Colorado Substation is not part of the proposed action. Further, alternative gen-tie and access road locations would be substantially similar in design or would have substantially similar effects to alternatives already analyzed given the proximity of "Point A" (i.e., the site) and "Point B" (i.e., to the Colorado Substation and I-10, respectively). One comment suggests that the BLM should have considered a phased alternative that would allow the portions of the project that have the fewest impacts to move forward while the Applicant finds alternative off-site locations to acquire, analyze and permit for the remaining phases of the project. This suggestion would be remote or speculative in light of siting criteria and constraints, multiple landowner issues and acreage requirements of the proposed project; it also could be technically or economically infeasible to spread the project over a potentially large area. Although the PA/FEIS takes into account new information about potential alternatives, such information is not "significant" under NEPA (40 CFR 1502.9).

5.5.4.7 Supplementation/Recirculation

Commenters and Comments Addressed

Commenter	Comments
The Wilderness Society and the NRDC	5-09, 5-10
Sierra Club	6-05, 6-07, 6-08, 6-25, 6-30, 6-38, 6-58
Center for Biological Diversity	8-06, 8-15, 8-17, 8-21, 8-30, 8-33, 8-40, 8-42, 8-59
Wildlife Society	9-08

Summary of Issues Raised

1. Comments suggest that supplementation and recirculation of the EIS is required for a variety of reasons.

Response

According to Section 5.3 of the BLM's NEPA Handbook, supplementing an EIS is required only in the following limited circumstances:

1. When substantial changes to the proposed action are made and are relevant to environmental concerns (40 CFR 1502.9(c)(1)(i));

2. When a new alternative is added that is outside the spectrum of alternatives already analyzed (see Question 29b, CEQ Forty Most Asked Questions Concerning CEQ's NEPA Regulation, March 23, 1981); and

3. When there are new significant circumstances or information relevant to environmental concerns and have bearing on the proposed action or its effects (40 CFR 1502.9(c)(1)(ii).

Changes in elements of the proposed action that have been made since issuance of the SA/DEIS are identified in PA/FEIS Section 2, including the following minor engineering changes: removal of the four gas-fired heat transfer fluid (HTF) heaters (one per Unit); addition of an on-site concrete batch plant during construction; addition of evaporation ponds to process industrial wastewater flows; revision to construction water requirements, number of groundwater wells, and construction water storage approach; finalization of the gen-tie line route to the southern california edison (sce) colorado river substation; clarification on the removal of the existing on-site (abandoned) natural gas pipeline; changes to layout of project facilities; revisions to project drainage system construction sequencing; clarification on the paving of black rock road; addition of a temporary construction power line from off-site; refinement of the daily construction schedule; finalization of the telecommunications line; revised list of water treatment chemicals; and addition of an on-site fuel depot. These engineering changes, and analysis of their related impacts dated April 17, 2010, were provided by the Applicant and independently reviewed by BLM. Although these changes were not previously considered, the impacts resulting from them (as summarized below) are within the scope of impacts analyzed in the SA/DEIS.

Removal of Gas-Fired HTF Heaters

This modification would not lead to any additional ground disturbance beyond that already expected, nor would it have any substantial effects on water use, noise emissions, chemicals use, waste discharges, etc. Based on the system performance modeling, historical ambient temperature data and cost considerations, the HTF heaters would not be needed for Project operations. Instead, the heat required for HTF freeze protection would be provided by the auxiliary boilers. Each auxiliary boiler would be used for HTF freeze protection up to a maximum of 10 hours per day, and up to a maximum of 100 hours per year. Associated emissions are taken into account in the PA/FEIS.

Addition of Concrete Batch Plant

Providing a concrete batch plant on site would not change the amount of concrete required for construction. Instead, it means that the raw materials (sand, aggregate, etc.), and plant components (storage bins, mixers, etc.) would be delivered to the site rather than having ready mix cement trucks deliver product from an off-site batch plant location. An on-site batch plant would not disturb land that otherwise would not already be disturbed by the BSPP. Impacts on air quality, water supply, noise, hazardous materials, waste management and traffic associated with the batch plant are taken into account in the PA/FEIS and are not substantially different than previously analyzed. Because no additional land disturbance would result from the on-site batch plant, impacts would be unchanged with respect to biological, cultural, and other natural resources.

Addition of Evaporation Pond(s) to Manage Industrial Wastewater Flows

The proposed evaporation ponds would disturb no additional land surface areas beyond what was previously analyzed. While the residue in the evaporation ponds represents an additional waste stream that would require off-site disposal, the volume and infrequency of such disposal would not be substantially different than previously analyzed. Potential biological resources implications are a primary concern with evaporation ponds, particularly raven-related impacts on juvenile desert tortoises and impacts resulting from the attraction of other migratory and resident avian species. However, since impacts and mitigation measures already analyzed include the development of a Raven Management Plan, the addition of evaporation pond(s) would not be substantially different with respect to biological resources than previously analyzed. Evaporation ponds also have the potential to impact water quality; however, coordination, review and approval from of the Colorado River Basin Regional Water Quality Control Board (RWQCB) for similar impacts already has been analyzed. Construction and operation of the evaporation ponds will not affect the type or quantity of hazardous materials used by the BSPP; waste streams would be the same with or without evaporation ponds and the waste volumes associated with periodic cleanout of the dried evaporation pond residues would not significantly affect available disposal facilities. On-site evaporation ponds would not have a substantial effect on the BSPP's air quality impacts. The process of evaporation pond construction is expected to have minimal effect on the project's construction-phase air quality impacts, and earthwork (cut and fill, grading, and compaction) and other activities (e.g., truck trips delivering clay for pond liners) associated with pond construction would slightly change Project construction emissions. Air quality impacts of evaporation pond operation would not be substantially different than previously analyzed.

Revision to Construction Water Requirements, Number of Groundwater Wells, and Construction Water Storage Approach

The change in proposed construction water supply represents about a 30 percent increase over the previously estimated volume of 3,100 acre-feet. Related impacts were evaluated by the Applicant using a numerical groundwater model provided in the data response of January 6, 2010 and other information. The cumulative impacts assessment was modified by only changing the construction water volume to the proposed 4,100 ac-ft/yr over a five-year period beginning in 2011. The recharge and discharge elements (i.e., mesa "inflow" and "outflow") were not changed over the water balance based on the assumption that the infiltration would be about five percent of precipitation. The forecast shows that the BSPP, during construction, would account for between 16 percent and 78 percent of the total water used by renewable energy projects proposed in the Palo Verde Mesa for a five-year period starting in 2011.

The BSPP's operational water volume would be unchanged and would account for 13 percent of the total renewable water use, representing about a four to seven percent increase in the total water use within the Palo Verde Mesa under an assumption of no change in the base-year water demand or inflow and outflow estimates. While the cumulative forecast from all the current and future sources results in a short-term net annual deficit, depending on the assumption of aquifer storage, the cumulative decline across the Palo Verde Mesa is between about four and 15 feet. It would be anticipated that the water level decline would be greater in areas of higher water demand. As previously analyzed, the proposed water use for the BSPP alone would represent about 0.3 percent of the available water in storage in the Palo Verde Mesa Groundwater Basin. Given its fractional contribution to the total water use, the BSPP does not represent a cumulatively considerable contribution to the water resource impacts to the Palo Verde Mesa Groundwater Basin with or without the revised construction water requirements.

Groundwater modeling data previously analyzed was revised to reflect an updated volume of construction water supply for the BSPP. For the numerical simulations, the total water volume (4,100 ac-ft) was applied over a five-year period (60 months) as a conservative estimate of the construction water impacts as the proposed construction period is 5.75 years or 69 months. No other changes were made in the operational water volume (600 ac-ft/yr) or aquifer characteristics in the model. While the operational volume was not changed, the full volume of water was segregated and applied through a pumping well at the northernmost part of each power block pumping at a rate of 150 ac-ft/yr. The change is limited to the construction period and the change in pumping would not be significantly different than prior estimates of construction supply. Further, the Project only pumping results using the updated construction volume were not significantly different than prior modeling.

Model results show that the maximum drawdown would occur at the end of construction. During the operational period, the pumping rate would drop and be distributed uniformly in the area of the power blocks, as such, so would the drawdown. At the end of operation, the drawdown would be slightly larger than at the middle of operation due to prolonged pumping. The impact to adjacent water supply wells also was assessed using the radius of influence from the construction and operational pumping wells to the five-foot drawdown and one-foot drawdown contours. The maximum distance at one-foot drawdown would occur at the end of operation for either scenario, though no drawdown above five feet is predicted beyond the project footprint. Additionally, during construction, no off-site water supply wells are predicted to be affected by BSPP pumping causing a drawdown of five feet or more. The scenarios modeled reveal that no off-site well is expected to be affected to a drawdown of five feet or more by the Project pumping.

In a numerical groundwater flow model, inflows and outflows of the model domain can be obtained using the model flow budget for each simulation. The cumulative difference between the inflows and outflows is the storage change for the aquifer. Analysis shows that the largest net storage change occurs at the end of operation for either model scenario. Assuming a total recoverable storage of 5,000,000 acre-feet in the basin (DWR 1979), the impact of basin storage over the full term of the Project (30 years) is insignificant even for the largest storage change at the end of operation (0.42 percent). Accordingly, related impacts would not be substantially different than those previously analyzed.

Finalization of the Gen-Tie Line Route to the SCE Colorado River Substation

Selection of the proposed route between the BSPP site and the Colorado River Substation would not substantially modify previous analyses with respect to air quality or water resources. Previous analyses in these disciplines have included a gen-tie line between the BSPP and the Colorado River Substation, and the differences between the selected route and the routes previously evaluated would not substantially change air emissions or water supply needs.

The primary areas of concern with respect to the final gen-tie line route are biological and cultural resources because the selected route includes areas not previously surveyed for biological and cultural resources. With respect to biological resources, portions of the gen-tie line outside the BSPP site are outside the area surveyed for biological resources in 2009. It is anticipated that the results of full protocol-level biological surveys of the transmission line pole locations and access road construction would result in modest increases in impacts to Sonoran Creosote Bush Scrub and Desert Dry Wash Woodland vegetation; however, the impacts would not be substantially different than previously analyzed. With respect to cultural resources, portions of the gen-tie line off of the BSPP site are outside the area surveyed for cultural resources in 2009. Cultural resource surveys for these additional areas were initiated and any resources encountered would be incorporated into the project's cultural resources evaluation and treatment programs.

With respect to transmission line safety and nuisance impacts, the electromagnetic field (EMF) is a function of the physical configuration of the transmission line and the voltage and current levels. An EMF study was prepared for a line voltage of 230 kV. No significant transmission line-related impacts were identified as a result of prior studies for the BSPP and, as such, none are expected to result from the change. The double circuit BSPP transmission lines would operate at 230 kV and would have a conductor surface electric field strength significantly below 15 kV per centimeter because of the large ("Bluebird") conductor chosen for the project. Radio frequency interference and audible noise levels are not expected to be a concern during operation of the line. Monopole height would be limited consistent with the height restrictions near the Blythe airport and thus, are not expected to cause impacts that are substantially different than those previously analyzed.

Clarification on the Removal of the Existing On-Site (Abandoned) Natural Gas Pipeline

Removal of the natural gas pipeline would not involve the disturbance of any previously undisturbed land areas. Thus, there would be no additional or modified impacts to biological or cultural resources. There also would not be changes in the amount of water needed for the proposed use, or changes to site drainage and runoff. Removal of the pipeline would involve minimal changes in equipment use or the amount of earthwork needed for the BSPP and thus there would be negligible changes in BSPP air quality impacts. Consequently, impacts associated with the pipeline removal would not cause impacts that are substantially different than those previously analyzed.

Changes to Power Block Layout

The proposed layout changes would not involve disturbance of any previously undisturbed ground surface areas. Thus, they would have no implications for existing analyses related to biological, cultural, or other natural resources. The changes would not substantially affect water use during construction or operation; the relatively minor changes to the sizes and layout of facilities within the site would not substantially change the existing visual resources impact analysis. Relatively small changes to power block facilities in the interior of the 7,000-acre plus site would be virtually unnoticeable from off-site locations. Air quality implications also are not expected to be substantially different than those previously analyzed because, given the distance from the power block to the fence line, any changes in equipment location within the power block would have a negligible impact to a receptor at or beyond the fence line more than 1,000 meters away. Revised cooling tower use and associated emissions, corrected mirror wash schedule and associated modeling, a reduction in the maintenance vehicle travel distance required for inspections and corresponding substantial reductions in vehicle emissions all were calculated. None of these changes would cause impacts that are substantially different than those previously analyzed.

Revisions to Project Drainage System Construction Sequencing

With respect to air quality, these revisions are expected to reduce somewhat the earthwork (cut and fill, grading, compaction) required for the BSPP, which would reduce equipment tailpipe emissions and fugitive dust from earthwork activities. Ambient air quality modeling has demonstrated that no adverse air quality impacts from construction activities as construction was originally proposed. The proposed reduction in emissions associated with the revisions to project drainage system construction sequencing would further reduce impacts to ambient air quality. This proposed refinement would not impact operating emissions from the BSPP facility. Revisions to the grading and drainage sequencing would result in no appreciable changes to identified biological impacts, since only one live tortoise was encountered during the protocol surveys of the site. Irrespective of the timing of various project-related site disturbances, all would occur within the identified project disturbance footprint that has been subjected to comprehensive protocol surveys and for which mitigation measures have been formulated and will be implemented. Accordingly, the revisions would not cause impacts that are substantially different than those previously analyzed.

Clarification on the Paving of Black Rock Road

With respect to air quality impacts, paving Black Rock Road would require the application of asphalt, which has the potential to cause volatile organic compound (VOC) emissions. Based on a paved area of 3,500 feet by 32 feet, the total VOC emissions are expected to be 7.2 pounds. Paving of this road could be completed in less than one day. The VOC emissions from this element of the BSPP would not trigger any new regulatory requirements, and the emissions would represent a small fraction of the daily VOC emissions during the construction period. Thus, the VOC emissions would not cause impacts that are substantially different than those previously analyzed. With respect to biological resources impacts, the Black Rock Road corridor is outside the area surveyed for biological resources in 2009. Full protocol-level biological surveys of the roadway alignment are expected to be minimal as this improvement consists of the blading and paving of an existing dirt road segment flanked by the I-10 ROW and disturbed land. Given the limited nature of the work, related impacts are not expected to be substantially different than those previously analyzed. With respect to cultural resources impacts, the Black Rock Road corridor is outside the area surveyed for cultural resources in 2009. Cultural resource surveys for these additional areas were initiated and, given the limited nature of the work and existing condition of the affected land, any impacts are not expected to be substantially different than those previously analyzed. Concerning potential noise impacts, improving Black Rock Road would involve the use of noise-producing heavy equipment. However, the roadway to be improved is adjacent to I-10 with its attendant vehicle noise, and there are no residents in close proximity to Black Rock Road to experience any increases in noise levels. Therefore, the work would not cause impacts that are substantially different than those previously analyzed.

Addition of a Temporary Construction Power Line from Off-Site

Using temporary power lines rather than portable generators would lower the BSPP's air quality impacts during construction. The temporary power lines would require the installation of temporary power poles and conductor. Installation of the poles is a relatively short-term activity (less than 60 days), which would be conducted prior to the bulk of the construction activities, as the power is required for the construction activities. Consequently, operation of the drill rig for power pole installation would not contribute to peak daily construction emissions and would not significantly alter the annual emissions for any criteria pollutant. Emissions from power line construction are not modeled or otherwise evaluated. The installation of the temporary power lines would reduce the need for portable diesel-fueled generators and thus reduce nitrogen oxides, sulfur oxides, VOC, carbon monoxide and particulate matter emissions during the construction period compared to the project as analyzed in the SA/DEIS. Lower air quality impacts than those previously analyzed are anticipated as a consequence of this change.

With respect to biological resource impacts, the temporary construction power line corridor is outside the area surveyed for biological resources in 2009. Full protocol-level biological surveys of the alignment were initiated. Potential biological effects are expected to be minimal as this improvement would consist of the blading and paving of an existing dirt road segment, approximately one-half mile in length, and the temporary installation of wooden poles. This change would not cause impacts on biological resources that are substantially different than those previously analyzed.

With respect to cultural resources impacts, the temporary construction power line corridor is outside the area surveyed for cultural resources in 2009. Cultural resource surveys for these additional areas were initiated. Any resources encountered would be incorporated into evaluation and treatment programs previously identified and analyzed. Thus, this change would not cause impacts on cultural resources that are substantially different than those previously analyzed.

Refinement of the Daily Construction Schedule

The resource areas potentially affected by the clarification in the daily work schedule are primarily noise and air quality. Noise impacts could be different because the additional work hours would occur outside normal work hours and include nighttime hours where ambient noise levels are lower than during the day. Also, the impacts of project emissions on ambient air quality are affected by meteorological conditions. There are calm atmospheric conditions during non-daylight hours including the hours around dawn and dusk that must be taken into account when analyzing the impacts of construction activities in those times of the day. With respect to noise impacts, the Applicant has agreed to limit construction activities outside the previously proposed work hours, consistent with the intent of Riverside County Noise Ordinance. This ordinance prohibits construction activities outside of specified hours when within 0.25 mile of an existing residence. The proposal to refine and limit work hours in this way would not cause noise impacts that are substantially different than those previously analyzed. Air quality impacts associated with the limited additional nighttime operations proposed have been modeled and conclude that adverse air quality impacts would not result. Based on the results of the ambient air quality impacts analysis, the Project would not have an adverse impact to air quality resources given the constraints outlined within this discussion. Accordingly, refinement of the daily construction schedule would not cause impacts that are substantially different than those previously analyzed.

Finalization of the Telecommunications Line

The addition of new telecommunications equipment to the BSPP would not substantially change project impacts in any of the areas addressed in the SA/DEIS and PA/FEIS. The installation of this line is not expected to have an adverse impact to air quality resources because the construction requirements do not differ significantly from the construction plan and associated emissions presented in the SA/DEIS, and no operating emissions would be associated with this equipment. Similarly, impacts to biological and cultural resources are not expected to change substantially because the proposed route is located in a corridor that already has been surveyed.

Revised List of Water Treatment Chemicals

Listed additional hazardous materials are typical water treatment chemicals; however, hazardous materials, such as sodium hydroxide, in sufficient concentration and quantity may trigger risk management plan or California Accidental Release Prevention requirements. All hazardous materials storage or process vessels would be designed in conformance with applicable American Society of Mechanical Engineers codes. Bulk storage tanks or totes would have secondary containment structures capable of holding the tank or tote volume plus an allowance for precipitation. Concrete containment structures would be coated with a chemical resistant coating to ensure long-term integrity of the containment structure. As with all other aspects of the BSPP, appropriate safety programs would be developed to address hazardous materials storage and use, emergency response procedures, employee training requirements, hazard recognition, fire safety, first aid/emergency medical procedures, hazardous materials release containment/control procedures, hazard communications training, Personal Protective Equipment training, and release reporting requirements. In short, the additional chemicals on site would not cause impacts that are substantially different than those previously analyzed.

Addition of an On-Site Fuel Depot During Construction

The gasoline storage tank would be subject to air permit requirements under Mojave Desert Air Quality Management District (MDAQMD) rules; the diesel tanks are exempt from permit requirements in the MDAQMD pursuant to Rule 219(E)(14)(c).

The emissions from the two 10,000-gallon diesel storage tanks and the 500-gallon gasoline storage tank proposed for BSPP were calculated using EPA’s TANKS 4.09D tank emission estimation program and the maximum annual fuel usage during the construction and operational phases of the project. The maximum annual fuel usage was calculated from the Carbon Dioxide (CO2) emissions derived from the OFFROAD2007 and EMFAC2007 models for each equipment and vehicle type used during the construction of the project. The CO2 emissions were divided by the Air Resource Board’s default CO2 emission factor, which is based on the carbon content of the fuel, to estimate the fuel consumption. This method was selected to calculate fuel usage because the OFFROAD2007 model incorporates fuel economy and average load rates into the emission factors, so additional adjustments are not required. To prevent the underestimation of annual emissions, it was assumed that the maximum monthly fuel usage for the construction of the Project would occur every month. The maximum annual gasoline and diesel usage from the operation of BSPP was taken from the greenhouse gas emissions calculations using the same method as described for construction. This method would overestimate the fuel throughput and corresponding tank emissions during both construction and operations because some of the equipment is expected to be refueled off site. Nonetheless, VOC emissions from these tanks are not expected to cause or contribute to a significant adverse air quality impact.

Diesel fuel is the hazardous material with the greatest potential for environmental consequences during project construction due to the volume that would be used in construction equipment and the frequent refueling that would be required. When refueling is needed, vehicles would enter a dedicated refueling area where secondary containment would be present to minimize the impact to the environment. A dedicated location would increase the ability to effectively manage spills, leaks, storage, handling, loading/unloading, and other activities associated with vehicle fueling. Any fuel spilled would be contained and promptly cleaned up with no contaminated soil generated. This change is expected to decrease the potential for environmental impacts associated with refueling spills and, thereby, not to cause impacts that are substantially different than those previously analyzed.

No new alternatives were added. Accordingly, NEPA does not require supplementation or recirculation on this basis.

The NEPA process is designed to provide information to examine impacts and allow for the creation of mitigation measures and alternatives to identify ways to improve a project while further minimizing its impacts. The information disclosure and sharing process inherent in NEPA does not exist in a vacuum. Improvements, additional mitigation, and/or project design features frequently are added to a proposed project as a result of comments received on a draft EIS. The overall design of, and impacts related to, the proposed BSPP as analyzed in the PA/FEIS have not greatly changed since the SA/DEIS, and none of the information that became available after the SA/DEIS has been considered “significant” for NEPA purposes after a thorough review.

The data relied upon in the SA/DEIS was adequate to inform the BLM’s consideration of the proposed BSPP and to allow a reasoned choice among alternatives. Accordingly, the additional information requested in various comments is not necessary for NEPA adequacy and therefore would not trigger a need to supplement. Further, for example, although the Energy Commission’s RSA and additional studies have become available since the issuance of the SA/DEIS, this information merely compliments or clarifies prior understandings or confirms earlier assumptions. Additional rationale for the elimination of alternatives from further consideration similarly compliments or clarifies information already provided. NEPA does not require supplementation or recirculation under these circumstances.

Other comments suggest that supplementation should occur based on an alleged inadequacy of existing planning documents to govern the BLM’s consideration of a project of the proposed scale, or because of a “sheer volume” of additional information, or because the SA/DEIS did not demonstrate compliance of the proposal with LORS. These proffered reasons are not among the bases upon which NEPA authorizes supplementation.

The SA/DEIS and the PA/FEIS contain sufficient information, including information regarding resources on the BLM managed lands on the BSPP site, and analyses to understand and document the effects of the BSPP project, the Agency Preferred Alternative, the other Action Alternatives, and the No Action Alternatives and, therefore, recirculation of the environmental document is not required.

5.5.4.8 Biological Resources

Commenters and Comments Addressed

Commenter	Comments
Defenders of Wildlife	4-11, 4-18, 4-20, 4-21
The Wilderness Society and the NRDC	5-06, 5-16
Sierra Club	6-11, 6-12, 6-13, 6-14, 6-15, 6-17, 6-33, 6-34, 6-35
Center for Biological Diversity	8-01, 8-26, 8-27, 8-28, 8-29, 8-30, 8-31, 8-32, 8-33, 8-35, 8-36
The Wildlife Society	9-03, 9-04, 9-05, 9-06, 9-07
Environmental Protection Agency	10-05

Summary of Issues Raised

1. ***Adequacy of Analysis*:** Various comments question the adequacy of analysis, including whether: baseline information or surveys are adequate and, therefore, whether the impact analyses reliant upon them are adequate; the identification of affected special-status species is adequate and, therefore, whether the impact analyses based on these identifications, are adequate; and the cumulative impact analysis is adequate.

2. ***General Biological*:** Various comments express opinions about general biological issues, including: the effects of global climate change on the affected environment (which is addressed in Common Response 5.5.4.9); whether impacts can be fully mitigated; concerns that recovery from the proposed action would be slow, over longevity of mitigation, about details of mitigation plans and about fencing impacts and mitigation for such impacts; about the adequacy of commitments for mitigation funding, implementation and flexibility; and the effect of workers on environmental degradation and mitigation for such degradation.

3. ***Vegetation*:** Comments suggest that the Western half of the BSPP is most biologically diverse and should be avoided; express concerns about ephemeral drainages and alternatives to their destruction; and state that special-status plants were not adequately evaluated or surveyed.

4. ***Wildlife*:** Comments express concern about bighorn sheep surveys, impacts and mitigation; about insects; about badgers and kit foxes, including relocation concerns; desert tortoise monitoring, impacts, movements, relocation, and the Sonoran population; other special-status wildlife besides desert tortoise; lasting effects to wildlife; the impacts of lighting, the proposed evaporation ponds, and mirrors, including whether the proposed mitigation of such impacts are adequate; the declining status of loggerhead shrike; and Golden eagles, including about the adequacy of the impact analysis and proposed mitigation for impacts on foraging habitat.

Response

Adequacy of Analysis

The DEIS adequately analyzes impacts on biological resources, including vegetation and wildlife. The Applicant and consultants coordinated with BLM, USFWS, CDFG, and CEC on the requirements for species-surveys and survey protocols, if any. A great deal of current baseline information was acquired for this proposed action, including that presented in the SA/DEIS and referenced from various documents such as the Application For Certification (AFC), the Biological Resources Technical Report (AECOM 2009; AECOM 2010w) and the CEC RSA. See PA/FEIS Sections 3.18 and 3.23, which describe the affected environment for vegetation and wildlife, respectively. Most biological data relevant to the BSPP Study Area were collected in the last three years. Additionally, reports regarding Western Burrowing Owl (AECOM 2010v), surveys conducted in the spring of 2010 for special-status plants (AECOM 2010w), golden eagles (AECOM 2010x), Nelson's Bighorn sheep (AECOM 2010y), and a revised Biological Resources Technical Report (AECOM 2010w) were recently submitted (dated June 16, 2010), confirm and refine prior assumptions and understandings, and were used in completing the PA/FEIS.

The DEIS and PA/FEIS identify special-status species and sensitive plant communities and analyze direct, indirect, and cumulative impacts to desert tortoise, Mojave fringe-toed lizard, special-status plants, and Desert Dry Wash Woodland (which is the same as desert microphyll woodland). See PA/FEIS sections 3.18 and 4.18 (vegetation), PA/FEIS sections 3.23 and 4.23 (wildlife), and the detailed cumulative impact analysis in Appendix H.

The presence of fossorial mammals such as badgers can be detected while performing other surveys for other focal species, such as desert tortoises and western burrowing owls. Badger population size and dynamics are not necessary to determine if the proposed action could impact badgers, or by what means any such impacts would manifest themselves.

The detailed cumulative effects analysis for wildlife and vegetation is found in Appendix H. Cumulative impact analysis is not an exercise in determining current conditions and trends, but requires considering effects of past, present, and reasonably foreseeable actions. The Appendix includes analyses of Wildlife Habitat Management Areas and connectivity corridors. It also includes an analysis of cumulative effects to burrowing owls. Additionally, a Western Burrowing Owl Technical Report, (AECOM 2010v) has been completed and was used in preparation of the PA/FEIS. Two alternatives that were analyzed include a Reconfigured Alternative and a Reduced Acreage Alternative that have varying impacts on vegetation and wildlife. These impact differences are shown in sections 4.18, impacts to vegetation resources, and 4.23, impacts to wildlife resources. Both the DEIS and the PA/FEIS discuss cumulative impacts to wildlife movement and connectivity (see Appendix H). Interpretations of conformance with BLM policy set forth in Manual sections 6500 or 6840 or FLPMA mandates are subject to matters of scale. The multiple use mandates of FLPMA for uses and protections cannot be met on every acre at every point in time. Future regional and coordinated planning efforts are outside the scope of the PA/FEIS.

General Biological

A response to comments about biological resources in the context of global climate change is provided in Common Response 5.5.4.9. Both sections 4.18, concerning impacts to vegetation resources, and 4.23, concerning impacts to wildlife resources, discuss residual impacts and unavoidable adverse impacts from the proposed action and alternatives. Mitigation Measure BIO-23 states that no fewer than 30 days prior to the start of BSPP-related ground disturbing activities the Applicant shall provide a draft Decommissioning and Reclamation Plan. The plan shall be finalized prior to the start of commercial operation and reviewed every five years thereafter. It is recognized that recovery of the site would be measured in decades, not years.

Mitigation measures have become more specific and refined since the SA/DEIS. As in the paragraph above, details such as schedules for plans or implementing various measures were developed, methods for verification of implementation were specified, and funding mechanisms and flexibility were explored. In particular, use of the National Fish and Wildlife Foundation's REAT account was included. Biological mitigation measures can be found in sections 4.18 and 4.23.

Mitigation Measure Bio-9 includes criteria and specifications for desert tortoise exclusion and perimeter security fencing, including maintenance and repair at channels after flood/heavy rainfall events, as does Mitigation Measure Water-14 for channel, fence, and gate maintenance. Impacts of fencing are discussed in Section 4.23, Impacts to Wildlife Resources, including the subsection on residual impacts.

Each section in Chapter 4 may have mitigation measures recommended to minimize or avoid impacts during construction or operations. Many mitigation measures are proposed for the project; 27 for biological resources alone, and are intended to avoid, reduce, minimize, or compensate for impacts of the proposed action. The PA/FEIS identifies residual impacts and unavoidable adverse impacts at the ends of sections 4.18 and 4.23 for vegetation resources and wildlife resources, respectively. These would constitute lasting impacts to vegetation and wildlife resources even after mitigation measures are implemented.

Uncertainty is a common factor in predictions of environmental effects, whether natural or anthropogenic. Several of the mitigating measures have monitoring and adaptive management components in case predictions do not match reality. In the development of weed or fire management plans, for instance, adaptive management components deal with issues of uncertainty. Future regional and coordinated planning efforts are outside the scope of the PA/FEIS.

Vegetation

The BLM agrees that the western half of proposed BSPP is more biologically diverse. The PA/FEIS analyzes a Reconfigured Alternative, a Reduced Acreage Alternative, and No Action Alternatives to the proposed action that show varying impacts to ephemeral drainages including Desert Dry Wash Woodland, Unvegetated Ephemeral Dry Wash, and Vegetated Ephemeral Swales. Differing alternatives avoid different amounts of habitat. Impacts to wildlife movement are discussed in Section 4.23 and the detailed cumulative impacts analysis, Appendix H. In addition, numerous mitigating measures would reduce some impacts to habitats in ephemeral drainages. These mitigating measures include BIO 1-8, 14, 22, and 23.

An updated BSPP Biological Resources Technical Report (AECOM 2010w) became available on June 16, 2010. This report has additional data and analysis from rare plant surveys conducted on more species and areas in 2010. This report clarifies and confirms prior assumptions and understandings, and was used in preparation of the PA/FEIS. In addition, Mitigation Measure BIO-19, Special-status Plant Impact Avoidance, Minimization, and Compensation, would reduce impacts to these species and is tailored to their phenology.

Wildlife

Nelson's bighorn sheep scat and tracks were found in surveys. Figure 5.3-9 does not show distribution throughout the Disturbance Area, but one location of bighorn scat in the southwest portion of the Disturbance Area. Surveys by air and site conducted in conjunction with golden eagle surveys were conducted in April and May of 2010. Additional information on bighorn sheep survey results became available on June 16, 2010 (AECOM 2010w), which clarified or confirmed prior assumptions and understandings, and was incorporated into the PA/FEIS. Federally endangered bighorn sheep do not occur in the BSPP Study Area. There is a long history of developing water sources such as guzzlers to expand habitat use of bighorns into new areas or to influence their use of certain habitats for extended, rather than short periods. For example, the Society for the Conservation of Bighorn Sheep, which is working with the BLM and CDFG, reports that there are now more than 50 guzzlers available to wild sheep in San Bernardino, Riverside, Inyo, Imperial, and San Diego counties; the first among them was installed in April, 1971.

The BSPP Biological Resources Technical Report (AECOM 2010w) indicated that nineteen badger dens and over 90 animal burrows showing evidence of predation by badgers were observed in the Study Area. Any relocation/translocation effort is likely to entail risk to the translocated animal, be it badger or kit fox. Biological studies showed suitable habitat is found throughout the study area and outside the disturbed areas of each of the action alternatives. When animals such as badgers or kit fox are moved into new areas already occupied by individuals of the same species, conflicts for food, water, cover, and space can, and do, occur. Additional studies on translocated animals would be impractical given the small numbers of animals involved. "Take" is a recognized type of impact and as such, is not a trigger for studies of the nature suggested.

Issue identification revealed no concerns about impacts on insects. The Applicant and consultants consulted with BLM, USFWS, CDFG, and CEC on needs for species surveys and survey protocols, if any. Additionally, reviews of literature and databases for special-status species revealed no special-status insects within the BSPP Study Area.

Impacts of BSPP alternatives on the desert tortoise and desert tortoise movement are found in PA/FEIS Section 4.23. Detailed cumulative impact analysis is found in Appendix H. In addition, consultation under the federal ESA and CESA concerning BSPP effects to the desert tortoise is ongoing. The BSPP desert tortoise Relocation/Translocation plan (Mitigation Measure BIO-10) would be submitted in final form no later than 30 days before site mobilization. Compensation actions (Mitigation Measure BIO-12) would begin before ground disturbing activities are started (PA/FEIS Section 4.23). The PA/FEIS discusses impacts to the threatened Mojave population of the desert tortoise and its critical habitat; the Sonoran population does not occur in California. In addition, consultation under the federal ESA and CESA concerning BSPP effects to the desert tortoise is ongoing. The BLM agrees that monitoring of desert tortoises is difficult, and that accurately obtaining population estimates is difficult, also. Further, the BLM agrees that disease testing should be a part of the Relocation/Translocation Plan. Accordingly, BLM proposes to supplement Energy Commission Condition of Certification BIO-10 with BLM BIO-10.

> **BLM BIO-10:** The Applicant shall develop and implement a final Desert Tortoise Relocation/Translocation Plan (Plan) that requires translocation to follow the Desert Tortoise Council Guidelines for Handling Desert Tortoise During Construction and requires that any tortoises to be moved more than 1,000 feet, as well as any population within 16,400 feet (approximately 5 kilometers) of the proposed site of relocation or translocation, shall be tested for disease, including by enzyme-linked immunosorbent assay (ELISA).

The comment requesting a CEC Condition of Certification to require a study on lighting has been received by the California Energy Commission.

Impacts to migratory birds are detailed in PA/FEIS Section 4.23. Concave mirrors that track the sun are unlike other mirrors for which bird strikes have been documented. Uncertainty over the scale of impacts such as bird strikes on mirrors is the reason why developing an avian protection plan with adaptive management features is a proposed mitigation measure (see BIO-15).

Section 4.23, Impacts to Wildlife Resources, discusses the impacts of evaporation ponds. Mitigation Measure BIO-25 discusses pond netting and monitoring. Additionally, the evaporation ponds are discussed in Sections 4.11, Public Health and Safety, and 4.19, Water Resources.

The DEIS and PA/FEIS consider the species mentioned in the comments and many others. Both the DEIS and the PA/FEIS (Section 4.23) show that the desert tortoise is only one of many native species that would be impacted by the BSPP. A full list of vegetation and wildlife resources considered in the affected environment is found in Sections 3.18, Vegetation Resources and 3.23, Wildlife Resources.

The BSPP Golden Eagle Survey Results report was submitted on June 16, 2010 (AECOM 2010x), clarifies and confirms prior assumptions and understandings, and was used in preparation of PA/FEIS Sections 3.23 and 4.23. Mitigation Measure BIO-12 (desert tortoise compensation) would compensate with like habitat in the same area for the lost golden eagle foraging habitat.

5.5.4.9 Climate Change / Greenhouse Gas Emissions

Commenters and Comments Addressed

Commenter	Comments
Defenders of Wildlife	4-01, 4-27, 4-28, 4-29, 4-30, 4-31, 4-32, 4-33, 4-34, 4-35, 4-36, 4-37, 4-39, 4-39, 4-40
Center for Biological Diversity	8-23, 8-43, 8-44, 8-45, 8-47, 8-48
EPA	10-13, 10-23, 10-24, 10-25, 10-26

Summary of Issues Raised

1. ***Air Quality*: ** Whether the DEIS adequately identifies and impacts to air quality and GHG emissions.

2. ***Biological Resources*: ** Whether the analysis of effects of global climate change on the affected environment is adequate, including with respect to the importance of wildlife movement corridors and habitat connectivity and identification of strategies to monitor climate change effects on groundwater or special-status species.

3. ***Carbon Sequestration:*** Whether the analysis of effects of global climate change is adequate, including to what extent the proposed action would result in reduced carbon sequestration and/or emission of carbon stored in soil organic matter and vegetation currently located on site.

4. ***Hydrology*: ** Whether the analysis of effects of global climate change is adequate, including to what extent climate related changes to hydrologic resources could affect the proposed action or be exacerbated by the proposed action. Specific issues include drainage, flooding, snowpack, and water supply.

5. ***Hazards:*** Whether the analysis of effects of global climate change is adequate in terms of potential hazards, including increases in potential heat-related hazards, as a result of climate change.

6. ***Soils*: ** To what extent the climate change analysis provided in the EIS should address potential changes in erosion patterns as a result of changes in flooding frequency and other drainage issues that could be exacerbated by climate change.

Response

A discussion of climate change, including the effects of the proposed action on climate change, was included in DEIS Chapter C.1, Air Quality. The BLM acknowledges that additional discussion is warranted given recent federal directives regarding the consideration of climate change in planning documents promulgated by the United States Department of the Interior. Therefore, PA/FEIS Section 4.3 has been updated. PA/FEIS Section 4.3, Impacts to Global Climate Change, includes additional details and discussion relative to the DEIS, including a review of the potential contribution of GHGs by the BSPP, the potential climate-related benefit that would be provided by the BSPP, and the potential impacts of climate change-related effects (such as increases in flooding or decreases in water supply) on the BSPP.

Air Resources

Air resources, including fugitive dust and GHG emissions are discussed in DEIS Chapter C.1, Air Quality, and PA/FEIS Sections 3.2 and 3.3 (affected environment, air quality and climate change, respectively) and PA/FEIS Sections 4.2 and 4.3 (environmental consequences, air quality and climate change, respectively). Concerning impacts to air resources, PA/FEIS Section 4.02, *Air Resources*, includes a detailed dispersion modeling analysis of PM10 and ozone emissions for the construction phase and operation phase of the proposed BSPP, including those emissions that would occur as a result of fugitive dust. Mitigation Measure AQ-SC3, *Construction Fugitive Dust Control*, would be required to be implemented during construction. The Applicant also would implement similar fugitive dust controls during the operations phase of BSPP (see the air quality *Operations-Related Mitigation Measures* discussion in Final EIS Section 4.02). Energy Commission Condition of Certification AQ-SC7 (see PA/FEIS Appendix G) would mitigate operation period fugitive dust emissions to ensure compliance with state and local regulations and requirements. Although climate change could result in some degree of reduction of soil moisture, as discussed below, soil moisture is already very low under current conditions. Any further reductions in soil moisture would be minimal in terms of the absolute amount of water contained in soils on the proposed site. Therefore, any potential further reductions in soil moisture associated with climate change are not anticipated result in a substantial increase in fugitive dust emissions. The previously proposed AQ-SC7, and other air quality mitigation measures proposed in the SA/DEIS and PA/FEIS, would be sufficient to meet federal, state, and local requirements regarding fugitive dust.

Sulfur hexafluoride (SF6) emissions would be associated with incidental leakage from the circuit breakers proposed as part of the high voltage power transmission facilities for the BSPP (see PA/FEIS Section 3.3). SF6 and the other GHGs analyzed in the PA/FEIS are measured in units of carbon dioxide equivalent (CO2e). The amount of SF6 that could leak from the circuit breakers is estimated to be approximately 24 CO2e per year (see PA/FEIS Table 4.3-2). However, given that operations of the BSPP would result in a substantial net reduction of GHG emissions by replacing conventional high GHG-producing energy sources with low GHG-producing renewable solar power, there is no need to provide additional offsets for GHG emissions that would be associated with circuit breaker leakage.

GHG emissions associated with water use and the life-cycle of building materials are not included in the analysis. It is acknowledged that there would be additional indirect emissions associated with these sources; however, the emissions related to water use would not significantly change the emissions totals presented in Table 4.3-2 and the assumptions that would be required to develop the analysis of life-cycle emissions of the building materials would be speculative; guesses would not likely provide an accurate representation of such emissions.

Given that operations of the BSPP would result in a substantial net reduction of GHG emissions by replacing conventional high GHG-producing energy sources with low GHG-producing renewable solar power, there is no need to require additional alternatives or mitigation measures to achieve additional GHG offsets for the BSPP. In the context of construction emissions, for example, short-term construction-related GHG emissions easily would be offset by BSPP operations within the first several months of the facility's operation.

Biological Resources

Biological resources could be affected as a result of climate change. Distribution patterns of species generally are expected to shift according to regional changes in temperature and precipitation, while the location of wildlife migration corridors and the extent of invasive species also may be altered.

Concerning fisheries, the BSPP does not contain any perennial or other surface waters that contain fisheries resources. Therefore, there would be no direct, indirect or cumulative contribution to climate change by the BSPP, and climate change-related impacts on fisheries resources would not affect the BSPP. No further discussion is warranted.

Concerning mitigation value waterways to be acquired and protected, as discussed in SA/DEIS Chapter C.2 and PA/FEIS Sections 3.18 (vegetation) and 4.21 (wildlife), implementation of the proposed action would require mitigation for biological resources values that would be lost as a result of implementation of the BSPP. Also as discussed, the proposed mitigation lands would be required to be equivalent in terms of habitat value, and at a replacement ratio of at least 1:1 (typically greater than 1:1, as specified in SA/DEIS Chapter C.2) for direct impacts. Unfortunately, climate change could potentially result in adverse effects on biological resources located on these mitigation lands. However, given that mitigation lands must be similar in biological resources value as compared to lost resources on site, it is anticipated that climate-related effects for the mitigation lands would be similar to those located at the proposed site, if the BSPP were never built. Therefore, potential reductions in the biological resources values of mitigation land values resulting from climate change are expected to be similar to on-site conditions in the absence of the BSPP, and no further discussion is warranted.

It would be extraordinarily difficult, if possible at all, to provide a broad-based climate analysis to a particular special-status species or habitat. Distribution patterns of species are generally expected to shift according to regional changes in temperature and precipitation, while the location of wildlife migration corridors and the extent of invasive species may also be altered. BSPP impacts on habitat fragmentation, habitat linkages, and cumulative impacts of multiple projects on corridors and connectivity are analyzed in the PA/FEIS and are only heightened in their importance by the effects of global climate change. As discussed in Section 4.3, adverse impacts of global climate change are expected to continue; however, international, national, and regional efforts, as well as the proposed action, are expected to reduce the rate at which such change occurs, and, thereby, to benefit the environment by minimizing the environmental impacts of climate change. Appropriate climate data would be collected while groundwater monitoring and special-status species monitoring occurs (see Mitigation Measures Water-16, Bio-7 and BLM-Bio-7a). Analysis of monitoring resource and project effects would consider available climate data when evaluating trends.

Carbon Sequestration[3]

Another comment raises the issue of potential loss or destruction of existing sinks of carbon. These include losses of soil carbon from desert soils, loss of existing vegetation on site, and loss of carbon sequestration that would have occurred on site over the life of the BSPP, if the proposed action never were to be installed/implemented. Potential carbon related effects related to land use change have been a subject of scientific, government, and interest group interest and research for the last several years, and many researchers have provided estimates of the amount of carbon contained in desert soils and vegetation, and the amount of carbon taken up annually by ecosystems in the Mojave Desert and similar climates. Estimates vary substantially based on the specific location of interest.

Campbell et al (2009) compiled several recent peer reviewed studies and other available data to assess the adequacy of a 500 MW solar thermal power plant installed in the Mojave Desert, when accounting for GHG emissions from land use change, as described above. The study compares the emissions of the solar thermal plant with a coal-fired Integrated Gasification Combined Cycle (IGCC) plant, assuming a 90 percent carbon capture sequestration rate for the IGCC plant. Results from the study indicate that, over the lifetime of the solar thermal plant, the solar thermal plant would save a total of 27,916,997 metric tons (30,773,222 short tons) of carbon emissions as compared to the IGCC with 90 percent carbon capture. This is likely a substantial underestimate of the carbon emission savings that would occur under the proposed action for two reasons: (1) the assessment of carbon emissions for the IGCC plant does not include emissions associated with land use change at the IGCC plant or the coal mine, which would supply the IGCC plant, and (2) the IGCC assessment includes carbon capture sequestration (CCS) at a 90 percent capture rate.

There has been much discussion regarding CCS and its potential to reduce carbon emissions from fossil power plants. However, to date, only pilot-scale CCS projects have been implemented in the U.S. Therefore, the fossil power that the proposed action would displace would not include CCS. Almost all of California’s fossil-based electricity is supplied from natural gas without carbon capture, and carbon emissions California’s existing grid mix of power would be many times higher than the IGCC with CCS case that is considered under the proposed action. Therefore, while the BLM acknowledges that the proposed action would result in increased carbon emissions due to land use changes on site, the total mass of carbon emitted due to these land use changes would be significantly less than the net carbon emission savings of the power plant, based on displacement of existing fossil power production.

3 See generally, Holly Campbell, et al., 2009, Here Comes the Sun: Solar Thermal in the Mojave Desert—Carbon Reduction or Loss of Sequestration? (March 13, 2009) <http://people.oregonstate.edu/~spencerd/Deidras_Homepage/Current_Projects_files/Solar%20Thermal%20Mojave%20Desert.pdf>.

Hydrology

A discussion of climate change, including the effect of the proposed action on climate change, as well as the effects of climate change on the proposed, was included in DEIS Chapter C.1, Air Quality, and is included in PA/FEIS Section 4.3. Given recent federal directives regarding the consideration of climate change in planning documents, PA/FEIS Section 4.3.3 includes supplemental information addressing direct and indirect impacts of climate change on the proposed action; sea level rise, snowpack, dilution, and water temperature; and flooding, drainage, and erosion.

One commenter requested analysis of several potential effects related to hydrologic resources and climate change that would not be relevant to the proposed action. These include: sea level rise, snowpack, dilution, and water temperature. Nonetheless, these topics are addressed in PA/FEIS Section 4.3.3.

As discussed in SA/DEIS Chapter C.9, Soil and Water Resources, the proposed action would include a series of engineered facilities, including rerouted drainage/flood channels, berms, and on-site drainage facilities that would channel, retain, and otherwise manage stormwater and flood flows on site and in the areas immediately surrounding the BSPP. Also discussed in SA/DEIS Chapter C.9, the proposed action would be designed to account for stormwater drainage and flood flows, and Energy Commission Conditions of Approval SOIL&WATER-11 through -14 (see PA/FEIS Appendix G) would require revisions to the proposed drainage report and plans, completion of a detailed FLO-2D analysis, and implementation of drainage channel design and channel erosion protection measures. In order to ensure that these Conditions of Approval adequately address potential drainage and flooding effects associated with climate change, the following BLM-specific mitigation measures supplement, and do not replace, the Energy Commission's Conditions of Certification, and have been incorporated into the PA/FEIS:

> **BLM-SOIL&WATER-11:** The Applicant shall provide a revised Drainage Report which includes an assessment of potential effects of climate change on the Project, as related to drainage and flood flows, which provides for estimated/most likely scenario increases for a 100-year storm event considering the effects of climate change. Results from this assessment shall be used as a planning basis for Project engineering design. Alternatively, the Applicant shall complete and adhere to the recommendations of an adaptive management strategy during operations, which would implement additional engineering design or mitigation measures as warranted, as future climate change scenarios develop and become more predictable, during Project operations. If the adaptive management strategy option is selected, the Applicant shall monitor existing climate change models and data, and ensure that design standards for the plant that sufficiently account for increases in flood flows are implemented.
>
> > **Verification:** The proposed adaptive management strategy for climate change shall be approved by both the AO and CPM.
>
> **BLM-SOIL&WATER-12:** The Applicant shall provide a detailed hydraulic analysis utilizing FLO-2D which models pre- and post-development flood conditions for the 10-, 25-, and 100-year storm events that incorporate the likely effects of climate change on increased rainfall and flooding.

Verification: The Applicant shall submit a detailed FLO-2D analysis, including model runs for climate change scenarios, to both the AO and CPM for their review and comments with the 30% plan Grading and Drainage Plans and revised Project Drainage Report required in **SOIL&WATER-11** and **BLM-SOIL&WATER-11**. Applicant will address comments provided by the both the AO and CPM until approval of the analysis is issued.

BLM-SOIL&WATER–14: The Applicant must provide revised preliminary Grading and Drainage Plans that shall account for potential increases in stormwater flows and flooding, as related to climate change, as assessed under SOIL&WATER-11 and BLM-SOIL&WATER-11 and SOIL&WATER-12 and BLM-SOIL&WATER-12.

Verification: The required information and criteria shall be incorporated into the Grading and Drainage Plans and with all subsequent submittals as required in **BLM-SOIL&WATER-11, SOIL&WATER-11** and **BLM-SOIL&WATER-12** and **SOIL&WATER-12**. The Applicant shall address all comments related to the channel erosion protection design through final plan approval.

Concerning water resources availability, and discussed in SA/DEIS **Chapter C.9. Soil and Water Resources**, PA/FEIS Section 3.20 and PA/FEIS Section 4.19, the site is located within the lower Colorado River watershed, and drainages on site are tributary to the Colorado River. Surfaces water at the BSPP area and its immediate vicinity occurs only during substantial precipitation events, where surface runoff occurs. Estimates of the potential effects of climate change on the frequency and amount of rainfall in the west vary, however, most studies concur that in the desert southwest, some degree of reduction of precipitation will occur. Seager et al (2007) and Christensen et al (2004) completed extensive reviews and modeling of potential climate change effects on the Colorado River watershed and other southwestern watersheds, including several climate change scenarios. The authors conclude that precipitation and runoff within the watershed could generally decrease, while periods of drought could increase, resulting in an overall reduction in the availability of water along the Colorado River. These scenarios could result in moderate to substantial effects on water supply availability, and could affect the ability of water rights holders along the Colorado River to divert their full entitlements.

As discussed in SA/DEIS Chapter C.9 and PA/FEIS Section 4.19, the BSPP would not rely on surface water from the Colorado River, but instead would rely on groundwater pumped from the aquifer underlying the proposed site. In the event that climate change results in reduced precipitation within the BSPP area and its vicinity, some degree of associated reduction in groundwater recharge could occur. However, this situation would not result in increased water requirements by the BSPP, and would not result in additional groundwater pumping during project construction or operations. Additionally, as discussed in SA/DEIS Chapter C.9 and PA/FEIS Section 4.19, the rate of groundwater pumping for the BSPP would be minor in comparison to the total volume of groundwater contained in storage. Therefore, even with potential reductions in total precipitation volume associated with future climate change, the ability of the BSPP to meet its water needs would not be reduced, and no increase in pumping would be required as a result of the effects of climate change.

Hazards

Potential risks associated with wildfire are discussed in SA/DEIS Chapter C.14, Worker Safety and Fire Protection, and PA/FEIS Sections 3.22 and 4.20, Wildland and Fire Ecology. SA/DEIS Chapter C.14 and PA/FEIS Sections 4.11 and 4.12, Public Health and Safety, discuss potential fire-related risks, and also ensure that adequate fire control personnel, infrastructure, and associated planning would be completed and/or available to the BSPP, to ensure compliance with federal, state, and local regulations, and to ensure worker safety.

Climate change would result in a small but general increase in temperature, and could also result in an increase in the frequency of extreme weather events that could generate wildfires, such as increased frequency of drought and heat waves, during operation of the BSPP. In compliance with applicable regulations and mitigation proposed in SA/DEIS Chapter C.14 and PA/FEIS Chapter 4, the Applicant would be required install a fire protection/control system on site in including a fire water supply system and associated infrastructure, and to comply with state and federal regulations regarding worker safety and training. Additionally, under Energy Commission Condition of Certification WORKER SAFETY-7 (see, PA/FEIS Appendix G), the Applicant would be required to provide funding to the Riverside County Fire Department to ensure available resources to fight potential fires on site. Although the risk of wildfire that could affect the site could increase as a result of climate change, these potential increases in risk are expected to be offset by ongoing compliance with the worker safety and fire protection regulations and mitigation measures specified in SA/DEIS Chapter C.14 and PA/FEIS Sections 4.11 and 4.20. Therefore, no additional mitigation is warranted.

Concerning heat waves, the frequency of occurrence and the severity of heat waves could increase as a result of climate change. Heat waves could result in increased potential risk to BSPP employees. However, as discussed in SA/DEIS Chapter C.14, PA/FEIS Section 4.3, and Common Response 5.5.4.9, Energy Commission Condition of Certification WORKER SAFETY-2 (see PA/FEIS Appendix G) would implement an operation period heat stress protection plan that is based on and expands on Cal-OSHA requirements. This plan would provide measures to protect workers against the effect of heat-related hazards, whether or not those hazards are caused by climate change. Although the frequency and/or intensity of heat wave events could increase as a result of future climate change, the heat stress protection plan would meet state requirements for worker safety. Therefore, no further discussion or mitigation is warranted.

Soils

As discussed in SA/DEIS Chapter C.9, Soil and Water Resources, and PA/FEIS Sections 3.15 and 4.14, concerning the affected soil resources environment and environmental consequences relating soils resources, respectively, almost all rainfall that occurs in this region of California is lost through evaporation and evapotranspiration. Soil moisture in the BSPP area and its vicinity is characteristically low. As discussed previously, although precise changes are impossible to predict, climate change could result in increases in extreme weather events, including droughts and heat waves, and an overall reduction in precipitation. These conditions could result in a concurrent reduction in soil moisture content at the proposed site and regionally. However, reductions in soil moisture content would not affect BSPP operations, and would not require any change in water resources usage. Additionally, the proposed facilities would in no way support additional drying of soils on site, or otherwise exacerbate potential changes in soil moisture associated with climate change. Therefore, no additional change would occur, and no further discussion is warranted.

5.5.4.10 Water Rights

Commenters and Comments Addressed

Commenter	Comments
Metropolitan Water District of Southern California	3-04
Defenders of Wildlife	4-23, 4-24, 4-25, 4-26

Summary of Issues Raised

1. Comments suggest that use of groundwater from Palo Verde Groundwater Basin, which is tributary to the Colorado River, would require the applicant to obtain a contract for use of said water, and that the acquisition or creation of offsets to mitigate withdrawal does not obviate need for a contract. Further, to determine the viability of the project, BLM would have to analyze the likelihood of the Applicant obtaining a legal right to use the water supply and the reliability of the supply for the life of the project.

Response

The BLM agrees that use of Colorado River water would require the Applicant to obtain a legal entitlement, regardless of whether such use could be mitigated or offset. Affected water supplies, including the Colorado River and local groundwater supplies, are identified in PA/FEIS Section 3.20, Water Resources. The potential effects of the BSPP's proposed well to the groundwater basin are disclosed in PA/FEIS Section 4.19, Water Resources, with modeling to show the impacts. Comments questioning the affects of the project's wells on Colorado River water appear to be based on the U.S. Bureau of Reclamation's and U.S. Geologic Survey's on-going rule-making process regarding the accounting surface and the impacts on the Colorado River. In response to this issue, the Energy Commission proposed several conditions of certification that would require the Applicant to provide for water rights or acquire rights in the event that a determination is made that the project's wells, in fact, impact the Colorado River. These conditions of certification are incorporated into the PA/FEIS as mitigation measures, and are set forth in PA/FEIS Appendix G (see, e.g., Soil & Water-2 and Soil & Water-16). Implementation of the BSPP would be subject to myriad permitting and entitlement requirements. Unless and until all required approvals are obtained, the project could not proceed. If the Applicant is unable to obtain a legal right to use Colorado River water, it would not be able to implement the project. In other words, the BSPP would be viable upon obtainment of the necessary water rights and all other requisite approvals; by contrast, it would not be viable without water rights if Colorado River water were, in fact, required.

5.5.4.11 Water Resources

Commenters and Comments Addressed

Commenter	Comments
Metropolitan Water District of Southern California	3-05
The Wilderness Society and the NRDC	5-07
Sierra Club	6-23, 6-24, 6-25
The Wildlife Society	9-09
EPA	10-02, 10-03, 10-04, 10-05, 10-08, 10-9, 10-10, 10-11, 10-12

Summary of Issues Raised

1. Some comments were raised concerning impacts on water resources, including groundwater and connectivity to the Colorado River, should be considered, including in the cumulative context, and question the documentation of the effectiveness of proposed mitigation measures.

2. Other comments question whether the BSPP is a hybrid wet-cooled proposal and, if so, request additional analysis.

3. Other comments pertain to potential impacts on waters under the jurisdiction of the United States; downstream flow, sedimentation, drainage channels, and the effects of fencing on drainage systems; as well as water usage and supply and potential effects on streams.

Response

Groundwater Resources and Water Supply

Water resources usage, including groundwater withdrawals, groundwater basin characteristics, and water supply, are described in PA/FEIS Section 3.20; environmental consequences relating to such usage are analyzed in PA/FEIS Section 4.19, which provides a detailed review of potential impacts associated with effects of the proposed action on the groundwater table relevant to the Palo Verde Mesa Groundwater Basin, effects on groundwater levels and other groundwater users, effects on surface water including springs/seeps/playa lakes, and potential effects on water supply in the Colorado River. Mitigation measures also are identified to reduce potential effects related to water resources availability, including adherence to a groundwater mitigation, monitoring, and reporting plan; monitoring and constraints on groundwater pumping; and mitigation of potential reductions in groundwater flow to the Colorado River (see, e.g., Appendix G, SOIL&WATER-1 and SOIL&WATER-15).

The volume of water required for SOIL&WATER-2 was determined by assuming that the total volume of groundwater that would be pumped by the BSPP over its lifetime would represent a 1:1 reduction of groundwater flows to the Colorado River. Therefore, the volume of water presented in SOIL&WATER-2 is likely a conservative overestimate of the actual effect on the Colorado River. SOIL&WATER-16 has also been included as an alternative accounting method, which would require additional investigation and calculation of the potential for groundwater pumping on site to affect the Colorado River. As discussed in PA/FEIS Section 4.19, implementation of these measures would require either an entitlement of water from the Colorado River to be acquired, or the replacement or commensurate reduction in use of groundwater, or recharge to groundwater at another point in the basin, so as to offset the potential effects on the Colorado River. This Mitigation Measure would ensure that effects on the Colorado River are minimized.

A cumulative assessment of potential impacts to water supply is contained in Chapter 4.19. Subsections within the cumulative impacts assessment discuss groundwater basin balance, groundwater levels, and surface water hydrology. The cumulative analysis considers reasonably foreseeable projects in the vicinity of the proposed solar field; the specific projects considered are listed in Table 4.19-6 in the PA/FEIS. Potential effects of the proposed action on groundwater levels and related effects on the Colorado River are discussed explicitly in the Construction and Operation and Groundwater Basin Balance Subsections of PA/FEIS Section 4.19. Briefly, a computer-based groundwater model was used to evaluate potential cumulative impacts from groundwater pumping on the regional aquifer, including the Colorado River. Results indicate that under cumulative conditions, groundwater level declines of five feet or more would be located at least 22,000 feet from the BSPP site. However, implementation of mitigation measures SOIL&WATER-2 through SOIL&WATER-6 would (1) provide for replacement of up to 22,100 acre-feet of water to the Colorado River to balance BSPP-related withdrawals; (2) ensure that the proposed groundwater extraction wells are completed in accordance with applicable construction permits and associated procedural requirements; (3) ensure that groundwater withdrawals are limited to 4,100 acre feet for the 69 month construction period, and 600 af/yr during operations via a groundwater metering system and reporting requirements; (4) require preparation and adherence to the conditions of a groundwater monitoring, mitigation, and reporting plan; and (5) provide for the compensation to well owners/operators who maintain wells that are affected by BSPP-related groundwater extraction. These mitigation measures would place limits on groundwater use, monitor groundwater levels during groundwater extraction, compensate owners of affected wells, and provide compensation for losses from the Colorado River. Together with the use of dry cooling (see discussion below), these measures would substantially reduce potential direct effects of the BSPP on groundwater levels.

Section 4.21 of the PA/FEIS includes a review of the potential effects of the proposed action on the Palo Verde Groundwater Basin, including usage of groundwater by the BSPP that could alter the basin's water balance, and effectively result in increased flow of Colorado River water into the Palo Verde Groundwater Basin. The term "overdraft condition" is used in the Construction and Operation Subsection of Section 4.21 to underscore that the total volume of water being extracted from the groundwater basin would be greater than the total recharge provided to the basin. Drawdown of an aquifer in and of itself is not necessarily a significant impact, because the amount of drawdown that would occur, even under cumulative conditions, would not significantly affect the total basin storage in the Palo Verde Mesa Groundwater Basin. However, the SA/DEIS and the PA/FEIS acknowledge that BSPP-related water use could have other related impacts, including reductions in groundwater flow to the Colorado River. However, as discussed above, Mitigation Measure SOIL&WATER-2 would mitigate potential reductions in flow to the Colorado River by requiring acquisition of entitlements or offsets to Lower Colorado River water.

Additionally, potential effects on springs or areas having shallow groundwater are also assessed, with mitigation provided as applicable.

Water Use for Cooling

As discussed in PA/FEIS Chapter 2, the proposed action would include an air-cooled condenser that would provide air-based cooling for the power generation train of the plant. The incorporation of air cooling into the project was proposed by the Energy Commission as a potential measure to offset most of the water use requirements for the BSPP. As a result, dry cooling has been incorporated into project design, and thereby serves to substantially reduce the total groundwater withdrawal requirements that would occur as a result of the BSPP.

As one commenter correctly noted, some auxiliary functions of the plant still would require water-based cooling. These details, including water use associated with auxiliary cooling, are discussed and fully disclosed in Chapter 2, and the rate of water use, including auxiliary cooling, is used as a basis for impact analysis in Section 4.19. As an aside, the amount of water required for cooling for these auxiliary functions is substantially less than the amount of cooling water that would be required if the power train cooling was supplied by wet cooling technologies.

In regards to the BSPP's capacity factor, the commenter is correct that the capacity factor is low in comparison to a conventional fossil fuel burning or nuclear power plant. Baseload fossil power plant capacity factors may commonly range from 75 to nearly 90 percent, while nuclear plant capacity factors may reach 92-95 percent or even slightly higher. Unfortunately, capacity factors for solar (and wind) are typically much lower than conventional power plants, due to the nature of their power source – the sun only shines during a portion of the day. So while the commenter is correct that the capacity factor for the plant is low, this is based primarily on the availability of sufficient sunshine to drive the power generation process, and to a much lesser extent on the specific solar technology being used. That said, even with the implementation of dry cooling (which reduces the efficiency of power production), the amount of power generated per acre of solar thermal field is, in comparison to most utility scale PV systems being installed at present, more efficient in terms of the amount of power that can be generated per acre of land area.

Effects on Streams and other Water Resource Concerns

Some comments expressed concern about potential effects on waters of the United States, including potential effects related to altering on site hydrology, as well as potential consequences related to erosion and sedimentation on site and downstream. As discussed in Section 4.21, Water Resources, the BSPP site is located along the Palo Verde Mesa, which is tributary to the Colorado River. Potential impacts associated with erosion are discussed in PA/FEIS Section 4.19.2. Briefly, the analysis indicates that increased potential for erosion could occur on site. Waterborne erosive losses modeled, and are reported in Table 4.19-3. However, SOIL&WATER-11, which would revise the existing version of the drainage report, and SOIL&WATER-13 through -15, which would provide for channel erosion protection and ensure continued maintenance of drainage/flood control channels through a channel maintenance program. Additionally, as discussed in Surface Water Quality Subsection of Section 4.19, a Drainage Erosion and Sedimentation Control Plan would also be implemented to ensure that the Project would minimize erosion and sedimentation during operations. Implementation of these mitigation measures would be required as conditions of the Energy Commission's certification of the project and are included as Mitigation Measures in the PA/FEIS (see Appendix G). Because construction would disturb over one acre of land area, the Applicant would be required to comply with the requirements of an NPDES General Permit for Construction Activities, which would require implementation of additional best management practices and erosion/sedimentation control during project construction.

In regards to the potential for utilizing existing drainage channels located on site, due to the nature of the proposed solar project, allowing floodwaters to inundate the site could result in various undesirable project-related and environmental consequences. If, for instance, a spill of heat transfer fluid occurred on site, and before spill management protocol could be completed, a flood situation occurred, that spill could result in undesired water quality consequences. Additionally, allowing floodwaters to proceed across the site could cause safety and equipment hazards to transformers, solar collector arrays, and other equipment located on site. In regards to the use of earthen berms or channels instead of concrete drainage channels, these are currently being investigated and incorporated into the final drainage plan as feasible. Earthen drainage features are substantially cheaper than concrete facilities; however, earthen features are more susceptible to erosional forces. It is anticipated that earthen drainage features would be employed to the extent possible under the Drainage Erosion and Sedimentation Control Plan as discussed above. In order to complete the Drainage Erosion and Sedimentation Control Plan, additional project design information is required, and that information will not be available until following approval of the proposed action. Therefore, the finalized drainage plan will not be available in time for submission with this PA/FEIS.

One commenter expressed concerns regarding the use of fencing on site, and potential drainage related effects of the installation and use of fencing on site, citing a study that was recently completed by the National Parks Service.[4] Unlike the fencing described in the cited study (along the national border between the US and Mexico, the fence is situated such that monsoonal desert flood flows (must pass *through* the fence. Identified effects included floodwater pooling and backup behind the fence, and significant debris collection along the fence. The fencing that would be installed at the BSPP site would be very different as compared to purpose and design, as compared to the fencing in the referenced study. The fencing proposed for the BSPP would provide a barrier to human crossing onto the site, and would be located along the proposed flood control berms and other features that would protect the BSPP from flooding. The proposed fence is not anticipated to intersect significant or substantial flood flows, and therefore would not have effects similar to the referenced National Parks study. However, the BLM and the Applicant acknowledge that the proposed fencing could affect drainage on a smaller scale – if improperly managed or installed, fencing could potentially exacerbate erosion or sedimentation conditions on site and adjacent to the site, for instance resulting in undercutting of the fence, buildup of small amounts of debris along the fence line, and other related issues. Implementation of Mitigation Measure Water-10 of the PA/FEIS Section 4.19 would provide for adherence to the recommendations of a drainage plan, which would include fencing-related drainage and

[4] http://www.biologicaldiversity.org/campaigns/borderlands_and_boundary_waters/pdfs/Flood_Report_July_2008.pdf

erosion/sedimentation considerations. Implementation of this mitigation measure would reduce potential impacts to less than significant levels.

In additional to the CEC-SOIL&WATER-11, the BLM would require the following in regards to fencing on site to minimize potentially interference with drainage systems or floodwaters. This would be an additional requirement during implementation of the proposed Drainage Erosion and Sedimentation Control Plan:

> **BLM-SOIL&WATER-11:** The Drainage Report shall also consider the potential effects of fencing on drainage, runoff, flooding, and erosion/sedimentation on site and downstream. The Drainage Report shall contain measures that minimize potential drainage and erosion/sedimentation related effects of installation and use of fencing on site. The proposed measures to minimize the drainage related effects of fencing shall be implemented by the Project Applicant as a Condition of Certification.

Runoff generated by the proposed action is assessed in the Surface Water Hydrology Subsection of Section 4.19, which provides modeled data for existing and proposed peak flow rates at the downstream site boundary (Table 4.21-3), and a review of the conceptual drainage plan. The associated impact discussion concludes that impacts related to onsite drainage would occur, but that incorporation of SOIL&WATER-10 and SOIL&WATER-11, which would require a revised drainage report and completion of a detailed modeling analysis of pre-and post development flood conditions, including up to the 100-year storm event. As discussed, implementation of these measures would reduce the anticipated severity of the potential impact.

In regards to the on-site watershed being tributary to a closed basin, to the contrary, the introductory text at the beginning of Section 3.21, Water Resources indicates that the McCoy Wash, which flows southeast at the northeastern-most part of the site, is tributary to the Colorado River. The surface water analysis contained in Section 4.21 considers and is consistent with this finding.

The procedure for determining whether waters located on a particular proposed site typically proceeds as follows: a project applicant or consultant completes an assessment of potentially jurisdictional waters located on site, in accordance with applicable guidelines and regulations, and generates a map of waters that are anticipated to be jurisdictional. Typically after the environmental compliance process is complete, but before breaking ground on construction, the applicant submits the proposed map of jurisdictional waters to the U.S. Army Corps of Engineers (USACE). The USACE then reviews the proposed map and either revises that map or accepts it as is. The commenter is correct that USACE concurrence has not yet been obtained. This is the typical condition, wherein USACE concurrence would be obtained following environmental review and after approval of the proposed action. Additionally, the impact discussion and proposed mitigation measures contained in Section 4.19 discuss various measures that would be implemented to reduce potential impacts to jurisdictional waters. Therefore, the current analysis is in compliance with applicable state and federal regulations and requirements, and recirculation is not warranted.

5.5.4.12 Cultural Resources

Commenters and Comments Addressed

Commenter	Comments
Brendan Hughes	1-04
The Wilderness Society and the NRDC	5-08, 5-17
Sierra Club	6-18, 6-19, 6-20, 6-21, 6-22
Greenaction	7-01, 7-02, 7-03, 7-04
EPA	10-28

Summary of Issues Raised

1. Whether BLM's use of a programmatic agreement satisfies its obligations under section 106 of the National Historic Preservation Act (NHPA), which requires federal agencies to take into account the effects of their actions on historic properties, or whether the use of a programmatic agreement impermissibly defers evaluation, mitigation and treatment of potential impacts on cultural resources.

2. Whether the SA/DEIS's analysis of cultural resources is adequate, in light of the status of cultural resource surveys, identification of potentially significant impacts, including impacts on Native American cultural heritage, and cultural resource mitigation. Pending additional information and analysis on cultural resources, BLM should develop strategies to minimize and mitigate impacts on cultural resources and engage in consultation with local Native American tribes.

3. Whether the BLM should be the final arbiter of what qualifies as a cultural, religious and historical site, especially without adequate information about these sites. Comments suggest this authority should reside with the Native peoples of the region, and that collaboration with them through government-to-government consultation is required to adequately consider potential impacts of these projects on Native peoples.

Response

Use of Programmatic Agreement to Comply with the NHPA

The regulations implementing the NHPA, found at 36 CFR Part 800, provide for the use of a Programmatic Agreement (PA) when effects on historic properties cannot be fully determined prior to approval of an undertaking. PAs commonly are used to comply with NHPA Section 106 on large projects like the BSPP. The PA for the BSPP would govern a process for completing the identification and evaluation of cultural resources that would be affected, and for determining mitigation consistent with their values, prior to construction or other activities that could affect them. The PA will be completed and signed prior to approval of the ROD. Consulting parties and stakeholders, including the State Historic Preservation Officer, the Advisory Council on Historic Preservation, and Indian tribes, will have an opportunity to participate in consultations on the terms and provisions of the PA before it is approved.

Identifying Impacts on Cultural Resources and Determining Mitigation Measures

Class III cultural resource inventories of the proposed action, including the plant site, access road, natural gas pipeline, and transmission gen-tie line have been completed. Impacts on the sites identified within the Areas of Potential Effect are discussed in PA/FEIS Chapter 4. A small amount of land remains to be surveyed as final adjustments are made to the footprint for the Reconfigured Alternative. Preliminary mitigation measures are included in PA/FEIS Section 4.04. Such measures would be implemented to the extent they are consistent with the PA that is being developed for the proposed action in accordance with the NHPA. Additional mitigation measures may be developed during the Section 106 compliance process in consultation with interested parties, including Indian tribes. Consultation with Indian tribes was initiated in the early stages of BSPP planning and will continue throughout the Section 106 compliance process. Tribes will be given opportunities to assist in identifying and evaluating cultural resources that may be affected by the proposed action, potential impacts on such resources and in determining appropriate mitigation measures, prior to approval of the ROD.

Government-to-Government Consultation with Indian Tribes

The BLM has well-trained professional cultural resource specialists on staff who have extensive experience in identifying and evaluating cultural properties, including archaeological and historical sites. See, e.g., PA/FEIS Section 5.7, *List of Preparers*. The BLM recognizes that sacred sites and other places of traditional cultural and religious importance can be identified only by the people who ascribe traditional values to those places. The BLM has been consulting with 15 Indian tribes and related entities since the early stages of planning for the BSPP and will continue this consultation throughout the NHPA Section 106 compliance process. BLM’s tribal consultation efforts are discussed in PA/FEIS Section 3.4 and in Cultural Resources Appendix D. Tribes have been invited to identify properties of traditional cultural and religious importance that might be affected by the proposed action. Tribes also have been invited to participate in consultations to develop a Programmatic Agreement for the proposed action that will seek to resolve adverse effects on any properties of traditional cultural and religious importance that could be identified.

5.5.5 Individual Responses

In this section, responses are provided for each comment received. Where a comment is addressed as part of a Common Response, the individual response provided in this section refers the reader to the applicable Common Response. NEPA requires all substantive comments - whether environmental or procedural in nature - to be addressed and attached to the FEIS (40 CFR 1503.4(b)). All of the comments received on the SA/DEIS are included in this section.

5.5.5.1 Letter 1 - Responses to Comments from Brendan Hughes

1-01 Concerning alternatives, see Common Response 5.5.4.6.

1-02 The BLM is responding to legislative mandates to increase renewable energy production in the United States, projects that have the potential to meet those goals, and the specific projects proposed by applicants. BLM will analyze each application for such a project according to all state and federal regulations. Concerning the purpose and need for the project more generally, see Common Response 5.5.4.5.

1-03 This comment suggests that visual impacts of the proposed action cannot be mitigated. As indicated in Section 4.19.4 of the PA/FEIS, which discusses residual impacts after mitigation measures are implemented, the BLM recognizes that the mitigation measures cannot fully mitigate the adverse effects of the project on visual resources.

1-04 Cultural resources are identified and discussed in PA/FEIS Chapters 3.4 and 4.4, and also in Appendix D. Known resources are identified, and provision is made for possible future discovery of presently unknown resources. See generally, Common Response 5.5.4.12.

1-05 Pursuant to Section 6.9.2.1 of the BLM NEPA Handbook H-1790-1 (Jan. 30, 2008), this is not a substantive comment. Nonetheless, PA/FEIS Section 4.21.6 concludes that unavoidable adverse impacts on wildlife resources that would result from the BSPP and alternatives include impacts to habitat types, including Sonoran creosote bush scrub and stabilized and partially stabilized sand dunes, as well as desert dry wash woodlands and vegetated ephemeral swales. The BSPP also would result in unavoidable adverse impacts on habitat for desert tortoise, adjacent wildlife communities, connectivity and dispersal of resident wildlife.

5.5.5.2 Letter 2 – Responses to Comments from Brendan Hughes

See letter 1.

5.5.5.3 Letter 3 – Responses to Comments from Metropolitan Water District of Southern California

3-01 Pursuant to Section 6.9.2.1 of the BLM NEPA Handbook H-1790-1 (Jan. 30, 2008), this is not a substantive comment.

3-02 The comment is correct: no MWD facilities have been identified on the proposed BSPP site. The BLM acknowledges that the proposed action could result in the installation of solar power generation facilities in general proximity to MWD aqueducts and other facilities. The BSPP would not draw water from any of MWD's facilities, and would not compete with MWD for water supplies. As discussed in PA/FEIS Section 4.19, proposed groundwater extraction in support of the BSPP could interfere with groundwater flows that would otherwise be tributary to the Colorado River. However, Mitigation Measures SOIL&WATER-3 and SOIL&WATER-17 require the Applicant to mitigate or completely offset these effects. See Common Response 5.5.4.10. Therefore, the proposed action would not interfere with any water right or MWD's ability to divert water from the Colorado River. In terms of MWD's transmission system, the proposed action would not interfere with MWD's ability to transmit power along its existing transmission lines, and would not physically interfere with, disturb, or interrupt those lines. Therefore, the BLM anticipates that the BSPP would not have any direct or indirect effect on MWD's infrastructure or operations, and, therefore, would not interfere with MWD's ability to deliver water within its service area.

3-03 See Response to Comment 3-02. Moreover, potential impacts on transmission lines are discussed in PA/FEIS Section 4.12. Recommended separation between lines also is discussed in PA/FEIS Section 4.6, Lands and Realty. Metropolitan's existing transmission system is part of the baseline condition and, as such, has been taken into account in the PA/FEIS.

3-04 PA/FEIS Section 4.19 discusses potential direct, indirect and cumulative impacts on water resources, including surface waters, including the Colorado River, and groundwater. See, e.g., PA/FEIS Section 4.19.2 ("the BSPP's pumping could have an effect on the Colorado River by inducing flow into the Palo Verde Mesa Groundwater Basin"). This section also sates, "water in the Colorado River is fully appropriated." Concerning water rights, see Common Response 5.5.4.10.

3-05 See Common Response 5.5.4.11.

5.5.5.4 Letter 4 – Responses to Comments from Defenders of Wildlife

4-01 Climate change, including GHG emissions of the proposed action, which would contribute to existing global climate conditions, and the impacts of global warming on the BSPP are discussed in Section 4.3 and Common Response 5.5.4.9. The BLM is dedicated to maintaining and providing for a balance of uses on public lands via the multiple use concept. The CDCA Plan, sub-regional plans, and subsequent plan amendments have been implemented so as to further balance the need for development activities while maintaining viable wildlife habitat. Further regional planning will be done as necessary and will continue to balance the uses on public lands.

4-02 Pursuant to Section 6.9.2.1 of the BLM NEPA Handbook H-1790-1 (Jan. 30, 2008), this is not a substantive comment.

4-03 Pursuant to Section 6.9.2.1 of the BLM NEPA Handbook H-1790-1 (Jan. 30, 2008), this is not a substantive comment.

4-04 Concerning the purpose and need for the proposed action, see Common Response 5.5.4.5. The comment is correct: the Energy Policy Act encourages the Secretary to approve a minimum of 10,000 MW of renewable energy on public lands by 2015.

4-05 Concerning the purpose and need of the proposed action, see Common Response 4.4.5.5. Concerning alternatives, see Common Response 5.5.4.6.

4-06 Concerning alternatives, see Common Response 5.5.4.6. A Reduced Acreage Alternative is analyzed fully in the document, see PA/FEIS Section 2.5.2. This alternative is similar to the one proposed in scoping and would have the same benefits as building the project only on the eastern side of the site as proposed. The reductions in habitat would be very similar to the commenter's proposal.

4-07 Concerning alternatives, see Common Response 5.5.4.6.

4-08 Concerning alternatives, see Common Response 5.5.4.6.

4-09 The PA/FEIS identifies existing environmental conditions in Chapter 3, and analyzes impacts, including cumulative impacts, in Chapter 4. Concerning species and habitats, see PA/FEIS Sections 3.18 and 4.17 (vegetation) and PA/FEIS Sections 3.23 and 4.21 (wildlife). See also, Common Response 5.5.4.8 (Biological Resources). This comment also questions whether the proposed action conforms to BLM policy as expressed in Manuals 6500 (Wildlife Habitat Management) and 6840 (Special Status Species Management) and BLM's statutory obligations under FLPMA. In this regard, see Common Responses 5.5.4.3 and 5.5.4.8.

4-10 Concerning consistency the CDCA Plan, see Common Response 5.5.4.2. Section 3.6, Lands and Realty, identifies existing and anticipated land use authorizations within proximity to the BSPP and Section 4.6 discusses potential impacts to those uses. FLPMA mandates that BLM manage the public lands for multiple uses. Multiple use means the "management of the public lands and their various resource values so that they are utilized in the combination that will best meet the present and future needs of the American people. …" As identified in FLPMA, this includes providing for the long-term needs for future generations for renewable and nonrenewable resources." PA/FEIS Sections 3.18, 3.23, 4.17 and 4.21, as well as Appendix H, identify the various biological communities that would be affected by the BSPP and alternatives, and identify mitigation measures that would be used to avoid or reduce impacts, and thereby improve the BSPP.

4-11 PA/FEIS Sections 4.17 (vegetation) and 4.21 (wildlife resources) and PA/FEIS Appendix H address project-specific and cumulative impacts of the BSPP and alternatives to biological resources. PA/FEIS Section 4.21.6 concludes that, under the technology proposed in the three action alternatives, native wildlife communities would be lost. The section identifies the total number of acres for each affected habitat type and identifies the loss of desert tortoise habitat and degradation and fragmentation of adjacent wildlife communities, a decrease in regional connectivity and dispersal of resident wildlife as unavoidable adverse impacts. The section also concludes that the BSPP is likely to promote the spread of invasive non-native plants, and subsidize certain desert tortoise predators. Death, harm, harassment, removal, or capture of wildlife, including eggs and nests, could occur even after the implementation of mitigation measures (see PA/FEIS Section 4.21.4 and Appendix H) and, thereby constitute unavoidable loss of individual animals. There appears to be a misunderstanding about the quoted statement from the DEIS, which concludes, as does the PA/FEIS, that the BSPP would contribute to cumulative effects. Concerning the adequacy of mitigation, see Common Response 5.5.4.8 (Biological Resources).

4-12 See Response to Comment 4-11.

4-13 Concerning the adequacy of mitigation measures to address impacts on biological resources, and concerning residual impacts, see Response to Comment 4-11.

4-14 Pursuant to Section 6.9.2.1 of the BLM NEPA Handbook H-1790-1 (Jan. 30, 2008), this is not a substantive comment. Nonetheless, the diversity of biological resources present on and near the site is described in PA/FEIS Sections 3.18 (vegetation) and 3.23 (wildlife resources). Hydrologic conditions and events are described in PA/FEIS Section 20 (water resources). See also, Common Response 5.5.4.8 (Biological Resources).

4-15 See Response to Comment 4-14. Concerning alternatives, see Common Response 5.5.4.6.

4-16 The diversity of biological resources present on and near the site is described in PA/FEIS Sections 3.18 (vegetation) and 3.23 (wildlife resources). Hydrologic conditions and events are described in PA/FEIS Section 20 (water resources). Concerning the reasonableness of the range of alternatives considered, see Common Response 5.5.4.6.

4-17 Pursuant to Section 6.9.2.1 of the BLM NEPA Handbook H-1790-1 (Jan. 30, 2008), this is not a substantive comment. Nonetheless, bighorn sheep are discussed in PA/FEIS Sections 3.23 and 4.21 and in Appendix H; see also, Common Response 5.5.4.8.

4-18 Bighorn sheep are discussed in PA/FEIS Sections 3.23 and 4.21, Section H.2.2 of PA/FEIS Appendix H (*Biological Cumulative Impact Analysis*), and also in Common Response 5.5.4.8. In preparing the PA/FEIS, the BLM relied in part on the Energy Commission's Revised Staff Assessment. Accordingly, to the extent that the Energy Commission relied upon the input of experts identified in this comment, so too does the PA/FEIS. The comment suggests that the presence of surface water at McCoy Spring on the western slope of the sheep's range should be investigated. While this is outside the scope of the project at this time, it may be evaluated in the course of the BLM's regional planning efforts.

4-19 See Response to Comment 4-18.

4-20 Direct, indirect and cumulative impacts of the proposed action on habitat connectivity are discussed in PA/FEIS Section 4.21 (wildlife resources) and Section H.2.2 of Appendix H. See also, Common Response 5.5.4.8.

4-21 Direct, indirect and cumulative impacts of the proposed action on habitat connectivity are discussed in PA/FEIS Section 4.21 (wildlife resources) and Section H.2.2 of Appendix H. The comment also questions whether the installation of a guzzler would provide adequate mitigation for loss of connectivity or seasonal habitat; in this regard, see Common Response 5.5.4.8.

4-22 Pursuant to Section 6.9.2.1 of the BLM NEPA Handbook H-1790-1 (Jan. 30, 2008), this is not a substantive comment. Nonetheless, bighorn sheep habitat, populations, and movement are discussed in PA/FEIS Sections 3.23 and 4.21, in Section H.2.2 of PA/FEIS Appendix H (*Biological Cumulative Impact Analysis*), and also in Common Response 5.5.4.8.

4-23 Relevant groundwater resources are described in PA/FEIS Section 3.20; direct, indirect and cumulative impacts of the proposed action on groundwater are discussed in PA/FEIS Section 4.19. The analysis in the PA/FEIS relies, in part, on the Energy Commission's Revised Staff Assessment. Water rights, as relevant to the apportionment of Colorado River water, are discussed in Common Response 5.5.4.10.

4-24 See Response to Comment 4-23, including Common Response 5.5.4.10.

4-25 See Response to Comment 4-23, including Common Response 5.5.4.10.

4-26 See Response to Comment 4-23, including Common Response 5.5.4.10.

4-27 Climate change is discussed in PA/FEIS Section 3.3 and related impacts are considered in PA/FEIS Section 4.3. Section 4.3 considers the contribution of GHG emissions from the proposed action on climate change, the effect of climate change on the proposed action, and the effect of climate change on the affected environment. The analysis considers climate change-related impacts on species and habitats. See also Common Response 5.5.4.9.

4-28 See Response to Comment 4-27, including Common Response 5.5.4.9.

4-29 See Response to Comment 4-27, including Common Response 5.5.4.9.

4-30 See Response to Comment 4-27, including Common Response 5.5.4.9.

4-31 See Response to Comment 4-27, including Common Response 5.5.4.9. The BLM agrees that biological diversity is important and, as discussed in the PA/FESI, could be affected by climate change.

4-32 See Response to Comment 4-27, including Common Response 5.5.4.9.

4-33 See Response to Comment 4-27, including Common Response 5.5.4.9.

4-34 See Response to Comment 4-27, including Common Response 5.5.4.9. Soil resources also are discussed in PA/FEIS Sections 3.15 (affected environment) and 4.14 (environmental consequences).

4-35 See Response to Comment 4-27, including Common Response 5.5.4.9. Wildlife resources also are discussed in PA/FEIS Sections 3.23 (affected environment), 4.23 (environmental consequences) and Appendix H (*Biological Cumulative Impact Analysis*).

4-36 See Response to Comment 4-27, including Common Response 5.5.4.9. Vegetation also is discussed in PA/FEIS Sections 3.18 (affected environment) and 4.17 (environmental consequences).

4-37 See Response to Comment 4-27, including Common Response 5.5.4.9. Water resources also are discussed in PA/ Sections 3.20 (affected environment) and 4.19 (environmental consequences).

4-38 Concerning climate change and GHG emissions, see Common Response 5.5.4.9. PA/FEIS Section 3.3 discusses the affected environment with respect to global climate change. PA/FEIS Section 4.3 discusses possible environmental consequences relative to climate change. More specifically, Section 4.3 discusses global climate change as an existing adverse cumulative condition, identifies the cumulative scenario, including the geographic and temporal scope of impacts, the anticipated contributions of GHG emissions caused by construction, operation and decommissioning of the proposed action and incremental impacts that are occurring or could result from past, present and reasonably foreseeable future projects. The consequences of global climate change on environmental resources also are discussed. As discussed, adverse impacts of global climate change are expected to continue; however, international, national, and regional efforts, as well as the proposed action, are expected to reduce the rate at which such change occurs, and, thereby, to benefit the environment by minimizing the environmental impacts of climate change.

4-39 See Response to Comment 4-27, including Common Response 5.5.4.9. Invasive species also are discussed in PA/FEIS Sections 3.18 (affected environment) and 4.17 (environmental consequences).

4-40 See Response to Comment 4-27, including Common Response 5.5.4.9. Hydrology also is discussed in PA/FEIS Sections 3.20 (affected environment) and 4.19 (environmental consequences).

5.5.5.5 Letter 5 – Responses to Comments from Wilderness Society and Natural Resources Defense Council (NRDC)

5-01 See Common Response 5.5.4.1.

5-02 As discussed in Common Response 5.5.4.3 and 5.5.4.4, this PA/FEIS is consistent with BLM Planning Procedures and NEPA.

5-03 Concerning BLM's decision-making process, including consistency with NEPA, see Common Response 5.5.4.1. Moreover, designation of the BSPP as a "fast track" did not absolve the BLM and other oversight agencies of any obligation to take a hard look at the potential consequences of the proposed action on the quality of the human environment. Concerning this and the timeframe for review of such projects, see also, Response to Comment 6-04.

5-04 See Common Response 5.5.4.1.

5-05 Vegetation and wildlife, including braided washes, on and in the vicinity of the BSPP site, including special-status species, are discussed in PA/FEIS Sections 3.18, 3.23, 4.17, 4.21, and Appendix H. Water resources and hydrology on and in the vicinity of the site are identified and discussed in PA/FEIS Sections 3.20 and 4.19. Mitigation measures to avoid or reduce impacts on these resources are included in Sections 4.17 (vegetation), 4.19 (water), 4.21 (wildlife), and Appendix G.

5-06 Concerning bighorn sheep habitat, populations, and movement see PA/FEIS Sections 3.23, 4.21, Section H.2.2 of PA/FEIS Appendix H (*Biological Cumulative Impact Analysis*), and also Common Response 5.5.4.8.

5-07 Water Resources are identified in PA/FEIS section 3.20, and discussed in PA/FEIS Section 4.19 and Common Response 5.5.4.11.

5-08 The BLM has analyzed impacts of the BSPP and alternatives to cultural resources and is engaging in consultation with the Tribes. Concerning cultural resources generally, see Common Response 5.5.4.12.

5-09 See Common Response 5.5.4.4; see also, Common Response 5.5.4.7.

5-10 Concerning the BLM's Purpose and Need see Common Response 5.5.4.5; see also, Common Response 5.5.4.7.

5-11 Concerning the reasonableness of the range of alternatives considered, see Common Response 5.5.4.6.

5-12 Concerning the reasonableness of the range of alternatives considered, see Common Response 5.5.4.6.

5-13 Concerning alternatives, see Common Response 5.5.4.6.

5-14 Concerning the reasonableness of the range of alternatives considered, see Common Response 5.5.4.6.

5-15 Concerning the analysis of cumulative impacts in the PA/FEIS, see Response to Comment 6-37. See also, Common Response 5.5.4.4.

5-16 See Common Response 5.5.4.8.

5-17 Concerning the analysis of impacts on cultural resources, see PA/FEIS Section 4.4 and Common Response 5.5.4.12. See also Common Response 5.5.4.4 (concerning the adequacy of the information relied upon in the EIS); Common Response 5.5.4.7 (Supplementation/Recirculation), and Response to Comment 6-04 (opportunities for public participation).

5-18 This comment is not "substantive" as described in Section 6.9.2.1 of BLM's NEPA Handbook 1790-1 (Jan. 30, 2008).

5.5.5.6 Letter 6 – Responses to Comments from California/Nevada Desert Energy Committee of the Sierra Club (Sierra Club)

6-01 Pursuant to Section 6.9.2.1 of the BLM NEPA Handbook H-1790-1 (Jan. 30, 2008), this is not a substantive comment. Nonetheless, the relationship between this proposed action and BLM's policies and programs is discussed in Common Response 5.5.4.2; NEPA consistency is discussed in Common Response 5.5.4.3; and climate change is discussed in PA/FEIS Sections 3.3 (affected environment), 4.3 (environmental consequences) and Common Response 5.5.4.9.

6-02 Pursuant to Section 6.9.2.1 of the BLM NEPA Handbook H-1790-1 (Jan. 30, 2008), this is not a substantive comment. Nonetheless, alternatives are discussed in Common Response 5.5.4.6. Direct, indirect and cumulative impacts of the proposed action and alternatives are discussed in PA/FEIS Chapter 4 (environmental consequences). See, e.g., PA/FEIS Section 4.17 (vegetation) and 4.21 (wildlife).

6-03 This comment is not "substantive" as indicated in Section 6.9.2.1 of BLM's NEPA Handbook H-1790-1 (Jan. 30, 2008). Nonetheless, see Common Responses 5.5.4.2 and 5.5.4.3.

6-04 The BLM, indeed the entire United States, recognizes that the CDCA, which includes a portion of the Colorado Desert, is a rich and unique environment teeming with "historical, scenic, archaeological, environmental, biological, cultural, scientific, educational, recreational, and economic resources." 43 U.S.C. § 1781(a)(2). Congress found that this desert and its resources are "extremely fragile, easily scarred, and slowly healed." Id. The BLM has evaluated and considered the level of disturbance that would result under the proposed action and alternatives (see, e.g., PA/FEIS Sections 4.4 (cultural resources), 4.10 (paleontological resources), etc.] and the existence of private property within the proposed ROW (see, e.g., PA/FEIS Section 4.16.2). The PA/FEIS identifies the presence of wildlife, including desert tortoise, Nelson's bighorn sheep, and a diversity of wild predators, in Section 3.23. Analysis of direct, indirect and cumulative impacts of the proposed action on desert biota and ecological processes is provided in PA/FEIS Sections4.17 (vegetation) and 4.23 (wildlife).

The time required to prepare an EIS ranges depending on the complexity of the issues involved and the types and magnitude of improvements proposed, and can take as much as 24-36 months or more. The BLM identified certain "fast-track" projects for which the companies involved demonstrated to the BLM that they had made sufficient progress to formally start the environmental review and public participation process. The BSPP is one such project. The Applicant submitted a right-of-way (ROW) application to the BLM on September 21, 2006, and filed an application for certification with the Energy Commission on August 24, 2009. The environmental review process, including opportunities for public participation, commenced immediately. Like all renewable energy projects proposed for BLM-managed lands, the BSPP has received the full extent of environmental review required by NEPA and has included the same opportunities for public involvement as are required for all other land-use decision making by the BLM.

In conducting the environmental review process for the proposed BSPP, the BLM has specified and briefly discussed the underlying purpose and need to which the agency is responding (40 CFR 1502.13, 1508.9(b); PA/FEIS Section 1.1); solicited internal and external input to determine the scope of issues, impacts, and potential alternatives to be addressed in the EIS (40 CFR 1501.7; PA/FEIS Appendix C), identified issues to be included in and excluded from analysis (40 CFR 1501.7(a), 1502.1, 1502.2; PA/FEIS Appendix C Scoping Report); described the proposed action and alternatives (NEPA Section 102(2)(E); 40 CFR 1508.23; PA/FEIS Chapter 2); described the relevant affected environment (40 CFR 1502.15; PA/FEIS Chapter 3); identified known and predicted effects that are related to the issues (40 CFR 1502.1; PA/FEIS Chapter 4); and, as discussed in Common Response 5.5.4.3, has invited public participation throughout the process (40 CFR 1506.6(a)).

6-05 This comment suggests that the assessment of environmental impacts of the BSPP is inadequate because significant impacts are deemed insignificant and impacts that can be mitigated are mistakenly found to be unavoidable. However, no specific examples are provided, and BLM's review of the analytical conclusions provided in PA/FEIS Chapter 4 in response to this comment did not identify such an inadequacy. Under NEPA, the goal of analysis is not to get to a significance conclusion, but rather to describe environmental problems or relationships between a proposed action and affected resources and to predict the degree to which the resource would be affected upon implementation of the action. See generally, BLM, NEPA Handbook H-1790-1 (Jan. 2008), Section 6.8, *Environmental Effects*. In this EIS, the BLM has taken a hard look at the impacts of the proposed BSPP; identifies relevant, reasonable mitigation measures that could improve the proposed action in Chapter 4 and Appendix G; and concludes that the proposed action would cause unavoidable impacts on certain resources. See, e.g., PA/FEIS Section 4.4.7 (cultural resources); PA/FEIS Section 4.6.6 (lands and realty); PA/FEIS Section 4.8.6 (multiple use class opportunities); PA/FEIS Section 4.9.7 (noise); PA/FEIS Section 4.12.6 (recreation); PA/FEIS Section 4.15.6 (designated wilderness areas); PA/FEIS 4.16.6 (OHV access); PA/FEIS Section 4.17.6 (vegetation); PA/FEIS Section 4.18.6 (visual resources); and PA/FEIS Section 4.21.6 (wildlife resources). The PA/FEIS's impact conclusions are adequate.

This comment also suggests that the EIS unlawfully segments consideration of the environmental impacts of the gen-tie transmission and natural gas pipeline. Segmentation occurs when one action is divided into multiple actions for purposes of analysis in separate environmental documents. However, the gen-tie and natural gas pipeline properly are analyzed in this EIS as part of the proposed action. See, e.g., PA/FEIS Section 2.2.1 (introducing the proposed action), PA/FEIS Section 4.6 (analyzing direct, indirect and cumulative impacts of the proposed action and alternatives on designated utility corridors), PA/FEIS Section 4.12.2.2 (analyzing public health and safety effects relating to natural gas use, storage and pipeline requirements); see also, Figure 2a (site layout). Consequently, no unlawful segmentation concerning impacts of the proposed gen-tie and gas line has occurred.

Other aspects of this comment are addressed in the Common Responses. Considering the adequacy of BLM's governing planning documents to guide the proposed action, see Common Response 5.5.4.2. Concerning compliance of the EIS with NEPA, see Common Response 5.5.4.3. Concerning the adequacy of the information relied upon in the EIS, including the timing of various studies and mitigation measures, see Common Response 5.5.4.4. Considering Alternatives, see Common Response 5.5.4.6. Considering information that has become available since issuance of the SA/DEIS, refinements and clarifications made to the proposed action, and suggestions that EIS be re-circulated and an additional public comment period provided, see Common Response 5.5.4.7.

6-06 See Response to Comment 6-04. Concerning the gen-tie and natural gas lines, see Response to Comment 6-05 and Figure 2a (site layout). Concerning transmission line routes, see Figure 2a (Site Layout) and Figure 6 (BLM Rights of Way). Potential impacts concerning transmission lines and the Blythe Airport are discussed in PA/FEIS Section 4.12 (Public Health and Safety). Concerning consistency of the PA/FEIS with NEPA, see Common Response 5.5.4.3. Concerning the adequacy of the data relied upon, see Common Response 5.5.4.4.

6-07 See PA/FEIS Section 2.9, Alternatives Considered but Eliminated from Detailed Analysis; see also, Common Response 5.5.4.6.

6-08 Concerning the adequacy of the data relied upon in the PA/FEIS, see Common Response 5.5.4.4; concerning waters of the United States, see Common Response 5.5.4.11; and concerning supplementation / recirculation, see Common Response 5.5.4.7.

6-09 The environmental consequences of the proposed action are discussed in PA/FEIS Chapter 4. CEQA requirements, including for a statement of overriding considerations under certain circumstances, are not applicable in the NEPA context. This comment questions the adequacy of the analysis in the EIS, but is insufficiently specific to enable the BLM to provide more than a general response. See Common Response 5.5.4.3.

6-10 Concerning biological resources, see Common Response 5.5.4.8. Concerning alternatives, see Common Response 5.5.4.6.

6-11 See Common Response 5.5.4.8. Desert tortoise is discussed in PA/FEIS Sections 3.23 (affected environment), 4.21 (environmental consequences) and in Section H.2.1 of PA/FEIS Appendix H.

6-12 See Response to Comment 6-11, including Common Response 5.5.4.8.

6-13 Nelson's bighorn sheep are discussed in PA/FEIS Section 3.23 (affected environment), PA/FEIS Section 4.21 (environmental consequences), Section H.2.2 of PA/FEIS Appendix H, and in Common Response 5.5.4.8. Concerning the adequacy of data relied upon, see Common Response 5.5.4.4.

6-14 Habitat connectivity is discussed in PA/FEIS Section 3.23 (affected environment), PA/FEIS Section 4.21 (environmental consequences), PA/FEIS Appendix H (Biological Cumulative Impact Analysis), and in Common Response 5.5.4.8.

6-15 See Responses to Comments 6-13 and 6-14, including Common Response 5.5.4.4 and Common Response 5.5.4.8. American Badger and other special-status wildlife also are discussed in Section H.2 of PA/FEIS Appendix H (Biological Cumulative Impact Analysis).

6-16 Concerning the suggestion of segmentation, see Response to Comment 6-05. Concerning transmission line routes, see Figure 2a (Site Layout) and Figure 6 (BLM Rights of Way). The locations of the Generation Tie Line (Gen-Tie) route and the transmission location have been further refined as part of the CEC siting process and the PA/FEIS includes a detailed description of those facilities in Sections 2.3.1 and 2.3.4. Potential impacts concerning transmission lines and the Blythe Airport are discussed in PA/FEIS Section 4.12 (Public Health and Safety).

6-17 Vegetation is discussed in PA/FEIS Section 3.18 (affected environment), PA/FEIS Section 4.17 (environmental consequences) and Common Response 5.5.4.8. Concerning the adequacy of the data relied upon, see Common Response 5.5.4.4.

6-18 See Common Response 5.5.4.12.

6-19 See Common Response 5.5.4.12.

6-20 See Common Response 5.5.4.12; see also, Common Response 5.5.4.4 concerning the suggestion that mitigation measures are deferred.

6-21 Concerning the gen-tie lines and natural gas lines, see Response to Comments 6-05 and 6-06; concerning cultural resources, see Common Response 5.5.4.12; concerning the adequacy of data relied upon in the PA/FEIS, see Common Response 5.5.4.4.

6-22 See Common Response 5.5.4.12.

6-23 See Common Response 5.5.4.11.

6-24 See Common Response 5.5.4.11.

6-25 See Common Response 5.5.4.7; see also, Common Response 5.5.4.11.

6-26 State law requirements do not govern this NEPA analysis. Consistency with the Riverside County General Plan is discussed in Common Response 5.5.4.2.

6-27 Consistency with the CDCA Plan and the NECO Plan is discussed in Common Response 5.5.4.2.

6-28 Consistency with the Riverside County General Plan is discussed in Common Response 5.5.4.2. Concerning impacts of the BSPP and alternatives on the Blythe Airport, see, e.g., PA/FEIS Section 4.11 (Public Health and Safety).

6-29 Concerning consistency with local land use plans, see Common Response 5.5.4.2.

6-30 State law requirements do not govern this NEPA analysis. Consistency with BLM planning documents (including the CDCA Plan and NECO Plan) is discussed in Common Response 5.5.4.2. Concerning the suggestion that the PA/FEIS should be supplemented and re-circulated to address such consistency is addressed in Common Response 5.5.4.7. The relationship between the proposed BSPP and the Solar PEIS is addressed in Common Response 5.5.4.1.

6-31 As stated in PA/FEIS Section 2.3.7, a Decommissioning Plan would be prepared as part of the proposed action and put into effect when permanent closure occurs. As described, the procedures provided in the Decommissioning Plan would be developed to ensure compliance with applicable LORS, and to ensure public health and safety and protection of the environment. Given that decommissioning would not be expected to occur within the next 30-40 years, it would be speculative at this time to guess what precise provisions would be included; however, performance standards for the preparation of such a plan are provided in PA/FEIS Chapter2. Also as indicated in PA/FEIS Section 2.3.7, the BLM anticipates that the Decommissioning Plan would address decommissioning measures for the BSPP and all associated facilities; activities necessary for site restoration/revegetation if removal of all equipment and facilities is needed; recycling of facility components, collection and disposal of hazardous and non-hazardous wastes, and resale of unused chemicals to other parties; decommissioning alternatives other than full site restoration; costs associated with the planned decommissioning activities and where funding would come from for these activities; and conformance with applicable LORS. These understandings provide a framework to guide the development of the Decommissioning Plan, and, in any event, BLM review and approval would be required before the plan would be implemented. In the event the decommissioning plan differs from the expectations stated in the PA/FEIS in a way that would cause new or more intense impacts than would result from a plan reflecting the expectations in this PA/FEIS, subsequent environmental review would be required. Consequently, NEPA does not require the suggested supplementation and recirculation.

6-32 Concerning the analysis of cumulative impacts in the PA/FEIS, see Response to Comment 6-37.

6-33 Concerning the analysis of cumulative impacts in the PA/FEIS, see Response to Comment 6-37. Impacts, including cumulative impacts, on biological resources also are identified in PA/FEIS Section 3.23, and are discussed in PA/FEIS Section 4.21, PA/FEIS Appendix H, and in Common Response 5.5.4.8.

6-34 See Response to Comment 6-37, including Common Response 5.5.4.8.

6-35 See Response to Comment 6-37, including Common Response 5.5.4.8.

6-36 Concerning cumulative impacts, see Response to Comment 6-37. Concerning potential impacts resulting from growth-inducement, see Response to Comment 10-29. CEQA requirements do not govern the NEPA process.

6-37 This comment questions the adequacy of the PA/FEIS's assessment of cumulative impacts. A cumulative impact is "the impact on the environment which results from the incremental impact of the action when added to other past, present, and reasonably foreseeable future actions regardless of what agency (Federal or non-Federal) or person undertakes such other actions. Cumulative impacts can result from individually minor but collectively significant actions taking place over a period of time." 40 C.F.R. § 1508.7. The PA/FEIS considers the potential for incremental impacts resulting from construction, operation and maintenance, and closure and decommissioning of the BSPP to cause or contribute to a cumulative effect in each of the issue areas for which the BSPP could cause an impact.

The Ninth Circuit requires federal agencies to "catalogue" and provide useful analysis of past, present, and future projects and to provide some quantified or detailed information because, in its absence, the public cannot be assured that the agencies have taken the requisite "hard look." The PA/FEIS for the BSPP not only catalogues cumulative projects, but also provides quantified and detailed information about them. See Table 4.1-1 (Cumulative Scenario). On an issue-by-issue basis, PA/FEIS Chapter 4 identifies the geographic and temporal scope of the cumulative impacts analysis area, provides a basis for the boundaries of each, identifies existing conditions within each cumulative impacts assessment area, identifies the direct and indirect effects of the BSPP and alternatives, and identifies past, present and reasonably foreseeable future actions making up the cumulative scenario. See, for example, PA/FEIS Section 4.21.3 (discussion of cumulative impacts on wildlife resources), Table 4.21-1 (Comparison of Direct and Indirect Impacts to Wildlife from Proposed Action, Reconfigured Alternative, Reduced Acreage Alternative, and No Action Alternatives), and PA/FEIS Appendix H. The several renewable energy (solar and wind) projects being considered by the BLM's California Desert District are identified in Table 4.1-2, including the number of projects, acreage and total megawatts under consideration in the Palm Springs, Barstow, El Centro, Needles, and Ridgecrest Field Offices. Renewable energy projects on state and private lands are identified in Table 4.1-3. Also part of the cumulative scenario, existing projects along the I-10 corridor in eastern Riverside County are identified in Table 4.1-4 and future foreseeable projects in this area are identified in Table 4.1-5. The PA/FEIS's analysis of cumulative impacts is adequate.

See also Common Response 5.5.4.3, concerning NEPA compliance generally.

6-38 This is not a substantive comment. See BLM NEPA Handbook H-1790-1 (Jan. 30, 2008). Nonetheless, see Common Response 5.5.4.4, regarding the additional 30-day review period for this PA/FEIS.

6-39 See Common Response 5.5.4.6.

6-40 See Section 2.9 in the PA/FEIS; see also, Common Response 5.5.4.6.

6-41 See Section 2.9 in the PA/FEIS; see also, Common Response 5.5.4.6.

6-42 See Common Response 5.5.4.5.

6-43 See Common Response 5.5.4.5.

6-44 See Section 2.9 in the PA/FEIS; see also, Common Response 5.5.4.6.

6-45 See Section 2.9 in the PA/FEIS; see also, Common Response 5.5.4.6.

6-46 See Common Response 5.5.4.6.

6-47 See Common Response 5.5.4.6.

6-48 See Section 2.9 in the PA/FEIS; see also, Common Response 5.5.4.6.

6-49 See Section 2.9 in the PA/FEIS; see also, Common Response 5.5.4.6.

6-50 See Common Response 5.5.4.6.

6-51 See Common Response 5.5.4.6.

6-52 See Common Response 5.5.4.6.

6-53 See Common Response 5.5.4.6.

6-54 See Common Response 5.5.4.6.

6-55 Concerning alleged segmentation relating to transmission ties to the grid and extent of new gas lines, see the Response to Comment 6-05. See also Common Response 5.5.4.3 concerning connected actions.

6-56 Consistency with BLM planning documents (including the CDCA Plan and NECO Plan) is discussed in Common Response 5.5.4.2.

6-57 Concerning the Solar PEIS and planning-level guidance, see Common Responses 5.5.4.1. and 5.5.4.2. The BLM can and is looking at regional land use planning in furtherance of its multiple use mission.

6-58 CEQA does not govern this NEPA process. Concerning consistency with NEPA and FLPMA, see Common Response 5.5.4.3. Concerning supplementation and recirculation, see Common Response 5.5.4.7. Concerning the CDCA and NECO Plans, see Common

Response 5.5.4.3. As noted in Common Response 5.5.4.5, the proposed BSPP is not an ARRA project.

6-59 See Common Response 5.5.4.6.

6-60 See Common Response 5.5.4.6.

6-61 See Common Response 5.5.4.6.

5.5.5.7 Letter 7 – Responses to Comments from Greenaction

7-01 Concerning cultural resources, see Common Response 5.5.4.12.

7-02 Concerning cultural resources, see Common Response 5.5.4.12.

7-03 Concerning cultural resources, see Common Response 5.5.4.12.

7-04 Concerning cultural resources, see Common Response 5.5.4.12.

5.5.5.8 Letter 8 – Responses to Comments from Center for Biological Diversity

8-01 Impacts on desert tortoise and the Mojave fringe-toed lizard are discussed in PA/FEIS Section 4.21 (wildlife) and PA/FEIS Appendix H (see, e.g., Sections H.2.1 and H.2.3). Impacts on rare plants are discussed in PA/FEIS Section 4.17 (vegetation) and PA/FEIS Appendix H (see, e.g., Section H.2.13). See also Common Response 5.5.4.8. Impacts on other resources are discussed on an issue-by-issue basis throughout Chapter 4.

8-02 Cumulative impacts of the BSPP and alternatives are discussed on an issue by issue basis throughout PA/FEIS Chapter 4. See also, Response to Comment 6-37. Concerning the reasonableness of the range of alternatives, see Common Response 5.5.4.6.

8-03 The Colorado River Substation has been analyzed fully pursuant to the Devers-Palo Verde II project. The expansion of the substation to support renewable projects is included as part of the reasonably foreseeable development scenario. See, e.g., Table 4.1-1 (under “other BLM-authorized actions”), Table 4.1-5 (Future Foreseeable Projects along the I-10 Corridor (Eastern Riverside County)), PA/FEIS Figure 9 (I-10 Corridor Existing and Proposed Actions).It is not part of the proposed action (see PA/FEIS Chapter 2). Concerning analysis of the proposed gen-tie line, see Response to Comment 6-05.

8-04 Concerning consistency with the CDCA Plan and amendments, see Common Response 5.5.4.2.

8-05 Concerning alternatives, see Common Response 5.5.4.6. Additionally, final decisions regarding the status of lands within the project’s application area will be determined in the ROD.

8-06 Concerning alternatives, see Common Response 5.5.4.6; see also, Common Response 5.5.4.7 concerning the request for supplementation/recirculation.

8-07 Considering the richness of the CDCA Plan area, see Response to Comment 6-04. Considering the CDCA Plan and NECO Plan amendment processes, see Section 1.4 of the PA/FEIS and Common Response 5.5.4.2. Considering alternatives, including whether the BLM should have considered additional ones, see Common Response 5.5.4.6.

Land use, including multiple use classifications, are identified in PA/FEIS Section 3.9 and discussed in PA/FEIS Section 4.8. Desert tortoise and habitat is identified in PA/FEIS Section 3.23.1, discussed in PA/FEIS Section 4.21.2 and shown in Figures 30 and 31. Route designations are identified in PA/FEIS Section 3.17, discussed in PA/FEIS Section 4.16 and shown in Figure 10. The purpose of the EIS is to ensure that information about possible impacts on the human environment that could result from implementation of the BSPP is available to public officials and the public before decisions are made and actions taken. NEPA does not require, and the EIS does not provide, an explanation or analysis of the adequacy of current land use designations and route designations in protecting desert tortoise.

8-08 The PA/FEIS discusses desert tortoise and tortoise critical habitat in PA/FEIS Sections 3.23 (affected environment), 4.21 (environmental consequences), and Appendix H (Biological Cumulative Impacts Analysis). See also, Common Response 5.5.4.8 (biological resources). OHV use is discussed in PA/FEIS Sections 3.17 and 4.16. Concerning consistency with BLM planning documents, see Common Response 5.5.4.3. As indicated in Common Response 5.5.4.2, no NECO Plan amendment is required for, or proposed as part of, the BSPP.

8-09 Concerning the Solar PEIS, see Common Response 5.5.4.1. Concerning consistency with BLM planning documents, see Section 1.4 of the PA/FEIS and Common Response 5.5.4.3.

8-10 Concerning consistency with FLPMA and BLM planning documents, see Common Response 5.5.4.2.

8-11 Concerning consistency with the CDCA Plan, see Common Response 5.5.4.2. Direct, indirect and cumulative impacts of the BSPP and alternatives on the desert environment are analyzed throughout PA/FEIS Chapter 4 on an issue-by-issue basis.

8-12 Concerning consistency with the CDCA Plan, see Common Response 5.5.4.2.

8-13 Concerning the geographic scope of review across different planning levels, see Common Response 5.5.4.2.

8-14 Concerning consistency with BLM planning documents, see Common Response 5.5.4.2. Concerning the reasonableness of the range of alternatives, see Common Response 5.5.4.6. As discussed in PA/FEIS Section 4.6, approval of a solar energy generation project would result in the land not being available for other uses during the life of the BSPP. However, once the BSPP is no longer viable and is decommissioned, the land would be available for other uses in the future, depending on the condition of the land and the use proposed. See also PA/FEIS Section 4.11, concerning the displacement of existing recreational uses on site for the duration of the BSPP.

8-15 See Section 4.17.2, Discussion of Direct and Indirect Impacts, for a more detailed discussion of potential direct and indirect impact to OHV “open” routes. See also, Common Response 5.5.4.7.

8-16 Concerning cumulative impacts, see Response to Comment 6-37, and, for NEPA consistency more generally, see Common Response 5.5.4.3. Impacts on Mojave fringe-toed lizard are discussed in PA/FEIS Section 4.21, PA/FEIS Appendix H. Concerning consistency with FLMA and BLM planning documents, see Common Response 5.5.4.3. Concerning the Solar PEIS, see Common Response 5.5.4.1.

8-17 Concerning the adequacy of the information relied upon, see Common Response 5.5.4.4. Concerning the suggestion for supplementation/recirculation, see Common Response 5.5.4.7. The construction, operation and decommissioning of the BSPP would be subject to myriad permit requirements under a variety of laws and regulations. Whether the ACOE complies with its obligations under the Clean Water Act is inapposite to the BLM’s compliance with its obligations under NEPA. Accordingly, ACOE’s compliance or non-compliance need not be analyzed in the PA/FEIS.

8-18 Considering the relationship between the proposed PA/EIS and BLM planning procedures and NEPA, see Common Response 5.5.4.3. Components of the BSPP and alternatives are identified and described in PA/FEIS Chapter 2. Baseline conditions are identified on an issue-by-issue basis throughout Chapter 3. Potential impacts (direct, indirect and cumulative) are analyzed throughout PA/FEIS Chapter 4 (see also, Appendix H). The comment suggests that the EIS characterizes baseline conditions in a way that renders the analysis in the PA/FEIS inadequate; however, it provides no specific examples as a basis for the allegation. Accordingly, the BLM is unable to provide a more detailed response.

8-19 Pursuant to Section 6.9.2.1 of the BLM NEPA Handbook H-1790-1 (Jan. 30, 2008), this is not a substantive comment.

8-20 Pursuant to Section 6.9.2.1 of the BLM NEPA Handbook H-1790-1 (Jan. 30, 2008), this is not a substantive comment.

8-21 Concerning consistency with BLM procedures and NEPA, see Common Response 5.5.4.3; concerning the purpose and need, see Common Response 5.5.4.5; and concerning the suggested supplementation and recirculation, see Common Response 5.5.4.7.

8-22 The Applicant is not seeking ARRA funding for the proposed action. Concerning the DOE's purpose and need, see Common Response 5.5.4.5. Concerning the adequacy of NEPA review for this "fast-track" project, see Response to Comment 6-4.

8-23 Concerning climate change, see PA/FEIS Section 3.3, FEIS Section 4.3 and Common Response 5.5.4.9. Concerning impacts on biological resources, see FEIS Section 4.17 (vegetation), FEIS Section 4.23 (wildlife), FEIS Appendix H and Common Response 5.5.4.8.

8-24 Baseline conditions are identified for rare plants in FEIS Section 3.18 and wildlife in FEIS Section 3.23. See also FEIS Appendix H. Concerning the status of surveys and the adequacy of the data relied upon, see Common Response 5.5.4.4.

8-25 Concerning the sufficiency of the information relied upon in the PA/FEIS, see Common Response 5.5.4.4. As a fundamental matter, the BLM notes that the Applicant is entitled to a presumption of compliance with applicable law and would be subject to enforcement for breach of its legal obligations in connection with implementation of the proposed action. Accordingly, it is not necessary to affirmatively establish compliance with LORS in the FEIS. Therefore, the allegation is unfounded that supplementation and recirculation of the EIS would be required on this basis.

8-26 See Common Response 5.5.4.8. Desert tortoise is discussed in FEIS Sections 3.23 (affected environment), 4.21 (environmental consequences) and in Section H.2.1 of FEIS Appendix H. Concerning the adequacy of the information relied upon in the absence of the Tortoise Relocation/Translocation Plan, see Common Response 5.5.4.4.

8-27 See Response to Comment 4-18, including Common Response 5.5.4.8. Concerning the adequacy of the information relied upon, see Common Response 5.5.4.4.

8-28 Rare and special-status plants are identified in FEIS Section 3.18 and discussed in FEIS Section 4.17 and Appendix H. See also, Common Response 5.5.4.8 (biological resources). Concerning the adequacy of the information relied upon, see Common Response 5.5.4.4.

8-29 See Common Response 5.5.4.8. Avian species are discussed in FEIS Sections 3.23 (affected environment), 4.21 (environmental consequences) and in Appendix H. The U.S. Fish and Wildlife Service's determination of compliance with the Migratory Bird Treaty Act would occur separately and independently of the BLM's consideration of the BSPP under FLPMA and NEPA.

8-30 Evaporation ponds are identified as part of the proposed action and related impacts are discussed in FEIS Sections 4.19 (water resources), 4.11 (public health and safety), and 4.21 (wildlife resources). See Common Response 5.5.4.7; see also, Common Response 5.5.4.8.

8-31 See FEIS Section 4.21 (wildlife resources) and Section H.2.6 of FEIS Appendix H, which considers total burrowing owl habitat based on the BLM NECO Landforms dataset (BLM CDD 2002), excluding dunes, playas, mountains, badlands, and lava flows. See also, Common Response 5.5.4.8.

8-32 See FEIS Section 4.21.5, which concludes that a residual adverse impact would remain, after the implementation of mitigation measures, in connection with the direct loss of habitats, which provide foraging, cover, and/or breeding habitat for a variety of resident wildlife, including the. . . golden eagle." See also, Section H.2.4 of FEIS Appendix H and Common Response 5.5.4.8. Further, the EIS does consider the golden eagle in the context of the Bald Eagle and Golden Eagle Protection Act (see, e.g., FEIS Appendix B, Section B.6.B). However, the U.S. Fish and Wildlife Service's determination of compliance with the Bald Eagle and Golden Eagle Protection Act would occur separately and independently of the BLM's consideration of the BSPP under FLPMA and NEPA.

8-33 See FEIS Section 4.21 (wildlife) and Section H.2.5 of Appendix H concerning American Badger and Desert Kit Fox. See also Common Response 5.5.4.7 and Common Response 5.5.4.8.

8-34 The site's attainment status for PM-10 is acknowledged in PA/FEIS Section 3.2. While cryptobiotic soils are not specifically mentioned in the PA/FEIS, they are known to occur on older alluvial fan surfaces, along with desert pavement (see PA/FEIS Section 4.14.2). Both crypotbiotic soils and desert pavement are indicators of older desert soils that have not been flooded by desert washes in thousands of years. Cryptobiotic soils can be expected to overlie older alluvial fan surfaces, indicated by all units other than Q_w (modern washes) and Qa_3 (late Holocene Alluvium) presented in Figure 2 of Appendix E. The likelihood that cryptobiotic soils are present generally increases with the age of the alluvial fan.

However, more specific information on the distribution and acreage of cryptobiotic soils within the BSPP is not necessary for an informed analysis of construction-related effects on wind erosion rates. This is because the process of soil-mapping considers the interrelated factors of age, climate, vegetation, parent rock, and soil texture; and most pertinently assesses the soil for its relative susceptibility to wind erosion. Table 4.14-1 presents the results of an analysis of soil series on the site for their predicted wind erosion rates. This analysis shows that under the construction scenario, there is a negligible increase in wind erosion rates for the Arco Soil Series and an actual decrease in wind erosion rates for the Gunsight and Cipriano Series, relative to undisturbed conditions. This indicates that disturbance of the land surface during construction is unlikely to have substantial adverse effects on soil loss by wind. Further, implementation of Mitigation Measures AQ-SC3 and AQ-SC4 would control construction-related fugitive dust and address the commenter concern about possible contributions to PM-10 (see PA/FEIS Section 4.2.4 and Appendix G).

8-35 Concerning consideration of insects, see Common Response 5.5.4.8.

8-36 Concerning the Decommissioning and Reclamation Plan, see Response to Comment 6-31. See also, Common Response 5.5.4.8. Consistent with BLM's Solar Energy Development Policy, a bond will be required in connection with the ROW grant to ensure compliance with the terms and conditions of the authorization and the requirements of the regulations, including reclamation. The amount of the bond will consider potential reclamation and administrative costs to the BLM.

8-37 The Applicant must comply with all applicable federal and state laws that govern the implementation of the proposed action. As discussed in FEIS Section 4.11, Public Health and Safety, the California Code of Regulations requires that an Operations Fire Prevention Plan be prepared for the BSPP (See the Fire Prevention Plan discussion in Final EIS Section 4.12.9.3). Effects of fire on the natural desert habitat are addressed in PA/FEIS Section 4.17.2, concerning vegetation.

8-38 The FEIS discusses impacts (direct, indirect and cumulative) on an issue-by-issue basis in Chapter 4. Mitigation Measures are summarized throughout Chapter 4 (see, e.g., FEIS Section 4.21.4 (wildlife) and set forth in Appendix G. The comment suggests that the discussion of mitigation measures is provided in insufficient detail to assure that environmental consequences have been evaluated fairly, but does not give examples of what additional data or information should have been provided. Accordingly, the BLM is unable to respond in greater detail.

8-39 Concerning the adequacy of the data relied upon, see Common Response 5.5.4.4.

8-40 Concerning the adequacy of the data relied upon, see Common Response 5.5.4.4. Concerning the suggestion that supplementation and recirculation is required, see Common Response 5.5.4.7.

8-41 Concerning the adequacy of the data relied upon, see Common Response 5.5.4.4.

8-42 See Common Response 5.5.4.4 and, concerning supplementation/recirculation, see also Common Response 5.5.4.7.

8-43 Climate change is discussed in FEIS Section 3.3 and related impacts are considered in FEIS Section 4.3. Section 4.3 considers the contribution of GHG emissions from the proposed action on climate change, the effect of climate change on the proposed action, and the effect of climate change on the affected environment. The analysis considers climate change-related impacts on species and habitats. See also Common Response 5.5.4.9.

8-44 Concerning GHG emissions, SF6 leakage and climate change, see FEIS Section 4.3 and Common Response 5.5.4.9.

8-45 See Common Response 5.5.4.9. Given that operations of the BSPP would result in a substantial net reduction of GHG emissions by replacing conventional high GHG-producing energy sources with low GHG-producing renewable solar power, there is no need to provide additional GHG emissions offsets for construction emissions. Short-term GHG construction emissions associated with the BSPP would easily be offset by BSPP operations within the first several months of project operations.

8-46 This comment questions the adequacy of the air resources analysis. PA/FEIS Section 3.2.1 identifies the BSPP area as being located within the Mohave Desert Air Basin, which is a nonattainment area for ozone and fugitive dust (PM10) criteria. Grading is identified as part of the site preparation process in PA/FEIS Section 2.3.5, and dust control is identified as part of construction and operation-phase activities (see PA/FEIS Sections 2.3.5 and 2.3.6, respectively). The PA/FEIS Section 4.2, *Air Resources,* includes detailed dispersion modeling analysis of PM10 and ozone emissions for both the construction and operations phases of the proposed BSPP, including those emissions that would occur as a result of fugitive dust. Mitigation Measure AQ-SC3, *Construction Fugitive Dust Control*, would be required to be implemented during construction and the Applicant would also implement similar fugitive dust controls during the operations phase of BSPP (see PA/FEIS Section 4.2.4 and Appendix G).

8-47 Concerning GHG emissions, carbon sequestration and climate change, see FEIS Section 4.3 and Common Response 5.5.4.9.

8-48 Concerning climate change, see Common Response 5.5.4.9.

8-49 Concerning the adequacy of the PA/FEIS's cumulative impacts assessment generally, see Response to Comment 6-37. Concerning the adequacy of the information and data relied upon in the PA/FEIS, see Common Response 5.5.4.4. Concerning the analysis of impacts of the proposed gen-tie line, see Response to Comment 6-05. Concerning analysis of the Colorado River substation, see Response to Comment 8-03.

8-50 Concerning consideration of reasonably foreseeable impacts in the context of the cumulative impacts analysis, see Response to Comment 6-37. The DEIS analyzes cumulative impacts, including additive, countervailing and synergistic effects, on an issue-by-issue basis in Chapter 4. See, e.g., PA/FEIS Sections 4.6.3, Lands and Realty; 4.9.4, Noise; 4.18.3, Visual Resources. The comment provides no basis to determine that the cumulative impacts analysis is inadequate.

8-51 Land use impacts of the BSPP and alternatives are discussed in PA/FEIS Section 4.6 (Lands and Realty) and PA/FEIS Section 4.8 (Multiple Use Classes). Impacts associated with growth are addressed in the socioeconomic analysis provided in PA/FEIS Section 4.13. PA/FEIS Section 4.13 quantifies the cumulative employment impact and assesses the potential for induced growth to the area's local and regional affected environment. See also Response to Comment 10-29.

8-52 Concerning the analysis of cumulative impacts in the PA/FEIS, see Response to Comment 6-37. Concerning the adequacy of the information relied upon in the EIS, including the timing of various studies and mitigation measures, see Common Response 5.5.4.4.

8-53 Concerning the purpose and need, see Common Response 5.5.4.5. Concerning the adequacy of the range of alternatives, see Common Response 5.5.4.6.

8-54 Concerning alternatives, see Common Response 5.5.4.6. Also, to clarify, the Colorado River Substation has been analyzed fully pursuant to the Devers-Palo Verde II project. The expansion of the substation to support renewable projects is included as part of the reasonably foreseeable development scenario. See, e.g., Table 4.1-1 (under "other BLM-authorized actions"), Table 4.1-5 (Future Foreseeable Projects along the I-10 Corridor (Eastern Riverside County)), PA/FEIS Figure 9 (I-10 Corridor Existing and Proposed Actions).It is not part of the proposed action (see PA/FEIS Chapter 2).

8-55 Concerning alternatives, see Common Response 5.5.4.6.

8-56 Concerning the adequacy of the range of alternatives, see Common Response 5.5.4.6.

8-57 Concerning the purpose and need, including the DOE's purpose and need, see Common Response 5.5.4.5.

8-58 Pursuant to Section 6.9.2.1 of the BLM NEPA Handbook H-1790-1 (Jan. 30, 2008), this is not a substantive comment.

8-59 Pursuant to Section 6.9.2.1 of the BLM NEPA Handbook H-1790-1 (Jan. 30, 2008), this is not a substantive comment. Nonetheless, concerning supplementation/recirculation, see Common Response 5.5.4.7.

5.5.5.9 Letter 9 – Responses to Comments from Wildlife Society

9-01 Concerning direct, indirect and cumulative impacts on wildlife, see FEIS Section 4.21, FEIS Appendix H.

9-02 Concerning impacts on soils, see FEIS Section 4.14. Concerning impacts on vegetation, see FEIS Section 4.17 and Appendix H.

9-03 Concerning roadway-related impacts on wildlife, see FEIS Section 4.21 and Appendix H.

9-04 The FEIS discusses desert tortoise and its habitat in FEIS Sections 3.23 (affected environment), 4.21 (environmental consequences), and Appendix H (Biological Cumulative Impacts Analysis). See also, Common Response 5.5.4.8 (biological resources).

9-05 See Response to Comment 9-04, including Common Response 5.5.4.8.

9-06 See Common Response 5.5.4.8.

9-07 See Common Response 5.5.4.8.

9-08 Concerning the Applicant's entitlement to a presumption of compliance with applicable laws, ordinances, regulations, and standards (LORS), see Response to Comment 8-25. Concerning the suggestion that the EIS be supplemented and re-circulated, see Common Response 5.5.4.7.

9-09 See Common Response 5.5.4.11.

9-10 See FEIS Section 4.21, which addresses potential impacts of nighttime lighting.

9-11 The impacts of the BSPP and alternatives, including indirect impacts associated with the presence of construction workers, are analyzed on an issue by issue basis throughout FEIS Chapter 4.

9-12 All mitigation measures proposed in the Biological Opinion issued by the U.S. Fish and Wildlife Service for the BSPP will be included in the ROD and the ROW grant stipulations.

5.5.5.10 Letter 10 – Responses to Comments from Environmental Protection Agency

10-01 Considering the reasonableness of the range of alternatives, see Common Response 5.5.4.6. Concerning the level of review for this and other "fast track" projects, see Response to Comment 6-04.

10-02 Concerning potential impact to water resources, including downstream flows, see Common Response 5.5.4.11.

10-03 Concerning use of existing draining channels and/or natural features instead of proposed concrete-lined channels, see Common Response 5.5.4.11.

10-04 Concerning a finalized drainage plan see Common Response 5.5.4.11.

10-05 Concerning potential impacts to wildlife and drainage systems, see Common Response 5.5.4.8 (wildlife); see also, Common Response 5.5.4.11 (drainage).

10-06 Impacts and mitigation measures concerning biological resources are analyzed in PA/FEIS Sections 4.17 (vegetation) and 4.21 (wildlife), and in PA/FEIS Appendix. Concerning compensatory mitigation, see Common Response 5.5.4.3.

10-07 Concerning mitigation plans and/or commitment, see Common Response 5.5.4.3. All mitigation commitments required by the BLM will be included in the ROD.

10-08 Concerning groundwater mitigation, see Common Response 5.5.4.11.

10-09 Concerning necessity for a basin balance analysis for the Palo Verde Mesa Groundwater Basin, see Common Response 5.5.4.11.

10-10 Concerning impacts to groundwater, see Common Response 5.5.4.11.

10-11 Concerning impacts to groundwater recharged by the Colorado River, see Common Response 5.5.4.11.

10-12 Concerning necessary project water entitlements see Common Response 5.5.4.11.

10-13 Concerning the need for the proposed action, see Common Response 5.5.4.5. Concerning climate change, see Common Response 5.5.4.9. Concerning the cumulative impacts, including the other large-scale renewable energy projects proposed for development on public lands in the desert southwest, see Response to Comment 6-37. Concerning the adequacy of the data relied upon, see Common Response 5.5.4.4.

10-14 Concerning the purpose and need and range of alternatives, see Common Responses 5.5.4.5 and 5.5.4.6, respectively.

10-15 The question requests a description of BLM's authority to adopt a "modified" project design or alternate site on BLM land, to deny an application, or to select another ROW application submitted by the same applicant or its corporate owner. A Right-of-Way (ROW) grant is an authorization to use a specific piece of public land for a certain project, such as a transmission line, road, pipeline, or communication site. A ROW grant authorizes rights and privileges for a specific use of the land for a specific period of time. Generally, a BLM ROW is granted for a term appropriate for the life of the project. As indicated in PA/FEIS Table 1-1, ROWs granted are authorized by Title V of the Federal Land Policy and Management Act (FLPMA) (43 U.S.C. 1761-1771) and the implementing regulations set forth at 43 CFR part 1600. Pursuant to 43USC 1764(j), "The Secretary. . . shall grant, issue, or renew a right-of-way under this subchapter only when he is satisfied that the applicant has the technical and financial capability to construct the project for which the right-of-way is requested, and in accord with the requirements of this subchapter."

BLM's authority includes the power to modify a project design subject to a ROW application, or to deny the application, to the extent that the application does not reflect certain statutorily-required terms and conditions. For example, terms and conditions are imposed to carry out the purposes of FLPMA; minimize damage to scenic and aesthetic values and fish and wildlife habitat, and otherwise protect the environment; require compliance with applicable air and water quality standards; and require compliance with State standards for public health and safety, environmental protection, and siting, construction, operation and maintenance if such standards are more stringent than applicable Federal standards. 43 USC 1765. BLM also may impose terms and conditions to the extent that it deems them necessary to protect Federal property and economic interests; manage efficiently the lands that would be subject to the ROW and protect the other lawful users of the lands adjacent to or traversed by the ROW; protect lives and property; protect the interests of individuals living in the general area traversed by the ROW who rely on the fish, wildlife, and other biotic resources of the area for subsistence purposes; require location of the ROW along a route that will cause least damage to the environment, taking into consideration feasibility and other relevant factors; and otherwise protect the public interest in the lands traversed by the right-of-way or adjacent thereto. 43 USC 1765.

Individual ROW applications are considered separately; thus, two applications submitted by the same applicant or its corporate owner would be considered independently based on the independent merit of each. A decision whether to grant one of the applications would be made independently of whether to grant the other.

10-16 The cumulative scenario is discussed in FEIS Section 4.1. The cumulative impacts analysis in Chapter 4 conservatively assumes that all projects within the cumulative scenario will proceed, including renewable energy projects. Any effort to further refine how many of renewable energy applications received by BLM are likely to proceed would be speculative and would not contribute to the understanding of the potential impacts of the BSPP on the human environment. Concerning the Solar PEIS and the DRECP process, see Common Response 5.5.4.2.

10-17 The Power purchase agreements are sensitive documents between the Applicant and the power purchaser. BLM does not require detailed information regarding the specifics of that agreement, only that there is an outlet or recipient of the power generated. The size of the project, in megawatts produced and acres utilized, can be evaluated by the public to determine the trade-off between resources. This information can be found in the PA/FEIS in Section 2.2.

10-18 Concerning siting, see Common Response 5.5.4.1. Concerning the reasonableness of the range of alternatives considered, see Common Response 5.5.4.6. The comment suggests that BLM should compare proposed renewable energy projects one with another. The BLM does consider each proposed project in the context of other past, present, and reasonably foreseeable future projects as part of the cumulative impacts analysis. See, e.g., PA/FEIS Chapter 4.

10-19 Concerning siting, see Common Response 5.5.4.1. Concerning purpose and need, see Common Response 5.5.4.5. Additionally, BLM in the purpose and need for the project is responding to the Applicant’s request for a ROW under Title V of FLPMA.

10-20 Concerning alternatives, see Common Response 5.5.4.6 and 5.5.4.12 (Cultural Resources).

10-21 Concerning alternatives, see Common Response 5.5.4.6. The BLM does not require the preparation of a cost benefit analysis or a fiscal impact statement. These are more typically done by the applicants prior to considering the use of public lands for projects.

Additionally, reviewing such information would not affect the size and scope of the project, or its impacts, nor would it improve the analysis of the alternatives in such a manner as to make one more feasible than another.

10-22 See PA/FEIS in Section 1.5 and Common Response 5.5.4.2.

10-23 Concerning climate change, See PA/FEIS Sections 3.3 and 4.3 Affected Environment and Impacts to Global Climate Change respective; see also Common Response 5.5.4.9.

10-24 Concerning climate change, See PA/FEIS Sections 3.3 and 4.3 Affected Environment and Impacts to Global Climate Change respective; see also Common Response 5.5.4.9.

10-25 Concerning incorporation of climate change monitoring, see PA/FEIS Sections 4.3 Impacts to Global Climate Change, and Section 4.17, Vegetation and Section 2.21, Wildlife.

10-26 Concerning climate change, See PA/FEIS Sections 3.3 and 4.3 Affected Environment and Impacts to Global Climate Change respective; see also Common Response 5.5.4.9.

10-27 All areas in the SA/DEIS that indicated undetermined technical areas have since been revised and appropriate mitigation has been provided in the PA/FEIS. Please see each technical section in Chapter 4 for the proposed mitigation. The Energy Commission's Conditions of Certification are located in Appendix G.

10-28 Concerning cultural resources, see Common Response 5.5.4.12. Concerning the adequacy of data relied upon, see Common Response 5.5.4.4.

10-29 The social and economic analysis in the PA/FEIS (see Sections 3.14, 4.13) assesses the cumulative impact expected under the conservative "worst-case" scenario assuming that all 13 identified solar projects proceed with construction between 2011 and 2016. The cumulative analysis also included the additional construction impacts associated with construction of the Blythe Airport Solar project and another six non-solar projects currently planned on BLM land within eastern Riverside County.

The cumulative analysis uses the same approach as impact analysis of the BSPP's construction impacts on the social and economic conditions for both the local study area (Blythe, California; Ehrenberg, Arizona; and Quartzite, Arizona) and the regional study area (eastern Riverside County from Palm Springs to Blythe). Specifically, the PA/FEIS impact analysis assesses the projected construction worker labor need and the regional labor force supply of adequately qualified and potential trainable workers to determine the likely magnitude of in-migration that may be expected to the local and regional study area.

The analysis estimates the amount of growth expected to occur based on the demand for housing from construction and operations workers by evaluating the supply of suitable housing to meet the temporary housing demand of project construction and operations workers. Given the region's relatively high unemployment rates it is expected that the majority of future construction and operations workers would live within the regional study area. Any workers attracted to work at any of the construction sites may be expected to seek temporary housing (i.e., for weekly commuting) and would maintain their existing primary residence in western Riverside County, San Bernardino or elsewhere.

Based on the current housing vacancy rates and availability of local hotel/motel accommodations in the local and regional study area, there is considerable potential availability for suitable temporary housing or accommodations within the existing housing stock and motel/hotel facilities especially if workers are willing to share accommodations. As a result, it is not expected that any new housing or hotel/motel growth would occur as a result of the planned solar projects.

Blythe currently lacks any transit operations that would be suitable for these projects' construction workers. The sites are at remote locations along I-10. The Greyhound is unsuitable for worker use as it is expensive, operates only four trips per daily with stops at Indio and Blythe, with its earliest daily arrival to Blythe at 12.35 pm. The Palo Verde Transit Agency (PVTA) provides transit service for Blythe and the surrounding unincorporated areas. PVTA runs an express worker commute service three times a day between Blythe and the Chuckwalla and Ironwood State prisons. While this service currently would not service the needs for the BSPP or other solar projects, it seems possible that if there was sufficient demand, a similar service for the solar projects would be possible. Similarly, solar project developers would be able to institute worker transit management programs (e.g., formal Rideshare, carpooling or busing programs) for their employees if they wish. However, in absence of an FEIS finding that major adverse impacts from worker commuting would occur, the BLM elects not to require the Applicant to make such provisions.

5.6 Administrative Remedies

BLM and EPA's Office of Federal Activities will publish separate NOAs for the PA/FEIS in the *Federal Register* when the document is ready to be released to the public. The NOA (to be published by the EPA in the *Federal Register*) will initiate a 30-day protest period on the Proposed PA to the Director of the BLM in accordance with 43 CFR 1610.5-2. Additionally, the BLM will be accepting additional public comment during this period. All substantive comments will be reviewed and responded to in the Record of Decision.

Following resolution of any protests, BLM may publish an Approved Plan Amendment and a Record of Decision (ROD) on the Project Application. Publication and release of the ROD would serve as public notice of BLM's decision on the Project Application which is appealable in accordance with 43 CFR Part 4.

5.7 List of Preparers

Though individuals have primary responsibility for preparing sections of the Proposed PA/FEIS, the document is an interdisciplinary team effort. In addition, internal review of the document occurs throughout preparation. Specialists at the BLM's Field Office, State Office, and Washington Office review the analysis and supply information, as well as provide document preparation oversight. Contributions by individual preparers may be subject to revision by other BLM specialists and by management during internal review.

TABLE 5-1
LIST OF PREPARERS

Name	Job Title	Primary Responsibility
BLM – Palm Spring-South Coast Field Office		
Cook, Stewart	GIS Specialist	Mapping
Hill, Greg	NEPA Coordinator	OHV/Recreation/VRM
Kline, George	Archaeologist	Cultural and Paleontological Resources
Maser, Mark	Biologist	Wildlife and Vegetation
Roberts, Holly	Associate Field Manager	Land Use Planning and NEPA Compliance
Shaffer, Allison	Realty Specialist	Lands and Transmission
BLM – California Desert District Office		
Childers, Jeff	Planning and Environmental Coordinator	Land Use Planning and NEPA Compliance
Godfrey, Peter	Hydrologist	Water Resources
LaPre, Larry	District Wildlife Biologist	Wildlife and Vegetation
Ludwig, Noel	Hydrologist	Water Resources
Marsden	Wildlife Biologist	Wildlife and Vegetation
Queen, Rolla	District Archaeologist	Cultural Resources
Roholt, Chris	Wilderness/NLCS Coordinator	Wilderness; Special Designations
Stein, Alan	Deputy District Manager, Resources	Planning; Review
BLM – California State Office		
Brink, Dianna	Rangeland Management Specialist	Rangeland, Grazing, Invasive Species/Weeds
Conley, Mark	Wilderness Coordinator	Special Land Use Designations, NLCS
Conrad-Saydah, Ashley	Renewable Energy Program Manager	Climate Change, Environmental Justice, (transmission)
Dreyfuss, Erin	Planning and Environmental Coordinator	Planning, NEPA Compliance
Fesnock, Amy	State Wildlife and Threatened and Endangered Species Lead	Wildlife, Special Status Species, Biology
Hunter, Charlotte	State Archeologist	Cultural and Paleontological Resources
Keeler, Jim	Off-highway vehicle coordinator	Recreation
Lund, Christina	State Botanist	Botany
McGinnis, Sandra	Planning and Environmental Coordinator	Planning, NEPA Compliance
Quinn, Sarah	Renewable Energy Program and Environmental Coordinator	Consistency Review, NEPA Compliance
Sintetos, Mike	Project Manager	Public Comment Review; Consistency Review
Wick, Bob	Natural Resource Specialist - Wilderness	Wilderness Characteristics Inventory

TABLE 5-1 (Continued)
LIST OF PREPARERS

Name	Job Title	Primary Responsibility
Environmental Science Associates		
Carlson, Nik	Senior Technical Associate	Environmental Justice, Social and Economics
Cordery, Ted	Biologist	Vegetation and Wildlife Resources, Wildland and Fire Ecology
Duverge, Dylan	Associate	Visual Resources
Eckard, Robert	Senior Associate	Global Climate Change, Water Resources
Fagundes, Matt	Technical Associate	Air Quality, Noise, Public Health and Safety
Holst, Julie	Associate	References
Hooper, Ron	Hydrologist	Livestock and Grazing, Water Resources, Wild Horse and Burro
Johnson, Jennifer	Director	Proposed Action and Alternatives, Recreation, Transportation and Public Access – OHV
Scott, Janna	Managing Associate	Global Climate Change, Cumulative Projects
Simmons, Gregg	NEPA Compliance Specialist	Proposed Action and Alternatives, Cumulative Projects, Multiple Use Classes, Special Designations, Consultation Coordination
Stumpf, Gary	Cultural Resources Specialist	Cultural and Paleontological Resources
Kershaw, Byard	Hazardous Materials Specialist	Mineral Resources, Public Health and Safety
Kershaw, Carol	Lands and Realty Specialist	Lands and Realty

ACRONYMS AND ABBREVIATIONS

µg/m^3	micrograms per cubic meter
°F	degrees Fahrenheit
A	ampere (amp)
AAQS	ambient air quality standards
AB	Assembly Bill
AB 32	California Global Warming Solutions Act of 2006
ac	acres
ACC	air-cooled condenser
ACEC	Area of Critical Environmental Concern
ACHP	Advisory Council on Historic Preservation
ADT	Average Daily Traffic
AERMOD	AMS/EPA Regulatory Model
af or ac-ft	acre-feet
AFC	Application for Certification
afy or ac-ft/yr	acre-feet per year
AIChE	American Institute of Chemical Engineers
AIM	Aeronautical Information Manual
ALUC	Airport Land Use Commission
AM	Amplitude Modulated
AML	appropriate management level
AML	abandoned mined lands
AMPs	Allotment Management Plans
AMS	American Meteorological Society
amsl	above mean sea level
AMT	alternative minimum tax
ANSI	American National Standards Institute
AO	Authorized Officer
APCDs	Air Pollution Control Districts
APCO	Air Pollution Control Officer
APE	Area of Potential Effects
API	American Petroleum Institute
APLIC	Avian Power Line Interaction Committee

APN	Assessor's Parcel Number
APP	Avian Protection Plan
Applicant	Palo Verde Solar I
AQCMM	Air Quality Construction Mitigation Manager
AQCMP	Air Quality Construction Mitigation Plan
AQMD	Air Quality Management District
AQMP	Air Quality Management Plan
ARB	California Air Resources Board
ARPA	Archaeological Resources Protection Act of 1979
ASME	American Society for Material Engineering
AST	aboveground storage tank
ASTM	American Society for Testing Materials Standards
ATC	Authority to Construct
ATCC	Area of Traditional Cultural Concern
ATCM	Airborne Toxic Control Measure
ATV	all-terrain vehicle
AWEA	American Wind Energy Association
BA	Biological Assessment
BAAB	Blythe Army Air Base
BAAQMD	Bay Area Air Quality Management District
BACM	Best Available Control Measures
BACT	Best Available Control Technology
BCC	birds or conservation concern
bgs	below ground surface
bhp	brake-horsepower
BIL	basic impulse level
BIS	Department of Business Innovation & Skills
BLM	United States Bureau of Land Management
BMPs	best management practices
BO	Biological Opinion
BOR	Bureau of Reclamation
BRMIMP	Biological Resources Mitigation Implementation and Monitoring Plan
BSPP	Blythe Solar Power Plant
CAA	Clean Air Act
CAISO	California Independent System Operator
CAL FIRE	California Department of Forestry and Fire Protection
CalARP	California Accidental Release Program
CalEPA	California Environmental Protection Agency
Cal-IPC	California Invasive Plant Council
Cal-OSHA	California - Occupational Safety and Health Administration

CalPIF	California Partners in Flight
Caltrans	California State Department of Transportation
CAPCOA	California Air Pollution Control Officers Association
CAS	Chemical Abstracts Service
CATEF II	California Air Toxics Emission Factors
CBC	California Building Code
CBEA	California Biomass Energy Alliance
CBO	Conference of Building Officials
CBOC	California Burrowing Owl Consortium
CBSC	California Building Standards Code
CC	City Council
CCAA	California Clean Air Act
CCR	California Code of Regulations
CCS	cryptocrystalline silicate
CCTV	closed circuit television
CDCA	California Desert Conservation Area
CDCA Plan	California Desert Conservation Area Plan
CDD	California Desert District
CDE	California Department of Education
CDF	California Department of Forestry and Fire Protection
CDFA	California Department of Food and Agriculture
CDFG	California Department of Fish and Game
CDMG	California Division of Mines and Geology
CDPA	California Desert Protection Act of 1994
CEC	California Energy Commission
CEQ	Council on Environmental Quality
CEQA	California Environmental Quality Act
CERCLA	Comprehensive Environmental Response, Compensation, and Liability Act
CESA	California Endangered Species Act
CFATS	Chemical Facility Anti-Terrorism Standard
CFR	Code of Federal Regulations
cfs	cubic feet per second
CGS	California Geological Survey
CH_4	methane
Chamber of Commerce	Blythe Area Chamber of Commerce
CHP	California Highway Patrol
CHRIS	California Historical Resources Information System
CIWMA	California Integrated Waste Management Act of 1989
CIWMB	California Integrated Waste Management Board
CMUP	Comprehensive Management and Use Plan

CNDDB	California Natural Diversity Database
CNEL	Community Noise Equivalent Level
CNF	Cleveland National Forest
CNPS	California Native Plant Society
CNRA	California Natural Resources Agency
CO	carbon monoxide
CO_2	carbon dioxide
COC	Conditions of Certification
col	colonies
CPM	Compliance Project Manager
CPUC	California Public Utilities Commission
CRAM	California Rapid Assessment Method
CRBRWQCB	Colorado River Basin Regional Water Quality Control Board
CRHR	California Register of Historical Resources
CRS	Congressional Research Service
CSC	California Species of Special Concern
CSP	California State Parks
CTG	Combustion Turbine Generator
CTI	Cooling Technology Institute
CTTM	Comprehensive Travel and Transportation Management
CUPA	Certified Unified Program Authority
CURE	California Unions for Reliable Energy
CVBG	Chuckwalla Valley Groundwater Basin
CWA	Clean Water Act
cy	cubic yards
D	dynamic volt amp reactive
D	Delisted
dB	Decibel
dBA	A-weighted decibels
DCS	data (or distributed) control system
DDT	Dichloro-diphenyl-trichloroethane
DESCP	Drainage, Erosion, and Sedimentation Control Plan
DHS	Department of Homeland Security
DMG	Division of Mines and Geology (now called California Geological Survey)
DNA	Determination of NEPA Adequacy
DOC	California Department of Conservation
DOE	United States Department of Energy
DOI	United States Department of Interior
DOJ	United States Department of Justice
DOT	Department of Transportation

DPM	diesel particulate matter
DPR	Department of Parks and Recreation
DPR	Department of Pesticide Regulation
DPS	Distinct Population Segment
DPV1	Devers-Palo Verde No. 1 Transmission Line
DPV2	Devers-Palos Verde 2 Transmission Line
DRECP	California Desert Renewable Energy Conservation Plan
DRMP-A/DEIS	Draft Resource Management Plan-Amendment/Draft Environmental Impact Statement
DTC	Desert Training Center
DTC/C-AMA	George S. Patton's World War II Desert Training Center/California-Arizona Maneuver Area
DTCCL	Desert Training Center California-Arizona Area Cultural Landscape
DTRO	Desert Tortoise Recovery Office
DTSC	Department of Toxic Substances Control
DWMA	Desert Wildlife Management Area
DWR	California Department of Water Resources
E3	Energy and Environmental Economics, Inc.
EA/FONSI	Environmental Assessment/Finding of No Significant Impact
EB	eastbound
EEC	Eastshore Energy Center
EEMP	Equipment Emissions Mitigation Plan
EERE	Energy Efficiency and Renewable Energy
EFD	El Centro Fire Department
EFZ	Earthquake Fault Zone
EIC	Eastern Information Center
EIR	Environmental Impact Report
EIS	Environmental Impact Statement
EMF	Electric and Magnetic Field
EMS	Emergency Medical Services
EO	Executive Order
EPA	United States Environmental Protection Agency
EPAct 05	Energy Policy Act of 2005
EPRI	Electric Power Research Institute
EPS	Emission Performance Standard
ERC	Emission Reduction Credit
ESA	Endangered Species Act
ET	evapotranspiration
FAA	Federal Aviation Administration
FCC	Federal Communications Commission
FDOC	Final Determination of Compliance

FE	Federally listed as endangered
FEIR	Final Environmental Impact Report
FEIS	Final Environmental Impact Statement
FEMA	Federal Emergency Management Agency
FERC	Federal Energy Regulatory Commission
FESA	Federal Endangered Species Act
FHWA or FHA	Federal Highway Administration
FLPMA	Federal Land Policy and Management Act
FM	Frequency Modulated
FMAP	Fire Management Activity Plan
FMMP	Farmland Mapping and Monitoring Program
FPPA	Farmland Protection Policy Act
fps	feet per second
FR	Federal Register
FSC	Field Supervisor Controller
ft	feet
ft^2/d	feet squared per day
FT	Federally listed as threatened
FTA	Federal Transit Administration
FTE	full time equivalent
FTHL	flat-tailed horned lizard
g	gravity
gal	gallon
GCC	Global Climate Change
GEA	Geothermal Energy Association
gen-tie	power transmission line
GHG	greenhouse gas
GIS	geographic information system
gpd	gallons per day
gpd/ft	gallons per day per foot
gpd/ft^2	gallons per day per square foot
gpm	gallons per minute
GSEP	Genesis Solar Energy Project
GSU	generator set-up transformer
GWh	gigawatt-hour
GWR	groundwater recharge
H_2S	hydrogen sulfide
HABS	Historic American Building Survey
HAER	Historic American Engineering Record
HALS	Historic American Landscape Survey

HAP	Hazardous Air Pollutant
HARP	Hotspots Analysis Reporting Program
HAs	Herd Areas
HCE	heat collection element
HCM	Highway Capacity Manual
HDPE	high-density polyethylene
HEC-RAS	Hydrologic Engineering Center River Analysis System
HERO	high efficiency reverse osmosis
HFCs	hydrofluorocarbons
HI	Hazards Index or Chronic Hazards Index
HMAs	Herd Management Areas
HMBP	Hazardous Materials Business Plan
hp	horsepower
HP	high pressure
HPTP	Historic Properties Treatment Plan
HRA	Health Risk Assessment
HRP	Habitat Restoration Plan
HSC	Health and Safety Code
HTF	Heat Transfer Fluid
HUC	hydrologic unit code
HWSRMRA	Hazardous Waste Source Reduction and Management Review Act of 1989
Hz	Hertz
I-10	Interstate-10
ICAPCD	Imperial County Air Pollution Control District
ICC	Interagency Coordinating Committee
ICDTSC	Imperial County Department of Toxic Substances Control
IEEE	Institute of Electrical and Electronics Engineers
IEPR	Integrated Energy Policy Report
IID	Imperial Irrigation District
ILPP	Injury and Illness Prevention Program
in	inches
in/sec	inches per second
IND	Industrial Service Supply
INT	international
IP	intermediate pressure
ISCST	Industrial Source Complex Short Term
ISO	Independent System Operator
ITC	investment tax credit
IUSD	Imperial Unified School District
IVEDC	Imperial Valley Economic Development Corporation

IVRM	Interim Visual Resource Management
IVS	Imperial Valley Solar
K	erosion factor
kA	kilo-amps
KOPs	key observation points
kV	kilovolt
kVA	kilovolt-amperes
kVAR	kilovolt-ampere reactive
kW	kilowatt
kWe	kilowatt-electric
L_{90}	The A-weighted noise level that is exceeded 90 percent of the time during the measurement period.
LADWP	Los Angeles Department of Water and Power
lbs	pounds
lb/yr	pounds per year
L_{dn}	day-night average noise level
LDS	leachate detection system
LE	Land Evaluation
LEDPA	Least Environmentally Damaging Practicable Alternative
L_{eq}	equivalent continuous sound level
LESA	Land Evaluation and Site Assessment
LESA Model	Land Evaluation and Site Assessment Model
LID	Low Impact Development
LLC	Limited Liability Corporation
LORS	laws, ordinances, regulations, and standards
LOS	level of service
LP	low pressure
LRAs	Local Reliability Areas
LTU	Land Treatment Unit
LTVA	Long-Term Visitor Area
LUP	Land Use Plan
M6.0	earthquake of magnitude 6.0 or greater
Ma	million years ago
MA	management area
MACT	Maximum Available Control Technology
MBTA	Migratory Bird Treaty Act
MCE	Maximum Credible Earthquake
MCL	Maximum Contaminant Level
MCR	Monthly Compliance Report
MDAB	Mojave Desert Air Basin
MDAQMD	Mojave Desert Air Quality Management District

MEIR	maximum exposed individual resident
MEIW	maximum exposed individual worker
mg/L	milligrams per liter
mg/m^3	milligrams per cubic meter
mi	miles
ml	milliliters
ML	Measuring Location
mm	millimeters
MM	Modified Mercalli
MMBtu	1 million british thermal units
MND	Mitigated Negative Declaration
MOU	Memorandum of Understanding
mph	miles per hour
MPP	Mirror Positioning Plan
MRZ	Mineral Resource Zone
MSA	Metropolitan Statistical Area
msl	mean sea level
MT	metric ton
MTBF	mean time between failure
$MTCO_2e$	metric tons of carbon dioxide equivalent
MTPs	Master Title Plats
MTS	Metropolitan Transit System
MUC	Multiple-Use Class
MUC C	Multiple-Use Class Controlled
MUC I	Multiple-Use Class Intensive
MUC L	Multiple-Use Class Limited
MUC M	Multiple-Use Class Moderate
MUC U	Multiple-Use Class Unclassified
MUN	Municipal and Domestic Water Supply
MVA	megavolt-amperes
MVAR	megavolt-ampere reactive
MW	megawatts
Mw	Maximum Earthquake Magnitude
MWh	megawatt-hour
N/A	Not Applicable
N_2O	nitrous oxide
NAAQS	National Ambient Air Quality Standards
NAGPRA	Native American Graves Protection and Repatriation Act
NAHC	Native American Heritage Commission
NECO	Northern and Eastern Colorado Desert Coordinated Management Plan

NEPA	National Environmental Policy Act
NERC	North American Electric Reliability Corporation
NESC	National Electrical Safety Code
NFP	National Fire Plan
NFPA	National Fire Protection Association
NFWF	National Fish and Wildlife Foundation
NHPA	National Historic Preservation Act
NIOSH	National Institute of Safety and Health
NLCS	National Landscape Conservation System
NMFS	National Marine Fisheries Service
NRCS	Natural Resources Conservation Service
NRHP or National Register	National Register of Historic Places
NO	nitric oxide
NO_2	nitrogen dioxide
NOA	Notice of Availability
NOI	Notice of Intent
NO_X	nitrogen oxides
NPDES	National Pollutant Discharge Elimination System
NPS	United States National Park Service
NRC	National Research Council
NRCS	Natural Resources Conservation Service
NRDC	Natural Resources Defense Council
NSPS	New Source Performance Standard
NSR	New Source Review
NTP	Notice to Proceed
NWIS	National Water Information System
O&M	operations and maintenance
O_2	oxygen
O_3	ozone
OCA	Off-site Consequence Analysis
OCWGB	Ocotillo/Coyote Wells Groundwater Basin
OEHHA	Office of Environmental Health Hazard Assessment
OFA	Offer of Financial Assistance
OHV	off-highway vehicle
OII	Order Initiating an Informational
OLM	Ozone Limiting Method
OSHA	United States Occupational Safety and Health Administration
OTC	once-through cooling
PA	Programmatic Agreement
PA	Plan Amendment

PA/FEIS	Resource Management Plan-Amendment/Final Environmental Impact Statement
PSSCFO	Palm Springs / South Coast Field Office
PALS	pre-acquisition liability survey
PBS	Peninsular bighorn sheep
PCA	Pest Control Advisor
PCU	power conversion unit
PDF	Portable Document Format
PDOC	Preliminary Determination of Compliance
PEIS	Programmatic Environmental Impact Statement
PFCs	perfluorocarbons
PGA	peak ground acceleration
PG&E	Pacific Gas and Electric Company
PL	Public Law
PM	particulate matter
PM_{10}	particulate matter less than 10 microns in diameter
$PM_{2.5}$	particulate matter less than 2.5 microns in diameter
PMI	Point of Maximum Impact
POD	Plan of Development
PPA	Power Purchase Agreement
PPE	Personal Protective Equipment
ppm	parts per million
ppmv	parts per million by volume
ppmvd	parts per million by volume, dry
PQAD	Prehistoric Quarries Archaelogical District
PRC	Public Resources Code
PRIA	Public Rangelands Improvement Act of 1978
PRM	Paleontological Resource Monitors
PRMMP	Paleontological Resources Monitoring and Mitigation Plan
PRPA	Paleontologic Resources Preservation Act
PRS	Paleontological Resources Supervisor
PSA	Preliminary Staff Assessment
PSD	Prevention of Significant Deterioration
psi	pounds per square inch
PSSCFO	Palm Springs South Coast Field Office
PTNCL	Prehistoric Trails Network Cultural Landscape
PTO	Permit to Operate
PTZ	pan, tilt, and zoom
PV	photovoltaic
PVC	polyvinyl chloride
PVID	Palo Verde Irrigation District

PVMGB	Palo Verde Mesa Groundwater Basin
PVVGB	Palo Verde Valley Groundwater Basin
PVVTA	Palo Verde Valley Transit Agency
PYFC	Potential Fossil Yield Classification
QFER	Quarterly Fuel and Energy Report
R	Rare
RACM	Reasonably Available Control Measures
RACT	Reasonably Available Control Technology
RCALUC	Riverside County Airport Land Use Commission
RCFD	Riverside County Fire Department
RCRA	Resource Conservation and Recovery Act
REAT	Renewable Energy Action Team
REC I	Water Contact Recreation
REC II	Non-contact Water Recreation
Recovery Act	American Recovery and Reinvestment Act of 2009, P.L. 111-5
RECs	Recognized Environmental Conditions
REF	Renewable Electricity Future
RELs	Reference Exposure Levels
RETI	Renewable Energy Transmission Initiative
RFI	radio frequency interference
RMP	Resource Management Plan
RMPA	Resource Management Plan Amendment
RO	reverse osmosis
ROD	Record of Decision
ROG	reactive organic gases
ROW	right-of-way
ROWD	Report of Waste Discharge
RPS	Renewables Portfolio Standard
RQ	reportable quantity
RSA	Revised Staff Assessment
RTP	Regional Transportation Plan
RUSLE2	Revised Universal Soil Loss Equation
RV	recreational vehicle
RWQCB	Regional Water Quality Control Board
S	Sensitive
SAC	Science Advisory Committee
SA/DEIS	Staff Assessment/Draft Environmental Impact Statement
SAP	Sampling and Analysis Plan
SARA Title III	Superfund Amendments and Reauthorization Act of 1986
SC	sediment control

SCA	Solar Collector Assembly
SCADA	supervisory control and data acquisition
SCAG	Southern California Association of Governments
SCCWRP	Southern California Coastal Water Research Project
SCE	Southern California Edison
SCEC	Southern California Earthquake Center
scf	standard cubic feet
scfh	standard cubic feet of hydrogen per hour
SCG	Southern California Gas Company
SCPBRG	Santa Cruz Predatory Bird Research Group
SCWD	Seeley County Water District
SDAR	San Diego and Arizona Railroad
SDG&E	San Diego Gas and Electric Company
SE	State listed as endangered
SES	Stirling Energy Systems
SESA	Solar Energy Study Area
sf	square feet
SF_6	sulfur hexafluoride
SFP	State fully protected
SHPO	State Historic Preservation Officer
SIC	Southeastern Information Center
SIP	State Implementation Plan
SLF	Sacred Lands File
SLRU	Sensitivity Level Rating Units
SO_2	sulfur dioxide
SO_4	sulfate
SOPs	standard operating procedures
SO_X	sulfur oxides
SPCC	Spill Prevention Control and Countermeasures
SPRR	Southern Pacific Railroad
sq mi	square miles
SQRUs	Scenic Quality Rating Units
SR-111	State Route 111
SR-98	State Route 98
SRA	Safety Risk Assessment
SRA	State Responsibility Area
SRP	Scientific Review Panel
SS	soil stabilization
SSAB	Salton Sea Air Basin
SSAB	Salton Sea Air Basin

ST	State listed as threatened
STG	steam turbine-generator
SVP	Society of Vertebrate Paleontology
SWPPP	Storm Water Pollution Prevention Plan
SWRCB	State Water Resources Control Board
SWWTP	Seeley Wastewater Treatment Plant
TAC	Toxic Air Contaminants
T-BACT	Best Available Control Technology for Toxics
TC	tracking control
TDS	Total Dissolved Solids
TGA	Taylor Grazing Act
TMDLs	Total Maximum Daily Loads
TNW	traditional navigable water
tpy	tons per year
UBC	Uniform Building Code
UDI	undocumented immigrants
µg/L	micrograms per Liter
$\mu g/m^3$	micrograms per cubic meter
URS	URS Corporation
US	United States
USACE	United States Army Corps of Engineers
USBR	United States Bureau of Reclamation
USC	United States Code
USDA	United States Department of Agriculture
USDI	United States Department of the Interior
USEPA	United States Environmental Protection Agency
USFS	United States Forest Service
USFWS	United States Fish and Wildlife Service
USGS	United States Geological Survey
USLE	Universal Soil Loss Equation
UXO	unexploded ordnance
UV	ultraviolet
V	volts
VAC	volts alternating current
VAR	volt-ampere reactive
VdB	velocity decibel
VDE	Visible Dust Emission
VHA	Lavic Lake volcanic hazard area
VMT	vehicle miles traveled
VOCs	volatile organic compounds

VRI	Visual Resource Inventory
VRM	Visual Resource Management
W	watts
WAs	Wilderness Areas
WAPA	Western Area Power Administration
WB	westbound
WDR	Waste Discharge Requirement
WE	wind erosion
WEAP	Worker Environmental Awareness Program
WEC	World Energy Council
WECC	Western Electricity Coordinating Council
WECO	Western Colorado Desert Routes of Travel Designations
WEPS	Wind Erosion Prediction System
WHMA	Wildlife Habitat Management Area
WILD	Wildlife Habitat
WIU	Wilderness Inventory Unit
WL	Watch List
WRCC	Western Regional Climate Center
WSA	Wilderness Study Area
WSS	Web Soil Survey
WTE	Wave & Tidal Energy
ybp	years before present
YDMP	Yuha Desert Management Plan
yr	year
ZOI	zone of influence

GLOSSARY OF TERMS

A

Adjacent: Defined by ASTM E1527-00 as any real property the border of which is contiguous or partially contiguous with that of the Site or would be contiguous or partially contiguous with that of the Site but for a street, road, or other public thoroughfare separating them.

Air Basin: A regional area defined for state air quality management purposes based on considerations that include topographic features that influence meteorology and pollutant transport patterns, and political jurisdiction boundaries that influence the design and implementation of air quality management programs.

Air Quality Control Region: A regional area defined for federal air quality management purposes based on considerations that include topographic features that influence meteorology and pollutant transport patterns, and political jurisdiction boundaries that influence the design and implementation of air quality management programs.

Alluvium: a fine-grained fertile soil consisting of mud, silt, and sand deposited by flowing water on flood plains, in river beds, and in estuaries.

Alluvial Fan: Fan shaped material of water deposited material.

Ambient Air Quality Standards: A combination of air pollutant concentrations, exposure durations, and exposure frequencies that are established as thresholds above which adverse impacts to public health and welfare may be expected. Ambient air quality standards are set on a national level by the U.S. Environmental Protection Agency. Ambient air quality standards are set on a state level by public health or environmental protection agencies as authorized by state law.

Ambient Air: Outdoor air in locations accessible to the general public.

Archaeological district: A significant concentration, linkage, or continuity of sites, buildings, or features important in history or prehistory. There can be discontiguous districts composed of resources that are not in close proximity to one another

Area of Critical Environmental Concern (ACEC): A designated area on public lands where special management attention is required: (1) to protect and prevent irreparable damage to fish and wildlife; (2) to protect important historic, cultural, or scenic values, or other natural systems or processes; or (3) to protect life and safety from natural hazards.

Attainment Area: An area that has air quality as good as or better than a national or state ambient air quality standard. A single geographic area may be an attainment area for one pollutant and a non-attainment area for others.

B

Basic Elements: The four design elements (form, line, color, and texture), which determine how the character of a landscape is perceived.

Bioremediation: The use of biological agents, such as bacteria or plants, to remove or neutralize contaminants, as in polluted soil or water.

C

Calcareous Substrates: Substances, often of a chalky composition, containing, or resembling calcium carbonate.

Cancer: A class of diseases characterized by uncontrolled growth of somatic cells. Cancers are typically caused by one of three mechanisms: chemically induced mutations or other changes to cellular DNA; radiation induced damage to cellular chromosomes; or viral infections that introduce new DNA into cells.

Carbon Monoxide (CO): A colorless, odorless gas that is toxic because it reduces the oxygen-carrying capacity of the blood.

Characteristic: A distinguishing trait, feature, or quality.

Characteristic Landscape: The established landscape within an area being viewed. This does not necessarily mean a naturalistic character. It could refer to an agricultural setting, an urban landscape, a primarily natural environment, or a combination of these types.

Climate: A statistical description of daily, seasonal, or annual weather conditions based on recent or long-term weather data. Climate descriptions typically emphasize average, maximum, and minimum conditions for temperature, precipitation, humidity, wind, cloud cover, and sunlight intensity patterns; statistics on the frequency and intensity of tornado, hurricane, or other severe storm events may also be included.

Community Noise Equivalent Level (CNEL): A 24-hour average noise level rating with a 5 dB penalty factor applied to evening noise levels and a 10 dB penalty factor applied to nighttime noise levels. The CNEL value is very similar to the Day-Night Average Sound Level (Ldn) value, but includes an additional weighting factor for noise during evening hours.

Contrast: Opposition or unlikeness of different forms, lines, colors, or textures in a landscape.

Contrast Rating: A method of analyzing the potential visual impacts of proposed management activities.

Cretaceous: In geologic history the third and final period of the Mesozoic era, from 144 million to 65 million years ago, during which extensive marine chalk beds formed.

Criteria Pollutant: An air pollutant for which there is a national ambient air quality standard (carbon monoxide, nitrogen dioxide, ozone, sulfur dioxide, inhalable particulate matter, fine particulate matter, or airborne lead particles).

Critical Habitat: Habitat designated by the US Fish and Wildlife Service under Section 4 of the Endangered Species Act and under the following criteria: 1) specific areas within the geographical area occupied by the species at the time it is listed, on which are found those physical or biological features essential to the conservation of the species and that may require special management of protection; or 2) specific areas outside the geographical area by the species at the time it is listed but that are considered essential to the conservation of the species.

Cultural Landscape: A geographic area, including both natural and cultural resources, associated with a historic event, activity, group, or person; or, a geographic area that has been assigned cultural or social meaning by associated cultural groups.

Cultural Modification: Any man-caused change in the land form, water form, vegetation, or the addition of a structure which creates a visual contrast in the basic elements (form, line, color, texture) of the naturalistic character of a landscape.

Cultural Resource: A location of human activity, occupation, or use identifiable through field inventory, historical documentation, or oral evidence. Cultural resources include archaeological and historical sites, structures, buildings, objects, artifacts, works of art, architecture, and natural features that were important in past human events. They may consist of physical remains or areas where significant human events occurred, even though evidence of the events no longer remains. And they may include definite locations of traditional, cultural, or religious importance to specified social or cultural groups.

Cultural Resource Data: Cultural resource information embodied in material remains such as artifacts, features, organic materials, and other remnants of past activities. An important aspect of data is context, a concept that refers to the relationships among these types of materials and the situations in which they are found.

Cultural Resource Data Recovery: The professional application of scientific techniques of controlled observation, collection, excavation, and/or removal of physical remains, including analysis, interpretation, explanation, and preservation of recovered remains and associated records in an appropriate curatorial facility used as a means of protection. Data recovery may sometimes employ professional collection of such data as oral histories, genealogies, folklore, and related information to portray the social significance of the affected resources. Such data recovery is sometimes used as a measure to mitigate the adverse impacts of a ground-disturbing project or activity.

Cultural Resource Integrity: The condition of a cultural property, its capacity to yield scientific data, and its ability to convey its historical significance. Integrity may reflect the authenticity of a property's historic identity, evidenced by the survival or physical characteristics that existed during its historic or prehistoric period, or its expression of the aesthetic or historic sense of a particular period of time.

Cultural Resource Inventory (Survey): A descriptive listing and documentation, including photographs and maps of cultural resources. Included in an inventory are the processes of locating, identifying, and recording sites, structures, buildings, objects, and districts through library and archival research, information from persons knowledgeable about cultural resources, and on-the-ground surveys of varying intensity.

Class I: A professionally prepared study that compiles, analyzes, and synthesizes all available data on an area's cultural resources. Information sources for this study include published and unpublished documents, BLM inventory records, institutional site files, and state and National Register files. Class I inventories may have prehistoric, historic, and ethnological and sociological elements. These inventories are periodically updated to include new data from other studies and Class II and III inventories.

Class II: A professionally conducted, statistically based sample survey designed to describe the probable density, diversity, and distribution of cultural properties in a large area. This survey is achieved by projecting the results of an intensive survey carried out over limited parts of the target area. Within individual sample units, survey aims, methods, and intensities are the same as those applied in Class III inventories. To improve statistical reliability, Class II inventories may be conducted in several phases with different sample designs.

Class III: A professionally conducted intensive survey of an entire target area aimed at locating and recording all visible cultural properties. In a Class III survey, trained observers commonly conduct systematic inspections by walking a series of close interval parallel transects until they have thoroughly examined an area.

Cultural Resource Values: The irreplaceable qualities that are embodied in cultural resources, such as scientific information about prehistory and history, cultural significance to Native Americans and other groups, and the potential to enhance public education and enjoyment of the Nation's rich cultural heritage.

Cultural Site: A physical location of past human activities or events, more commonly referred to as an archaeological site or a historic property. Such sites vary greatly in size and range from the location of a single cultural resource object to a cluster of cultural resource structures with associated objects and features.

D

Day/Night Average Sound Level (Ldn): A 24-hour average noise level rating with a 10 dB penalty factor applied to nighttime noise levels. The Ldn value is very similar to the CNEL value, but does not include any weighting factor for noise during evening hours.

Decibel (dB): A generic term for measurement units based on the logarithm of the ratio between a measured value and a reference value. Decibel scales are most commonly associated with acoustics (using air pressure fluctuation data); but decibel scales sometimes are used for ground-borne vibrations or various electronic signal measurements.

Desert Pavement: A surface covering of closely packed rock fragments of pebble or cobble size found on desert soils.

Desert Wildlife Management Area (DWMA): areas established in the NECO Plan to address the recovery of the desert tortoise. They are intended to be areas where viable desert tortoise populations can be maintained (Category I habitat).

Distance Zones: A subdivision of the landscape as viewed from an observer position. The subdivision (zones) includes foreground-middleground, background, and seldom seen.

E

Enhancement: A management action designed to improve visual quality.

Equivalent Average Sound Pressure Level (Leq): The decibel level of a constant noise source that would have the same total acoustical energy over the same time interval as the actual time-varying noise condition being measured or estimated. Leq values must be associated with an explicit or implicit averaging time in order to have practical meaning.

Ethnohistoric Resources: Areas used by Native Americans following exploration and settlement by non-Native Americans. Sites or artifacts of particular significance to modern Native Americans are often kept secret by those groups to protect the sites from disturbance, looting, overuse, or other defamations.

Excavation: The scientific examination of an archaeological site through layer-by-layer removal and study of the contents within prescribed surface units, e.g. square meters.

F

Fluvial: Of, relating to, or occurring in a river.

Form: The mass or shape of an object or objects which appear unified, such as a vegetative opening in a forest, a cliff formation, or a water tank.

G

Geomorphic Province: Naturally defined geologic regions that display a distinct landscape or landform.

Greenhouse Gas: A gaseous compound that absorbs infrared radiation and re-radiates a portion of hat back toward the earth’s surface, thus trapping heat and warming the earth’s atmosphere.

H

Habitat: A specific set of physical conditions that surround a single species, a group of species, or a large community. In wildlife management, the major components of habitat are considered to be food, water, cover, and living space.

Hazardous Air Pollutant (HAP): Air pollutants which have been specifically designated by relevant federal or state authorities as being hazardous to human health. Most HAP compounds are designated due to concerns related to: carcinogenic, mutagenic, or teratogenic properties; severe acute toxic effects; or ionizing radiation released during radioactive decay processes.

Hertz (Hz): A standard unit for describing acoustical frequencies measured as the number of air pressure fluctuation cycles per second. For most people, the audible range of acoustical frequencies is from 20 Hz to 20,000 Hz.

Historical Site: A location that was used or occupied after the arrival of Europeans in North America (ca. A.D. 1492). Such sites may consist of physical remains at archaeological sites or areas where significant human events occurred, even though evidence of the events no longer remains. They may have been used by people of either European or Native American descent.

Holocene: Of, denoting, or formed in the second and most recent epoch of the Quaternary period, which began 10 000 years ago at the end of the Pleistocene.

Hydrocarbons: Any organic compound containing only carbon and hydrogen, such as the alkanes, alkenes, alkynes, terpenes, and arenes.

I

Igneous: Rock, such as granite and basalt that has solidified from a molten or partially molten state.

Indian Tribe: Any American Indian group in the United States that the Secretary of the Interior recognizes as possessing tribal status (listed periodically in the Federal Register).

Indigenous: Being of native origin (such as indigenous peoples or indigenous cultural features).

Interdisciplinary Team: A group of individuals with different training, representing the physical sciences, social sciences, and environmental design arts, assembled to solve a problem or perform a task. The members of the team proceed to a solution with frequent interaction so that each discipline may provide insights to any stage of the problem and disciplines may combine to provide new solutions.

Invasive Species: An exotic species whose introduction does or is likely to cause economic or environmental harm or harm to human health (Executive Order 13122, 2/3/99).

Isolate: Non-linear, isolated archaeological features without associated artifacts.

K

Key Observation Point (KOP): One or a series of points on a travel route or at a use area or a potential use area, where the view of a management activity would be most revealing.

L

Landscape Character: The arrangement of a particular landscape as formed by the variety and intensity of the landscape features and the four basic elements of form, line, color, and texture. These factors give the area a distinctive quality which distinguishes it from its immediate surroundings.

Landscape Features: The land and water form, vegetation, and structures which compose the characteristic landscape.

Leasable Minerals: Minerals whose extraction from federally managed land requires a lease and the payment of royalties. Leasable minerals include coal, oil and gas, oil shale and tar sands potash, phosphate, sodium, and geothermal steam.

Line: The path, real or imagined, that the eye follows when perceiving abrupt differences in form, color, or texture. Within landscapes, lines may be found as ridges, skylines, structures, changes in vegetative types, or individual trees and branches.

Locatable Minerals: Minerals subject to exploration, development, and disposal by staking mining claims as authorized by the Mining Law of 1872, as amended. This includes deposits of gold, silver, and other uncommon minerals not subject to lease or sale.

M

Maintenance Area: An area that currently meets federal ambient air quality standards but which was previously designated as a nonattainment area. Federal agency actions occurring in a maintenance area are still subject to Clean Air Act conformity review requirements.

Management Activity: A surface disturbing activity undertaken on the landscape for the purpose of harvesting, traversing, transporting, protecting, changing, replenishing, or otherwise using resources.

Memorandum of Understanding (MOU): A written but noncontractual agreement between two or more agencies or other parties to take a certain course of action.

Mineral Material Disposal: The sale of sand, gravel, decorative rock, or other materials defined in 43 CFR 3600.

Mining Claim: A mining claim is a selected parcel of Federal Land, valuable for a specific mineral deposit or deposits, for which a right of possession has been asserted under the General Mining Law. This right is restricted to the development and extraction of a mineral deposit. The rights granted by a mining claim protect against a challenge by the United States and other claimants only after the discovery of a valuable mineral deposit. The two types of mining claims are lode and placer. In addition, mill sites and tunnel sites may be located to provide support facilities for lode and placer mining.

Mitigation: Mitigation includes: (a) Avoiding the impacts altogether by not taking an action or parts of an action, (b) Minimizing impacts by limiting the degree or magnitude of the action and its implementation, (c) Rectifying the impact by repairing, rehabilitating, or restoring the affected environment, (d) Reducing or eliminating the impact over time by preservation and maintenance operations during the life of the action, (e) Compensating for the impact by replacing or providing substitute resources or environments (40 CFR 1508.20).

N

National Pollutant Discharge Elimination System (NPDES): The NPDES permit program has been delegated in California to the State Water Resources Control Board. These sections of the CWA require that an applicant for a federal license or permit that allows activities resulting in a discharge to waters of the United States must obtain a State certification that the discharge complies with other provisions of the Clean Water Act.

National Register District: A group of significant archaeological, historical, or architectural sites, within a defined geographic area, that is listed on the National Register of Historic Places. See National Register of Historic Places.

National Register of Historic Places: The official list, established by the National Historic Preservation Act, of the Nation's cultural resources worthy of preservation. The National Register lists archeological, historic, and architectural properties (i.e. districts, sites, buildings, structures, and objects) nominated for their local, state, or national significance by state and federal agencies and approved by the National Register Staff. The National Park Service maintains the National Register. Also see National Historic Preservation Act.

National Scenic Trail: One of the three categories of national trails defined in the National Trails System Act of 1968 that can only be established by act of Congress and are administered by federal agencies, although part or all of their land base may be owned and managed by others. National Scenic Trails are existing regional and local trails recognized by either the Secretary of Agriculture or the Secretary of the Interior upon application.

Native American: Indigenous peoples of the western hemisphere.

Nitric Oxide (NO): A colorless toxic gas formed primarily by combustion processes that oxidize atmospheric nitrogen gas or nitrogen compounds found in the fuel. A precursor of ozone, nitrogen dioxide, numerous types of photochemically generated nitrate particles (including PAN), and atmospheric nitrous and nitric acids. Most nitric oxide formed by combustion processes is converted into nitrogen dioxide by subsequent oxidation in the atmosphere over a period that may range from several hours to a few days.

Nitrogen Dioxide (NO2): A toxic reddish gas formed by oxidation of nitric oxide. Nitrogen dioxide is a strong respiratory and eye irritant. Most nitric oxide formed by combustion processes is converted into nitrogen dioxide by subsequent oxidation in the atmosphere. Nitrogen dioxide is a criteria pollutant in its own right, and is a precursor of ozone, numerous types of photochemically generated nitrate particles (including PAN), and atmospheric nitrous and nitric acids.

Nitrogen Oxides (NOx): A group term meaning the combination of nitric oxide and nitrogen dioxide; other trace oxides of nitrogen may also be included in instrument-based NOx measurements. A precursor of ozone, photochemically generated nitrate particles (including PAN), and atmospheric nitrous and nitric acids.

Non-native Species: See Invasive Species and Noxious Weed.

Noxious Weed: According to the Federal Noxious Weed Act (PL 93-629), a weed that causes disease or has other adverse effects on man or his environment and therefore is detrimental to the agricultural and commerce of the United States and to the public health.

Nonattainment Area: An area that does not meet a federal or state ambient air quality standard. Federal agency actions occurring in a federal nonattainment area are subject to Clean Air Act conformity review requirements.

O

Off-Highway Vehicle (OHV): Any vehicle capable of or designed for travel on or immediately over land, water, or other natural terrain, deriving motive power from any source other than muscle. OHVs exclude: 1) any non-amphibious registered motorboat; 2), any fire, emergency, or law enforcement vehicle while being used for official or emergency purposes; 3) any vehicle whose use is expressly authorized by a permit, lease, license, agreement, or contract issued by an authorized officer or otherwise approved; 4) vehicles in official use; and 5) any combat or combat support vehicle when used in times of national defense emergencies.

Organic Compounds: Compounds of carbon containing hydrogen and possibly other elements (such as oxygen, sulfur, or nitrogen). Major subgroups of organic compounds include hydrocarbons, alcohols, aldehydes, carboxylic acids, esters, ethers, and ketones. Organic compounds do not include crystalline or amorphous forms of elemental carbon (graphite, diamond, carbon black, etc.), the simple oxides of carbon (carbon monoxide and carbon dioxide), metallic carbides, or metallic carbonates.

Overdraft condition: A condition in which the total volume of water being extracted from the groundwater basin would be greater than the total recharge provided to the basin.

Ozone (O3): A compound consisting of three oxygen atoms. Ozone is a major constituent of photochemical smog that is formed primarily through chemical reactions in the atmosphere involving reactive organic compounds, nitrogen oxides, and ultraviolet light. Ozone is a toxic chemical that damages various types of plant and animal tissues and which causes chemical oxidation damage to various materials. Ozone is a respiratory irritant, and appears to increase susceptibility to respiratory infections. A natural layer of ozone in the upper atmosphere absorbs high energy ultraviolet radiation, reducing the intensity and spectrum of ultraviolet light that reaches the earth’s surface.

P

Paleontological Resources (Fossils): The physical remains of plants and animals preserved in soils and sedimentary rock formations. Paleontological resources are for understanding past environments, environmental change, and the evolution of life.

Paleontology: A science dealing with the life forms of past geological periods as known from fossil remains.

Paleozoic Era: An era of geologic time (600 million to 280 million years ago) between the Late Precambrian and the Mesozoic eras and comprising the Cambrian, Ordovician, Silurian, Devonian, Missippian, Pennsylvanian, and Permian periods.

Particulate Matter: Solid or liquid material having size, shape, and density characteristics that allow the material to remain suspended in the atmosphere for more than a few minutes. Particulate matter can be characterized by chemical characteristics, physical form, or aerodynamic properties. Categories based on aerodynamic properties are commonly described as being size categories, although physical size is not used to define the categories. Many components of suspended particulate matter are respiratory irritants. Some components (such as crystalline or fibrous minerals) are primarily physical irritants. Other components are chemical irritants (such as sulfates, nitrates, and various organic chemicals). Suspended particulate matter also can contain compounds (such as heavy metals and various organic compounds) that are systemic toxins or necrotic agents. Suspended particulate matter or compounds adsorbed on the surface of particles can also be carcinogenic or mutagenic chemicals.

Peak Particle Velocity: A measure of ground-borne vibrations. Physical movement distances are typically measured in thousandths of an inch, and occur over a tiny fraction of a second. But the normal convention for presenting that data is to convert it into units of inches per second.

Petroglyph: Pictures, symbols, or other art work pecked, carved, or incised on natural rock surfaces.

pH (parts hydrogen): The logarithm of the reciprocal of hydrogen-ion concentration in gram atoms per liter.

Physiographic Province: An extensive portion of the landscape normally encompassing many hundreds of square miles, which portrays similar qualities of soil, rock, slope, and vegetation of the same geomorphic origin (Fenneman 1946; Sahrhaftig 1975).

Pleistocene (Ice Age): An epoch in the Quarternary period of geologic history lasting from 1.8 million to 10,000 years ago. The Pleistocene was an epoch of multiple glaciation, during which continental glaciers covered nearly one fifth of the earth’s land.

Pliocene: The Pliocene Epoch is the period in the geologic timescale that extends from 5.332 million to 2.588 million years before present.

PM_{10} (inhalable particulate matter): A fractional sampling of suspended particulate matter that approximates the extent to which suspended particles with aerodynamic equivalent diameters smaller than 50 microns penetrate to the lower respiratory tract (tracheo-bronchial airways and alveoli in the lungs). In a regulatory context, PM_{10} is any suspended particulate matter collected by a certified sampling device having a 50 percent collection efficiency for particles with aerodynamic equivalent diameters of 9.5-10.5 microns and an maximum aerodynamic diameter collection limit less than 50 microns. Collection efficiencies are greater than 50 percent for particles with aerodynamic diameters smaller than 10 microns and less than 50 percent for particles with aerodynamic diameters larger than 10 microns.

$PM_{2.5}$ (fine particulate matter): A fractional sampling of suspended particulate matter that approximates the extent to which suspended particles with aerodynamic equivalent diameters smaller than 6 microns penetrate into the alveoli in the lungs. In a regulatory context, $PM_{2.5}$ is any suspended particulate matter collected by a certified sampling device having a 50 percent collection efficiency for particles with aerodynamic equivalent diameters of 2.0-2.5 microns and an maximum aerodynamic diameter collection limit less than 6 microns. Collection efficiencies are greater than 50 percent for particles with aerodynamic diameters smaller than 2.5 microns and less than 50 percent for particles with aerodynamic diameters larger than 2.5 microns.

Precursor: A compound or category of pollutant that undergoes chemical reactions in the atmosphere to produce or catalyze the production of another type of air pollutant.

Prehistoric: Refers to the period wherein American Indian cultural activities took place before written records and not yet influenced by contact with nonnative culture(s).

Programmatic Agreement (PA): A document that details the terms of a formal, legally binding agreement between one party and other state and/or federal agencies. A PA establishes a process for consultation, review, and compliance with one or more federal laws, most often with those federal laws concerning historic preservation.

Protocol Agreement (Protocol): A modified version of the NPA, adapted to the unique requirements of managing cultural resources on public lands in California, and is used as the primary management guidance for BLM offices in the state.

Q

Quaternary Age: The most recent of the three periods of the Cenozoic Era in the geologic time scale of the ICS. It follows the Tertiary Period, spanning 2.588 ± 0.005 million years ago to the present. The Quaternary includes two geologic epochs: the Pleistocene and the Holocene Epochs.

R

Rehabilitation: A management alternative and/or practice which restores landscapes to a desired scenic quality.

Restoration (Cultural Resource): The process of accurately reestablishing the form and details of a property or portion of a property together with its setting, as it appeared in a particular period of time. Restoration may involve removing later work that is not in itself significant and replacing missing original work. Also see Stabilization (Cultural Resource).

Riparian: Situated on or pertaining to the bank of a river, stream, or other body of water. Normally describes plants of all types that grow rooted in the water table or sub-irrigation zone of streams, ponds, and springs.

Road: A linear route declared a road by the owner, managed for use by low-clearance vehicles having four or more wheels, and maintained for regular and continuous use.

Route: "Routes" represents a group or set of roads, trails, and primitive roads that represents less than 100% of the BLM transportation system. Generically, components of the transportation system are described as routes.

S

Saleable Minerals: Common variety minerals on the public lands, such as sand and gravel, which are used mainly for construction and are disposed by sales or special permits to local governments. See also Mineral Materials.

Scale: The proportionate size relationship between an object and the surroundings in which the object is placed.

Scenery: The aggregate of features that give character to a landscape.

Scenic Area: An area whose landscape character exhibits a high degree of variety and harmony among the basic elements which results in a pleasant landscape to view.

Scenic Quality: The relative worth of a landscape from a visual perception point of view.

Scenic Quality Evaluation Key Factors: The seven factors (land form, vegetation, water, color, adjacent scenery, scarcity, and cultural modifications) used to evaluate the scenic quality of a landscape.

Scenic Quality Ratings: The relative scenic quality (A, B, or C) assigned a landscape by applying the scenic quality evaluation key factors; scenic quality A being the highest rating, B a moderate rating, and C the lowest rating.

Scenic Values: See Scenic Quality and Scenic Quality Ratings.

Secretary of the Interior: The U.S. Department of the Interior is in charge of the nation's internal affairs. The Secretary serves on the President's cabinet and appoints citizens to the National Park Foundation board.

Sedimentary Rocks: Rocks, such as sandstone, limestone, and shale, that are formed from sediments or transported fragments deposited in water.

Sensitivity Levels: Measures (e.g., high, medium, and low) of public concern for scenic quality.

Shaft: See Mine Shaft.

Special Status Species: Federal- or state-listed species, candidate or proposed species for listing, or species otherwise considered sensitive or threatened by state and federal agencies.

State Historic Preservation Office (SHPO): The official within and authorized by each state at the request of the Secretary of the Interior to act as liaison for the National Historic Preservation Act. Also see National Historic Preservation Act.

State Implementation Plan (SIP): Legally enforceable plans adopted by states and submitted to EPA for approval, which identify the actions and programs to be undertaken by the State and its subdivisions to achieve and maintain national ambient air quality standards in a time frame mandated by the Clean Air Act.

State Water Resources Control Board (SWRCB): Created in 1967, joint authority of water allocation and water quality protection enables the State Water Board to provide comprehensive protection for California's waters. The mission of the nine Regional Boards is to develop and enforce water quality objectives and implementation plans that will best protect the State's waters, recognizing local differences in climate, topography, geology and hydrology.

Subsurface: Of or pertaining to rock or mineral deposits which generally are found below the ground surface.

Sulfur Dioxide (SO2): A pungent, colorless, and toxic oxide of sulfur formed primarily by the combustion of fossil fuels. It is a respiratory irritant, especially for asthmatics. A criteria pollutant in its own right, and a precursor of sulfate particles and atmospheric sulfuric acid.

T

Taphonomy: The study of the processes by which animal bones and shells and plant and other fossil remains are transformed after deposition.

Tertiary: The Tertiary Period marks the beginning of the Cenozoic Era. It began 65 million years ago and lasted more than 63 million years, until 1.8 million years ago. The Tertiary is made up of 5 epochs: the Paleocene Epoch, the Eocene Epoch, the Oligocene Epoch, the Miocene Epoch, and the Pliocene Epoch.

Texture: The visual manifestations of the interplay of light and shadow created by the variations in the surface of an object or landscape.

Toxic: Poisonous. Exerting an adverse physiological effect on the normal functioning of an organism's tissues or organs through chemical or biochemical mechanisms following physical contact or absorption.

Traditional Cultural Properties: Areas associated with the cultural practices or beliefs of a living community. These sites are rooted in the community's history and are important in maintaining cultural identity.

Trail: A linear route managed for human-powered, stock, or off-highway vehicle forms of transportation or for historical or heritage values. Trails are not generally managed for use by four-wheel drive or high-clearance vehicles.

V

Vandalism (Cultural Resource): Malicious damage or the unauthorized collecting, excavating, or defacing of cultural resources. Section 6 of the Archaeological Resources Protection Act states that "no person may excavate, remove, damage, or otherwise alter or deface any archaeological resource located on public lands or Indian lands…unless such activity is pursuant to a permit issued under section 4 of this Act."

Variables: Factors influencing visual perception including distance, angle of observation, time, size or scale, season of the year, light, and atmospheric conditions.

Variety: The state or quality of being varied and having the absence of monotony or sameness.

Vehicle Miles Traveled (VMT): The cumulative amount of vehicle travel within a specified or implied geographical area over a given period of time.

Viewshed: The landscape that can be directly seen under favorable atmospheric conditions, from a viewpoint or along a transportation corridor. Protection, rehabilitation, or enhancement is desirable and possible.

Visual Contrast: See Contrast.

Visual Quality: See Scenic Quality.

Visual Resources: The visible physical features on a landscape (e.g., land, water, vegetation, animals, structures, and other features).

Visual Resource Management Classes: Categories assigned to public lands based on scenic quality, sensitivity level, and distance zones. There are four classes. Each class has an objective which prescribes the amount of change allowed in the characteristic landscape.

Visual Resource Management (VRM): The inventory and planning actions taken to identify visual values and to establish objectives for managing those values; and the management actions taken to achieve the visual management objectives.

Visual Values: See Scenic Quality.

W

Wetlands: Permanently wet or intermittently water-covered areas, such as swamps, marshes, bogs, potholes, swales, and glades.

Wilderness Area: An area formally designated by Congress as part of the National Wilderness Preservation System as defined in the Wilderness Act of 1964 (78 Stat.891), Section 2(c).

Wilderness Study Area: A roadless area or island that has been inventoried and found to have wilderness characteristics as described in section 603 of FLPMA and section 2(c) of the Wilderness Act of 1964 (78 Stat. 891). Source for both of these is BLM's IMP and Guidelines for Lands Under Wilderness Review (December 1979).

REFERENCES

Organization of the References

A number of document available through the California Energy Commission's permitting process were used as primary references in preparing this PA/FEIS. These include the Staff Assessment/Draft Environmental Impact Statement, the Revised Staff Assessment, the Supplemental Staff Assessment and the Supplemental Staff Assessment, Part 2. The SA/DEIS is incorporated by reference in this FEIS. Other references used in the preparation of this FEIS for the BSPP are organized in this section as follows:

References from the CEC Permitting Process

Although the authors of this FEIS did not use the cited references from the documents described above from the CEC Permitting Process as primary reference, the references are listed here to provide the complete listing of references that were used in the analysis of the Blythe Application for Certification by the CEC and then the PA/FEIS. Those references are listed by topical area/environmental parameter.

Additional References

These are additional references that were used by the PA/FEIS authors as primary sources of information for the analyses provided in the PA/FEIS.

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