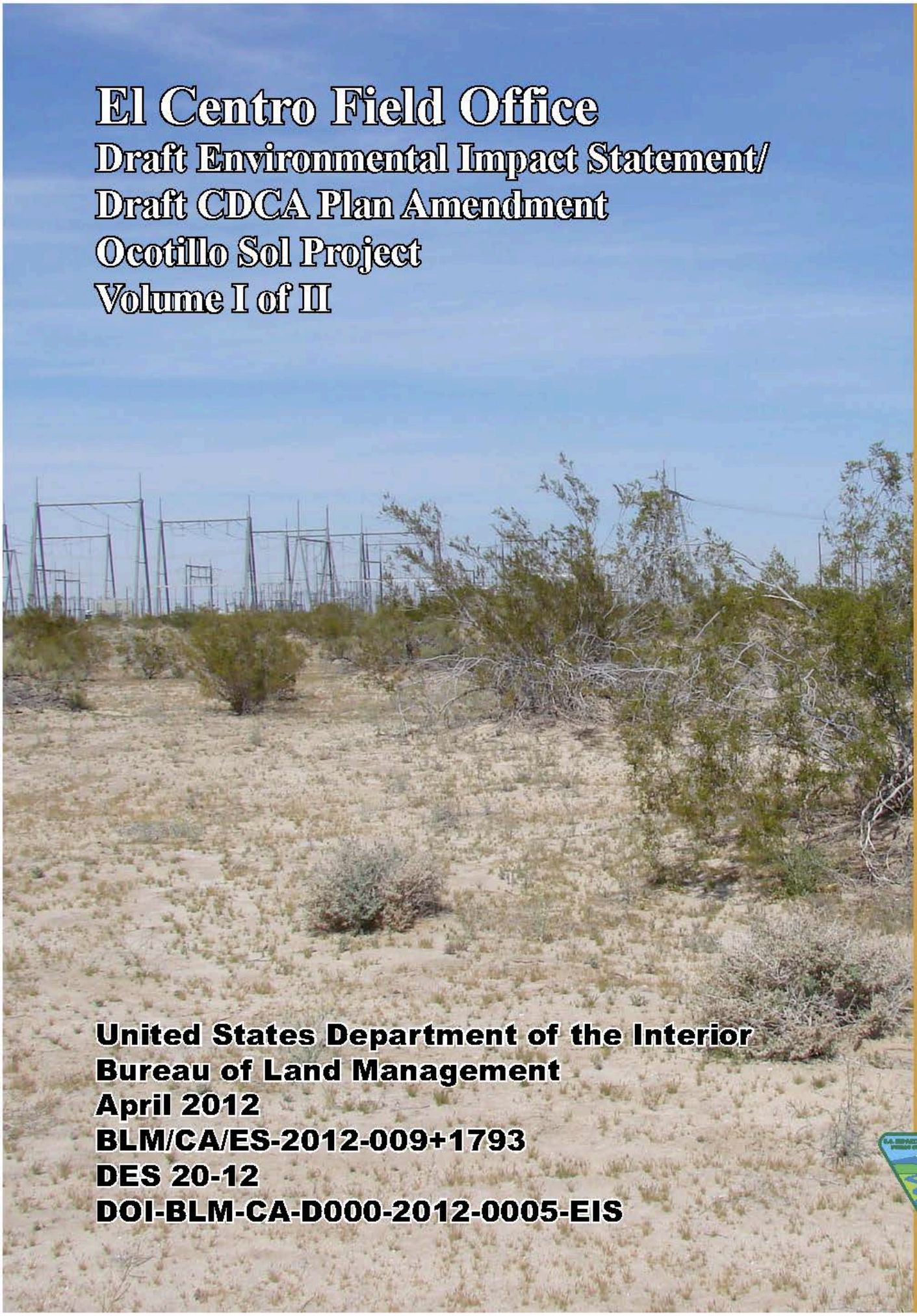

El Centro Field Office

Draft Environmental Impact Statement/ Draft CDCA Plan Amendment

Ocotillo Sol Project

Volume I of II

United States Department of the Interior
Bureau of Land Management
April 2012
BLM/CA/ES-2012-009+1793
DES 20-12
DOI-BLM-CA-D000-2012-0005-EIS

BLM

El Centro Field Office

United States Department of the Interior

BUREAU OF LAND MANAGEMENT
El Centro Field Office
1661 S. 4th Street
El Centro, CA 92243
(760) 337-4436

In reply refer to: CACA 51625

April 2012

Dear Reader:

Attached for your review and comment is the Draft Environmental Impact Statement/ Draft California Desert Conservation Area Plan Amendment (Draft EIS/Draft CDCA Plan Amendment) for the Ocotillo Sol Project prepared by the Bureau of Land Management (BLM) El Centro Field Office. The BLM prepared this document in accordance with the National Environmental Policy Act of 1969 (NEPA), as amended, the Federal Land Policy and Management Act of 1976 (FLPMA), as amended, the applicable implementing regulations, the BLM's Land Use Planning Handbook (H-1601-1), and other applicable law and policy.

The Applicant's proposed Ocotillo Sol Project, a 100-acre, up to 20-megawatt solar photovoltaic facility and 15-acre temporary construction laydown area, would be sited on BLM-managed lands adjacent to the existing Imperial Valley Substation in Imperial County, California. The Draft EIS/Draft CDCA Plan Amendment and supporting information are available on the project web site at: www.blm.gov/en/fo/elcentro.

The BLM encourages the public to provide information and comments pertaining to the analysis presented in the Draft EIS/Draft CDCA Plan Amendment. We are particularly interested in feedback concerning the adequacy and accuracy of the proposed alternatives, the analysis of the alternatives, and any new information that would help the BLM as it develops the document. As a member of the public, your timely comments on the Draft EIS/ Draft CDCA Plan Amendment will help formulate the Final EIS.

Comments will be accepted for ninety (90) calendar days following the Environmental Protection Agency's publication of its Notice of Availability in the *Federal Register*. The BLM can best use your comments and resource information submissions if received within the review period.

Comments may be submitted electronically at the following e-mail address: BLM_CA_Ocotillo_Sol_Comments@blm.gov. Comments may also be submitted by mail to: Noel Ludwig, California Desert District Office, 22835 Calle San Juan de Los Lagos, Moreno Valley, CA 92553. To facilitate analysis of comments and information submitted, we strongly encourage you to submit comments in an electronic format.

Your review of and comments on the content of this document are critical to the success of this planning effort. If you wish to submit comments on the Draft EIS/Draft CDCA

Plan Amendment, we request that you make your comments as specific as possible. Comments containing only opinions or preferences will be considered and included as part of the decision-making process, but they will not receive a formal response from the BLM.

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.

Public meetings to provide an overview of the document, respond to questions, and take public comments will be announced by local media, website, and/or public mailings at least 15 days in advance.

Copies of the Draft EIS/Draft CDCA Plan Amendment have been sent to affected federal, state and local government agencies, as well as affected Tribal governments. Copies of the Draft EIS/Draft CDCA Plan Amendment are available for public inspection at the BLM California Desert District Office (see address above); the BLM El Centro Field Office, 1661 S. 4th Street, El Centro, California 922443; and the BLM California State Office, 2800 Cottage Way, Sacramento, California 95825.

Thank you for your continued interest in the Draft EIS/Draft CDCA Plan Amendment. We appreciate the information and suggestions you contribute to the planning process. For additional information or clarification regarding this document or the planning process, please contact Noel Ludwig, BLM Project Manager, California Desert District Office at (951) 697-5368 or BLM_CA_Ocotillo_Sol_Comments@blm.gov.

Sincerely,

Margaret L. Goodro
Field Manager, El Centro Field Office
Bureau of Land Management

Ocotillo Sol Project
Draft Environmental Impact Statement

Prepared by
U.S. Department of the Interior
Bureau of Land Management
El Centro Field Office
California

April 2012

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DOI Control #DES 12-20
BLM California Desert District Office Publication #DOI-BLM-CA-D000-2012-0005-EIS

EXECUTIVE SUMMARY

San Diego Gas & Electric (the Applicant) has filed a right-of-way application with the Bureau of Land Management (BLM) for a right-of-way grant to construct, operate, maintain, and decommission a 100-acre solar photovoltaic facility on BLM-managed lands. The Ocotillo Sol Project would interconnect with the existing Imperial Valley Substation and generate up to 20 megawatts of electricity. In connection with its consideration of the Applicant's right-of-way application, the BLM will also be considering whether or not to amend the California Desert Conservation Area (CDCA) Plan of 1980, as amended.

The decision regarding the issuance of the right-of-way grant and potential amendment to the CDCA Plan will be based in part on an evaluation of the potential environmental effects through the environmental review process under the National Environmental Policy Act of 1969 (NEPA) and the requirements of the Federal Land Policy and Management Act of 1976 (FLPMA). This environmental impact statement (EIS) follows regulations promulgated by the Council on Environmental Quality for Implementing the Procedural Provisions of NEPA (40 Code of Federal Regulations [CFR] 1500–1508); the Department of the Interior's NEPA regulations, 43 CFR Part 46; the BLM NEPA Handbook, H-1790-1; Sections 201, 202, and 206 of FLPMA (43 CFR 1600); and the BLM Land Use Planning Handbook, H1601-1. This EIS describes the components of and reasonable alternatives to the proposed action and environmental consequences of the proposed action and the alternatives. It also presents recommended mitigation measures that would avoid, minimize, or mitigate the significant environmental impacts identified. In accordance with NEPA, this EIS also identifies alternatives that respond to the BLM's purpose and need, including alternatives to amend the CDCA Plan.

ES.1 PROJECT OVERVIEW

The Applicant's proposed 100-acre solar photovoltaic generation facility and 15-acre temporary laydown area would be sited entirely on BLM-managed lands adjacent to the existing Imperial Valley Substation in Imperial County, California. The Ocotillo Sol Project would be sited approximately 82 miles east of San Diego, approximately 9 miles southwest of El Centro, 5 miles south of Seeley, and approximately 5 miles north of the United States–Mexico border.

The project site would lie within the Imperial South California Renewable Energy Zone and within the BLM's Yuha Basin Area of Critical Environmental Concern, which contains the Yuha Desert Management Area. The Yuha Desert Management Area was created for the conservation and management of the flat-tailed horned lizard as identified in the *Flat-tailed Horned Lizard Rangewide Management Strategy, 2003 Revision, An Arizona-California Conservation Strategy* and incorporated through an amendment to the CDCA Plan.

The Ocotillo Sol Project components would include the photovoltaic modules and mounting structures, a maintenance building with an associated parking area, internal roads, inverters, transformers, and the combining switchgear.

ES.2 PURPOSE AND NEED

In accordance with FLPMA (Section 103(c)), public lands are to be managed for multiple use that takes into account the long-term needs of future generations for renewable and non-renewable resources. The Secretary of the Interior is authorized to grant rights-of-way on public lands for systems of generation, transmission, and distribution of electric energy (Section 501[a][4]). Taking into account the BLM's multiple use mandate, the purpose and need for the proposed action is to respond to a FLPMA Title V right-of-way application submitted by the Applicant to construct, operate, maintain, and decommission a solar photovoltaic facility and associated infrastructure on public lands administered by the BLM in compliance with FLPMA, BLM right-of-way regulations, and other applicable federal laws and policies.

In conjunction with FLPMA, the BLM's applicable authorities include the following:

- 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

- Section 211 of the Energy Policy Act of 2005, sets forth the "sense of Congress" that the Secretary of the Interior should seek to have approved 10,000 megawatts of non-hydropower renewable energy on public lands by 2015

- Secretarial Order 3285A1, dated February 22, 2010, which establishes the development of renewable energy as a priority for the Department of the Interior

The BLM will decide whether to deny the proposed right-of-way, grant the right-of-way, or grant the right-of-way with modifications. The BLM may include any terms, conditions, and stipulations it determines to be in the public interest and may include modifying the proposed use or changing the route or location of the proposed facilities (43 CFR 2805.10[a][1]).

In connection with its decision on the Ocotillo Sol Project right-of-way grant application, the BLM's action will also include consideration of potential amendments to the CDCA land use plan, as analyzed in the Draft EIS alternatives. The CDCA Plan, while recognizing the potential compatibility of solar energy facilities on public lands, requires that all sites associated with power generation or transmission not identified in that plan be considered through the land use plan amendment process to determine the suitability of the sites for energy development. The Ocotillo Sol Project site was not previously identified as suitable for solar energy development, so any authorization of the project would require an amendment to the CDCA Plan.

Additionally, the CDCA Plan requires that transmission lines about 161 kilovolts are either within a designated corridor or allowed outside of a designated corridor. The Ocotillo Sol Project would use an existing transmission line that is entirely within a designated corridor, so a Plan Amendment would not be required. The transmission line associated with this project is compliant with the CDCA Plan.

ES.3 ALTERNATIVES

Alternatives considered in this environmental impact statement are based on issues identified by the BLM, comments received during the public scoping process, and the Applicant's process for evaluating and selecting potential project locations. The BLM is required to "study, develop, and describe appropriate alternatives to recommended course of action in any proposal that involves unresolved conflicts concerning alternative uses of available resources" (42 USC § 4332). In determining the alternatives to be considered, the emphasis is on what is reasonable: "Reasonable alternatives include those that are practical or feasible from the technical and economic standpoint and using common sense, rather than simply desirable from the standpoint of applicant" (46 *Federal Register* 18026). Alternatives must also meet the purpose and need to be considered reasonable.

Alternatives considered by the BLM, along with those suggested by the public during the scoping process, were evaluated using the following criteria:

§ Does the alternative fulfill the purposes, needs, and objectives identified in Chapter 1 for both the BLM and the applicant?

§ Does the alternative minimize effects on human and environmental resources and therefore resolve identified resource conflicts?

§ Is the alternative technically and economically feasible to construct, operate, maintain, and decommission?

Alternatives that met all the criteria above were analyzed and are presented in detail in this environmental impact statement.

ES.3.1 ALTERNATIVE 1: NO ACTION / NO CDCA PLAN AMENDMENT

Under NEPA, the No Action Alternative serves as a benchmark of existing conditions by which the public and decision makers can compare the environmental effects of the proposed action and the alternatives. With this No Action Alternative, the Ocotillo Sol Project would not be approved (all components of the project would be denied), no right-of-way grant would be issued, and there would be no CDCA Plan Amendment regarding the suitability of the site for solar development. If Alternative 1 were selected, the construction, operation, maintenance, and decommission of the Ocotillo Sol Project would not occur. This No Action Alternative does not preclude future solar development in the Ocotillo Sol Project area, subject to compliance with the applicable statutory and regulatory requirements at the time such a project were proposed.

ES.3.2 ALTERNATIVE 2: APPLICANT'S PROPOSED PROJECT

Under Alternative 2, the Applicant's proposed project, the Applicant would construct, operate, maintain, and decommission a 100-acre, up to 20-megawatt solar photovoltaic facility on BLM-managed lands pursuant to an approved right-of-way grant. In addition, this alternative includes

a 15-acre temporary right-of-way for use as a laydown area during construction of the solar facility. This alternative would also include a 12.47-kilovolt, 2,000-foot underground generation tie line from the generation facility to the adjacent Imperial Valley Substation. It would also include interconnection facilities within the Imperial Valley Substation consisting of breakers, switches, racking systems, and cabling. The Applicant would develop, execute, own, and operate the Ocotillo Sol Project.

PROPOSED CDCA PLAN AMENDMENT

Under Alternative 2, the BLM would amend the CDCA Plan to identify all 115 acres as suitable for solar energy development and allow solar development on this land. A Plan Amendment would not be required for the proposed generation tie line and interconnection facilities as they lie fully within a previously designated corridor (Utility Corridor N) for such facilities within the the existing CDCA Plan.

ES.3.3 ALTERNATIVE 3: REDUCED CONSTRUCTION FOOTPRINT ALTERNATIVE (PREFERRED ALTERNATIVE)

Alternative 3, the reduced construction footprint alternative, is the BLM's Preferred Alternative. Alternative 3 would be the same as Alternative 2 except it would be modified to reduce the total area of disturbance in the Yuha Desert associated with the Ocotillo Sol Project. By reducing the laydown area, Alternative 3 would necessitate the Applicant's management of laydown and staging within the 100-acre Ocotillo Sol Project site as construction activities progress. The 2-acre temporary laydown area would be used for construction workforce parking.

ES.3.4 ALTERNATIVE 4: NO PROJECT / AMEND CDCA PLAN TO IDENTIFY AREA AS SUITABLE FOR SOLAR DEVELOPMENT

Under Alternative 4, the Ocotillo Sol Project would not be approved and no right-of-way grant would be issued to the Applicant. Construction, operation, maintenance, and decommission of the Ocotillo Sol Project would not occur. The CDCA Plan, however, would be amended to identify the Ocotillo Sol Project area as suitable for solar energy development.

ES.3.5 ALTERNATIVE 5: NO PROJECT / AMEND CDCA PLAN TO IDENTIFY AREA AS UNSUITABLE FOR SOLAR DEVELOPMENT

Under Alternative 5, the Ocotillo Sol Project would not be approved and no right-of-way grant would be issued to the Applicant. Construction, operation, maintenance, and decommission of the Ocotillo Sol Project would not occur. Additionally, the CDCA Plan would be amended to identify the site as unsuitable for solar energy development, and the site would not be available for such development in the future. The site, however, would continue to be available for other types of uses allowable on BLM-administered lands, and the site would remain within a designated utility corridor.

ES.4 ENVIRONMENTAL CONSEQUENCES

Under Alternatives 1, 4, and 5, there would be no construction, operation and maintenance, or decommissioning of the Applicant's proposed Ocotillo Sol Project. Therefore, no direct or indirect impacts associated with the Ocotillo Sol Project would occur under any of these alternatives. Alternatives 1, 4, and 5 would not contribute cumulative impacts when added to other reasonably foreseeable future projects in the area.

Of the 5 alternatives considered, Alternative 2 would have the highest level of ground disturbance (115 acres) and thus the highest level of impacts. Alternative 3, the preferred alternative, would have a lower level of ground disturbance (102 acres) than Alternative 2. Impacts under Alternatives 2 and 3 would be minimal overall. Mitigation measures and best management practices would be incorporated into the project that would further reduce the level of impacts.

No adverse direct or indirect impacts are expected to occur under Alternatives 2 and 3 related to geologic features; water resources; special status plant species; jurisdictional waters; cultural resources or historic properties; lands and realty; special designation areas; transportation and access; noise sensitive receptors; public health and safety; local socioeconomic impact area; or minority populations, low-income communities, and Tribes. Alternatives 2 and 3 would not contribute cumulative impacts when added to other reasonably foreseeable future projects in the area.

Negligible impacts (direct, indirect, or cumulative) would occur related to air quality, greenhouse gases, soil resources, paleontological resources, wildland fire, recreation, and visual resources under Alternatives 2 and 3.

Although Alternatives 2 and 3 would generate a marginal economic benefit for the local economy, the impact would be relatively small and would not represent a substantial impact to the regional economy.

Alternatives 2 and 3 would result in direct and indirect adverse impacts to vegetation resources and the creosote bush–white burr sage scrub sensitive natural community. Mitigation measures would be implemented to minimize or compensate for these impacts. With implementation of mitigation measures, Alternatives 2 and 3 would not contribute to cumulatively adverse impacts to sensitive natural communities.

Alternatives 2 and 3 would result in adverse impacts to flat-tailed horned lizard. Conservation and mitigation measures would be implemented to avoid, minimize, or compensate for impacts under these alternatives. Impacts under Alternatives 2 and 3 would be mitigated in accordance with the *Flat-tailed Horned Lizard Rangewide Management Strategy* and thus would not contribute to cumulatively adverse impacts to flat-tailed horned lizard.

Alternatives 2 and 3 would result in adverse impacts also to burrowing owl, raptor species, migratory birds, and special status small mammals and reptiles. Conservation and mitigation measures would be implemented to avoid, minimize, or compensate for impacts under these alternatives. With implementation of mitigation measures, Alternatives 2 and 3 would not

contribute to a cumulatively adverse impact to burrowing owl, raptor species, migratory birds, and special status small mammals and reptiles.

Under Alternatives 2 and 3, ground-disturbing activities may result in the spread of noxious, invasive, or non-native weed species. Soil disturbed due to grading during construction and continued use of the Ocotillo Sol Project area could result in the introduction or increased density of non-native invasive plant species. To reduce the potential for the introduction and spread of non-native invasive plant species under Alternatives 2 and 3, a Weed Management Plan has been prepared and would be implemented.

Table ES-1 provides a comparison of impacts by alternative at the end of this Executive Summary.

ES.5 LEAD AGENCY ROLES AND RESPONSIBILITIES

As the federal lead agency on the proposed Ocotillo Sol Project, the BLM is responsible for soliciting comments from relevant agencies and the public, organizing and analyzing the comments received, and identifying the issues that will be addressed during the environmental analysis.

ES.6 NATIVE AMERICAN GOVERNMENT-TO-GOVERNMENT CONSULTATION

The BLM is responsible for consultation with Indian tribes to identify sacred sites, historic properties, other places of traditional religious and cultural significance, and other resources within the project area. The BLM is also responsible for consultation with Indian tribes to incorporate appropriate mitigation measures in the event such sites are adversely affected by the Ocotillo Sol Project.

The BLM invited Indian tribes to consult on the Ocotillo Sol Project on a government-to-government basis at the earliest stages of project planning. Initial Tribal consultation letters were sent in February 2010. Additional correspondence and communication has occurred since the initial letters were sent. Tribes were also invited to the August 2011 affected agency pre-application meeting. Consultation with Tribes will continue throughout the NEPA and Section 106 compliance processes.

ES.7 PUBLIC PARTICIPATION

An initial 30-day scoping period for the Ocotillo Sol Project was announced by the publication of the Notice of Intent in the *Federal Register* on July 15, 2011. The Notice of Intent announced the period for public scoping of alternatives, issues, impacts, and planning criteria. The Notice of Intent also requested the views of other agencies regarding the scope and content of the environmental information relevant to their statutory responsibilities or areas of expertise.

Federal, state, and local agencies, as well as individuals or organizations that were interested or may be affected by the BLM's decision on the Ocotillo Sol Project, were invited to participate in the scoping process. Eligible agencies could request to participate as a cooperating agency. The BLM hosted two public scoping meetings in El Centro, California, on August 10, 2011. Both the afternoon (2:00–4:00 P.M.) and evening (6:00–8:00 P.M.) meetings were held at the Imperial County Executive Office. Both meetings were conducted as an open house, allowing participants to review maps, display boards, and ask specific questions of the BLM staff available at the display stations. A letter from the BLM to the public provided information about the scoping meetings and process, and was made available as a handout for the public. Fact sheets about the project and NEPA process were also made available, along with comment forms. The BLM invited participants to submit comments in formats other than comment forms, including letters and e-mail.

ES.8 SCOPING COMMENTS

Two federal agencies, eight special interest (environmental) organizations (many of which combined their comments), and three individuals provided comments by e-mail. No scoping comments, written or verbal, were received at either of the two scoping meetings.

Five comments were received regarding assessing impacts on resources. Two comments addressed the purpose and need for the project, and one comment addressed BLM's purpose and need. Several comments were received regarding alternatives. These comments included requests to provide reasons for eliminating alternatives, suggestions to include alternative sites and generation technologies, a request to identify and analyze an environmentally preferred alternative, requests for a comparison of all alternatives, and a suggestion to include an approach to identifying and designating environmentally sensitive areas. Four comments were received concerning air quality. These comments concerned the existing air quality conditions in Imperial County. Several comments received were specific to biological resources near the Ocotillo Sol Project. Three comments received regarded climate change and greenhouse gas emissions. Two comments were specific to cultural resources. Both comments requested that cultural resources at the Ocotillo Sol Project be protected or avoided pursuant to existing legislation. In addition, one comment requested that Tribal and State Historic Preservation Officer coordination be discussed. Four comments regarded public health and safety. Two comments related to socioeconomics. One comment received was about environmental justice requesting an evaluation of the project's impact on minority populations and low-income communities and analysis of disproportionate impacts to these populations. Several comments were received specific to special designations, particularly the Yuha Desert Area of Critical Environmental Concern. Commenters expressed concern regarding the management of the Area of Critical Environmental Concern and potential impacts of this project or other renewable energy projects within this or other Areas of Critical Environmental Concern. Two comments were about visual resources—one asking that light and glare be discussed and another that impacts to visual resources be analyzed. Numerous comments were received concerning water resources for the Ocotillo Sol Project.

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TABLE ES-1
SUMMARY COMPARISON OF IMPACTS BY ALTERNATIVE

Alternative 1: No Action / No CDCA Plan Amendment	Alternative 2: Applicant's Proposed Project (115 acres)	Alternative 3: Reduced Construction Footprint Alternative (102 acres; Preferred Alternative)	Alternative 4: No Project/Amend CDCA Plan To Identify Area As Suitable For Solar Development	Alternative 5: No Project/Amend CDCA Plan To Identify Area As Unsuitable For Solar Development
Air Quality				
No direct or indirect impacts.	Construction and operational emissions are projected to be below the *de minimis* thresholds and would not be regionally significant. The Ocotillo Sol Project is presumed to conform to the applicable state implementation plan, and adverse direct and indirect impacts to air quality would be negligible. A Dust Control Plan would be implemented to further avoid and reduce dust emissions. Potential adverse impacts associated with carbon monoxide hot spot formation and air toxics would likewise be negligible.	Emissions associated with Alternative 3 would be equal to or less than those associated with Alternative 2. A Dust Control Plan would be implemented to further avoid and reduce dust emissions. Potential adverse impacts associated with carbon monoxide hot spot formation and air toxics would likewise be negligible.	No direct or indirect impacts.	No direct or indirect impacts.
Cumulative Impacts: Under Alternative 1, there would be no direct or indirect impacts to air quality. This alternative would not contribute to cumulative air quality impacts within the 6-mile radius of the project area or within the larger region.	The majority of past, present, and reasonably foreseeable activities, with the exception of activities at the Imperial Valley Substation, would occur 2 miles or more away from the proposed Ocotillo Sol Project area. The renewable energy projects, along with other activities within the 6-mile geographic scope for air quality, combined with construction activities under Alternative 2, would result in short-term cumulative impacts to air quality. These impacts are not expected to have a significant cumulative effect on local or regional air quality. All renewable energy projects within a 6-mile radius of the proposed Ocotillo Sol Project area have or will be required to implement air quality dust control plans or mitigation measures to reduce impacts. During operation and maintenance activities under Alternative 2, emissions for all criteria pollutants would be near zero. No direct cumulative impacts to air quality are anticipated during operations and maintenance activities under Alternative 2.	The majority of past, present, and reasonably foreseeable activities, with the exception of activities at the Imperial Valley Substation, would occur 2 miles or more away from the proposed Ocotillo Sol Project area. The renewable energy projects, along with other activities within the 6-mile geographic scope for air quality, combined with construction activities under Alternative 3, would result in short-term cumulative impacts to air quality. These impacts are not expected to have a significant cumulative effect on local or regional air quality. All renewable energy projects within a 6-mile radius of the proposed Ocotillo Sol Project area have or will be required to implement air quality dust control plans or mitigation measures to reduce impacts. During operation and maintenance activities under Alternative 3, emissions for all criteria pollutants would be near zero. No direct cumulative impacts to air quality are anticipated during operations and maintenance activities under Alternative 3.	Under Alternative 4, there would be no direct or indirect impacts to air quality. This alternative would not contribute to cumulative air quality impacts within the 6-mile radius of the project area or within the larger region.	Under Alternative 5, there would be no direct or indirect impacts to air quality. This alternative would not contribute to cumulative air quality impacts within the 6-mile radius of the project area or within the larger region.

TABLE ES-1
SUMMARY COMPARISON OF IMPACTS BY ALTERNATIVE

Alternative 1: No Action / No CDCA Plan Amendment	Alternative 2: Applicant's Proposed Project (115 acres)	Alternative 3: Reduced Construction Footprint Alternative (102 acres; Preferred Alternative)	Alternative 4: No Project/Amend CDCA Plan To Identify Area As Suitable For Solar Development	Alternative 5: No Project/Amend CDCA Plan To Identify Area As Unsuitable For Solar Development
Air Quality (cont.)				
Irreversible or Irretrievable Commitment of Resources: Alternative 1 would not cause irreversible or irretrievable commitment of air resources. No unavoidable adverse impacts to air quality are anticipated under Alternative 1.	Construction and decommissioning activities under Alternative 2 would result in unavoidable adverse impacts to air quality from particulate matter and vehicle emissions. These impacts would be temporary negligible residual effects. Best management practices and implementation of a dust control plan would minimize impacts. Alternative 2 would not trigger federal or state conformity levels, and would not cause irreversible or irretrievable commitment of air resources.	Construction and decommissioning activities under Alternative 3 would result in unavoidable adverse impacts to air quality from particulate matter and vehicle emissions. These impacts would be temporary negligible residual effects. Best management practices and implementation of a dust control plan would minimize impacts. Alternative 3 would not trigger federal or state conformity levels, and would not cause irreversible or irretrievable commitment of air resources.	Alternative 5 would not cause irreversible or irretrievable commitment of air resources. No unavoidable adverse impacts to air quality are anticipated under Alternative 4.	Alternative 5 would not cause irreversible or irretrievable commitment of air resources. No unavoidable adverse impacts to air quality are anticipated under Alternative 5.
Greenhouse Gases and Climate Change				
No direct or indirect impacts.	Greenhouse gas emissions associated with Alternative 2 would be negligible. There would be no adverse impacts from greenhouse gas emissions.	Greenhouse gas emissions associated with Alternative 3 would be negligible. There would be no adverse impacts from greenhouse gas emissions.	No direct or indirect impacts.	No direct or indirect impacts.

TABLE ES-1
SUMMARY COMPARISON OF IMPACTS BY ALTERNATIVE

Alternative 1: No Action / No CDCA Plan Amendment	Alternative 2: Applicant's Proposed Project (115 acres)	Alternative 3: Reduced Construction Footprint Alternative (102 acres; Preferred Alternative)	Alternative 4: No Project/Amend CDCA Plan To Identify Area As Suitable For Solar Development	Alternative 5: No Project/Amend CDCA Plan To Identify Area As Unsuitable For Solar Development
Greenhouse Gases and Climate Change (cont.)				
Cumulative Impacts: Alternative 1 would not contribute to cumulative greenhouse gas impacts.	This entire greenhouse gas impact assessment is a cumulative impact assessment; there are no direct localized impacts from project-level greenhouse gas emissions. The information needed to link any particular instance of GHG emissions or sequestration to any specific climate-related environmental effects does not currently exist, and the effect of GHG emissions must be understood in the aggregate. The Ocotillo Sol Project under Alternative 2 would not be sufficient to effect global climate change, but it would emit greenhouse gases and, therefore, has been analyzed as a source of potential cumulative impacts in the context of long-term global impacts and existing greenhouse gas regulatory requirements and greenhouse gas energy policies. The broad integration of renewable energy, however, would allow for a sizable reduction in current greenhouse gas emission rates and could have long-term beneficial impacts in relation to climate change. Specifically, the Ocotillo Sol Project under Alternative 2 would enable greenhouse gas emission reductions, and so has been found to provide beneficial cumulative greenhouse gas impacts.	This entire greenhouse gas impact assessment is a cumulative impact assessment; there are no direct localized impacts from project-level greenhouse gas emissions. The information needed to link any particular instance of GHG emissions or sequestration to any specific climate-related environmental effects does not currently exist, and the effect of GHG emissions must be understood in the aggregate. The Ocotillo Sol Project under Alternative 3 would not be sufficient to effect global climate change, but it would emit greenhouse gases and, therefore, has been analyzed as a source of potential cumulative impacts in the context of long-term global impacts and existing greenhouse gas regulatory requirements and greenhouse gas energy policies. The broad integration of renewable energy, however, would allow for a sizable reduction in current greenhouse gas emission rates and could have long-term beneficial impacts in relation to climate change. Specifically, the Ocotillo Sol Project under Alternative 3 would enable greenhouse gas emission reductions, and so has been found to provide beneficial cumulative greenhouse gas impacts.	Alternative 4 would not contribute to cumulative greenhouse gas impacts.	Alternative 5 would not contribute to cumulative greenhouse gas impacts.
Irreversible and Irretrievable Commitment of Resources: Alternative 1 would not result in an irreversible or irretrievable commitment of resources. No unavoidable adverse impacts from greenhouse gas emissions are anticipated under Alternative 1.	Construction and decommissioning activities under Alternative 2 would result in negligible GHG emissions. Alternative 2 would not result in a significant increase of GHG emissions within the region nor would it hinder attainment of the state's goals of reducing GHG emissions to 1990 levels by 2020. As a result, it would not result in an irreversible or irretrievable commitment of air resources causing a significant increase in GHG emissions.	Construction and decommissioning activities under Alternative 3 would result in negligible GHG emissions. Alternative 3 would not result in a significant increase of GHG emissions within the region nor would it hinder attainment of the state's goals of reducing GHG emissions to 1990 levels by 2020. As a result, it would not result in an irreversible or irretrievable commitment of air resources causing a significant increase in GHG emissions.	Alternative 4 would not result in an irreversible or irretrievable commitment of resources. No unavoidable adverse impacts from greenhouse gas emissions are anticipated under Alternative 4.	Alternative 5 would not result in an irreversible or irretrievable commitment of resources. No unavoidable adverse impacts from greenhouse gas emissions are anticipated under Alternative 5.

TABLE ES-1
SUMMARY COMPARISON OF IMPACTS BY ALTERNATIVE

Alternative 1: No Action / No CDCA Plan Amendment	Alternative 2: Applicant's Proposed Project (115 acres)	Alternative 3: Reduced Construction Footprint Alternative (102 acres; Preferred Alternative)	Alternative 4: No Project/Amend CDCA Plan To Identify Area As Suitable For Solar Development	Alternative 5: No Project/Amend CDCA Plan To Identify Area As Unsuitable For Solar Development
Geology and Soils				
No direct or indirect impacts.	No impacts to geology are anticipated under Alternative 2. Impacts from expansive soils would not be significant. Erosion could occur within graded areas due to removal of vegetation and soil exposure. Soil erosion and compaction could occur due to maintenance and decommissioning activities. Erosion control measures would be implemented to minimize the amount of soil erosion during construction. In addition, a stormwater pollution prevention plan would be implemented, which would also minimize erosion potential.	Impacts related to seismic activity would be the same for Alternative 3 as outlined under Alternative 2. The incorporation of standard building practices and design recommendations from the geotechnical report would minimize these potential impacts. Erosion could occur within graded areas due to removal of vegetation and soil exposure. Direct and indirect adverse impacts to soil resources would be negligible under Alternative 3.	No direct or indirect impacts.	No direct or indirect impacts.
Cumulative Impacts: Alternative 1 would not result in impacts to geology or soil resources. This alternative would not contribute to geology and soil resource cumulative impacts.	Alternative 2 would result in negligible impacts to soil resources. Activities occurring on lands within a 1-mile radius of the Ocotillo Sol Project area (e.g., recreation, transmission line development and maintenance, and agricultural activities) have had minimal impacts to geology and soils within the Ocotillo Sol Project area, and these ongoing activities would likely continue to have minimal impacts to geology and soil resources, even when combined with potential impacts under Alternative 2. Erosion control measures, along with measures incorporated into present and reasonably foreseeable future actions, will minimize cumulative impacts to soil resources under Alternative 2. Alternative 2 would not result in impacts to geologic resources. Therefore, Alternative 2, when added to other reasonably foreseeable future projects, is not expected to result in cumulative impacts to geologic resources.	Alternative 3 would result in negligible impacts to soil resources. Activities occurring on lands within a 1-mile radius of the Ocotillo Sol Project area (e.g., recreation, transmission line development and maintenance, and agricultural activities) have had minimal impacts to geology and soils within the Ocotillo Sol Project area, and these ongoing activities would likely continue to have minimal impacts to geology and soil resources, even when combined with potential impacts under Alternative 3. Erosion control measures, along with measures incorporated into present and reasonably foreseeable future actions, will minimize cumulative impacts to soil resources under Alternative 3. Alternative 3 would not result in impacts to geologic resources. Therefore, Alternative 3, when added to other reasonably foreseeable future projects, is not expected to result in cumulative impacts to geologic resources.	Alternative 4 would not result in impacts to geology or soil resources. This alternative would not contribute to geology and soil resource cumulative impacts.	Alternative 5 would not result in impacts to geology or soil resources. This alternative would not contribute to geology and soil resource cumulative impacts.

TABLE ES-1
SUMMARY COMPARISON OF IMPACTS BY ALTERNATIVE

Alternative 1: No Action / No CDCA Plan Amendment	Alternative 2: Applicant's Proposed Project (115 acres)	Alternative 3: Reduced Construction Footprint Alternative (102 acres; Preferred Alternative)	Alternative 4: No Project/Amend CDCA Plan To Identify Area As Suitable For Solar Development	Alternative 5: No Project/Amend CDCA Plan To Identify Area As Unsuitable For Solar Development
Geology and Soils (continued)				
Irreversible and Irretrievable Commitment of Resources: No irreversible or irretrievable commitment of geological or soil resources would occur under Alternative 1. Alternative 1 is not expected to result in unavoidable adverse impacts to geological or soil resources.	No direct or indirect impacts to geology would occur under Alternative 2 and no irreversible or irretrievable commitment of geological resources would occur. Alternative 2 would result in negligible adverse impacts to soil erosion and compaction during construction, operation and maintenance, and decommissioning activities. Erosion control measures would be implemented to minimize soil erosion during construction. In addition, a stormwater pollution prevention plan would be implemented, which would also minimize erosion potential. There would be an irreversible and irretrievable commitment of soil resources on areas where revegetation fails and subsequent erosion occurs. It is expected that these areas would be small overall and minimal, if any, erosion would occur. Effects to soils could also occur from petroleum or other hazardous material spills. Best management practices related to hazardous materials spills would be implemented and the affected area would be cleaned. If a spill occurred, affected soils would be irretrievably and irreversibly lost. Unavoidable adverse impacts to soil resources would occur, primarily during the construction period under Alternative 2. These impacts would be negligible and would be minimized with implementation of the stormwater pollution prevention plan and related erosion control measures. No unavoidable impacts to geology would occur as a result of selecting Alternative 2.	No direct or indirect impacts to geology would occur under Alternative 3 and no irreversible or irretrievable commitment of geological resources would occur. Alternative 3 would result in negligible adverse impacts to soil erosion and compaction during construction, operation and maintenance, and decommissioning activities. Erosion control measures would be implemented to minimize soil erosion during construction. In addition, a stormwater pollution prevention plan would be implemented, which would also minimize erosion potential. There would be an irreversible and irretrievable commitment of soil resources on areas where revegetation fails and subsequent erosion occurs. It is expected that these areas would be small overall and minimal, if any, erosion would occur. Effects to soils could also occur from petroleum or other hazardous material spills. Best management practices related to hazardous materials spills would be implemented and the affected area would be cleaned. If a spill occurred, affected soils would be irretrievably and irreversibly lost. Unavoidable adverse impacts to soil resources would occur, primarily during the construction period under Alternative 3. These impacts would be negligible and would be minimized with implementation of the stormwater pollution prevention plan and related erosion control measures. No unavoidable impacts to geology would occur as a result of selecting Alternative 3.	No irreversible or irretrievable commitment of geological or soil resources would occur under Alternative 4. Alternative 4 is not expected to result in unavoidable adverse impacts to geological or soil resources.	No irreversible or irretrievable commitment of geological or soil resources would occur under Alternative 5. Alternative 5 is not expected to result in unavoidable adverse impacts to geological or soil resources.

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Water Resources				
No direct or indirect impacts.	No direct or indirect impacts.	No direct or indirect impacts.	No direct or indirect impacts.	No direct or indirect impacts.
Cumulative Impacts: Alternative 1 would not result in impacts to water resources. This alternative would not contribute to cumulative impacts to water resources in the groundwater basin.	Alternative 2 would not result in direct or indirect impacts to water resources. Existing and reasonably foreseeable activities occurring on lands within the groundwater basin (e.g., renewable energy projects, recreation, transmission line development and maintenance, and agricultural activities) have had minimal impacts to groundwater resources. Therefore, these ongoing activities would likely continue to have minimal impacts on water resources. Mitigation measures in the form of a stormwater pollution prevention plan and erosion control measures would be implemented during construction, operation and maintenance, and decommissioning to minimize impacts to water resources. Alternative 2, when added to other reasonably foreseeable future projects, are not expected to result in cumulative impacts to water resources.	Alternative 3 would not result in direct or indirect impacts to water resources. Existing and reasonably foreseeable activities occurring on lands within the groundwater basin (e.g., renewable energy projects, recreation, transmission line development and maintenance, and agricultural activities) have had minimal impacts to groundwater resources. Therefore, these ongoing activities would likely continue to have minimal impacts on water resources. Mitigation measures in the form of a stormwater pollution prevention plan and erosion control measures would be implemented during construction, operation and maintenance, and decommissioning to minimize impacts to water resources. Alternative 3, when added to other reasonably foreseeable future projects, are not expected to result in cumulative impacts to water resources.	Alternative 4 would not result in impacts to water resources. This alternative would not contribute to cumulative impacts to water resources in the groundwater basin.	Alternative 5 would not result in impacts to water resources. This alternative would not contribute to cumulative impacts to water resources in the groundwater basin.
Irreversible and Irretrievable Commitment of Resources: No direct or indirect impacts to water resources would occur under Alternative 1 and no irreversible or irretrievable commitment of water resources would occur. No unavoidable adverse impacts to water resources are expected to occur under Alternative 1.	No direct or indirect impacts to water resources would occur under Alternative 2 and no irreversible or irretrievable commitment of water resources would occur. By implementing the mitigation measures identified above, and by avoiding groundwater extraction from beneath the project site, no unavoidable adverse impacts to water resources are expected to occur under Alternative 2.	No direct or indirect impacts to water resources would occur under Alternative 3 and no irreversible or irretrievable commitment of water resources would occur. By implementing the mitigation measures identified above, and by avoiding groundwater extraction from beneath the project site, no unavoidable adverse impacts to water resources are expected to occur under Alternative 3.	No direct or indirect impacts to water resources would occur under Alternative 4 and no irreversible or irretrievable commitment of water resources would occur. No unavoidable adverse impacts to water resources are expected to occur under Alternative 4.	No direct or indirect impacts to water resources would occur under Alternative 5 and no irreversible or irretrievable commitment of water resources would occur. No unavoidable adverse impacts to water resources are expected to occur under Alternative 5.

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Biological Resources				
(Vegetation and Noxious Weeds) Under Alternative 1, no direct or indirect adverse impacts to vegetation, riparian habitat, special status plants, or sensitive natural communities would occur. Under Alternative 1, no direct or indirect adverse impacts from noxious, invasive, or non-native weed species would be expected to occur.	Under Alternative 2, permanent impacts to 100 acres of creosote bush–white burr sage scrub vegetation would occur. The area would remain un-vegetated after the facility is constructed and during its entire operation period. No other vegetation community would be disturbed or removed within the 100-acre construction area. The 100-acre solar field would be reclaimed after operations are terminated. The 15-acre temporary laydown area would be considered a temporary impact to creosote bush–white burr sage scrub vegetation, and the laydown area would be revegetated to repair impacts to the habitat after construction is complete. Removal of creosote bush–white burr sage scrub vegetation may affect flat-tailed horned lizard, burrowing owl, and other wildlife species that rely on the creosote bush–white burr sage scrub vegetation. In addition, soil disturbed due to grading during construction and continued use of the access road may result in the introduction or increased density of non-native invasive plant species. These species can undermine the habitat quality and integrity of the native plant communities. Alternative 2 would result in direct and indirect adverse impacts to vegetation resources and the creosote bush–white burr sage scrub sensitive natural community. Mitigation measures would be implemented to minimize or compensate for these impacts. No impacts to special status plant species are anticipated under Alternative 2.	Under Alternative 3, impacts to vegetation resources would be similar to, but slightly less than, those discussed under Alternative 2. As with Alternative 2, mitigation measures would be implemented to minimize or compensate for impacts under Alternative 3. Under Alternative 3, 100 acres of permanent and 2 acres of temporary impacts would occur that may result in the spread of noxious, invasive, or non-native weed species. Soil disturbed due to grading during construction and continued use of the Ocotillo Sol Project area could result in the introduction or increased density of non-native invasive plant species. To reduce the potential for the introduction and spread of non-native invasive plant species, a Weed Management Plan has been prepared and would be implemented during both the construction and general operation and maintenance phases of the project, within and adjacent to the solar field as a mitigation measure.	Under Alternative 4, no direct or indirect adverse impacts to vegetation, riparian habitat, special status plants, or sensitive natural communities would occur. Under Alternative 4, no direct or indirect adverse impacts from noxious, invasive, or non-native weed species would be expected to occur.	Under Alternative 5, no direct or indirect adverse impacts to vegetation, riparian habitat, special status plants, or sensitive natural communities would occur. Under Alternative 5, no direct or indirect adverse impacts from noxious, invasive, or non-native weed species would be expected to occur.

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Biological Resources (continued)				
(Wildlife) Under Alternative 1, no direct or indirect adverse impacts to wildlife or special status species would occur.	Alternative 2 would result in adverse impacts to flat-tailed horned lizard. Conservation and mitigation measures would be implemented to avoid, minimize, and/or compensate for impacts under this alternative. In accordance with the *Flat-tailed Horned Lizard Rangewide Management Strategy*, compensation for permanent impacts to flat-tailed horned lizard habitat within the Yuha Desert Wildlife Management Area will be at a 6:1 ratio. Alternative 2 would result in adverse impacts to burrowing owl. Conservation and mitigation measures would be implemented to avoid, minimize, and/or compensate for impacts under this alternative. Alternative 2 could result in adverse impacts to migratory bird species. Conservation and mitigation measures would be implemented to avoid, minimize, and/or compensate for impacts under this alternative. Alternative 2 could result in adverse impacts to special status small mammals and reptiles. Conservation and mitigation measures would be implemented to avoid, minimize, and/or compensate for impacts under this alternative. Impacts to wildlife movement are not anticipated to occur under Alternative 2.	Impacts to wildlife and habitat for special status wildlife would occur under Alternative 3. These impacts would be similar to, but slightly less than, those discussed under Alternative 2.	Under Alternative 4, no direct or indirect adverse impacts to wildlife or special status species would occur.	Under Alternative 5, no direct or indirect adverse impacts to wildlife or special status species would occur.
(Jurisdictional Waters) Under Alternative 1, no direct or indirect adverse impacts to jurisdictional waters would occur.	No impacts to U.S. Army Corps of Engineers, Regional Water Quality Control Board, or California Department of Fish and Game jurisdictional waters would occur under Alternative 2.	No impacts to U.S. Army Corps of Engineers, Regional Water Quality Control Board, or California Department of Fish and Game jurisdictional waters would occur under Alternative 3.	Under Alternative 4, no direct or indirect adverse impacts to jurisdictional waters would occur.	Under Alternative 5, no direct or indirect adverse impacts to jurisdictional waters would occur.

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Biological Resources (continued)				
Cumulative Impacts: Alternative 1 would not result in impacts to vegetation resources. This alternative would not contribute to cumulative impacts to vegetation in the 2-mile geographic scope area. Alternative 1 would not result in impacts to wildlife resources. This alternative would not contribute to cumulative impacts to wildlife in the 2-mile geographic scope area.	The cumulative impact to the 57,304-acre Yuha Desert Wildlife Management Area would be 374.6 acres of flat-tailed horned lizard habitat disturbance from impacts 1) that have occurred since the 1997 adoption of the *Flat-tailed Horned Lizard Rangewide Management Strategy*, 2) that could result from reasonably foreseeable projects, and 3) that would occur under Alternative 2. These habitat disturbances would comprise about two-thirds of the 1 percent (1 percent of the 57,304-acre area is 573.04 acres) of habitat disturbance allowance within the Yuha Desert Wildlife Management Area. Based on the U.S. Fish and Wildlife Service determination not to list the flat-tailed horned lizard, the success of BLM's *Flat-tailed Horned Lizard Rangewide Management Strategy*, and implementation of mitigation and mitigation measures, Alternative 2, when combined with the other reasonably foreseeable future projects, would not result in a cumulatively adverse impact to flat-tailed horned lizard. With implementation of mitigation measures, Alternative 2, when combined with other past, present and reasonably foreseeable projects in the area, would not result in a cumulatively adverse impact to burrowing owl. With implementation of mitigation measures, Alternative 2 would not result in a cumulatively adverse impact to nesting raptors or migratory birds when combined with other past, present, and reasonably foreseeable projects in the area.	The cumulative impact to the 57,304-acre Yuha Desert Wildlife Management Area would be 361.6 acres of flat-tailed horned lizard habitat disturbance from impacts 1) that have occurred since the 1997 adoption of the *Flat-tailed Horned Lizard Rangewide Management Strategy*, 2) that could result from reasonably foreseeable projects, and 3) that would occur under Alternative 3. These habitat disturbances would comprise about two-thirds of the 1 percent (1 percent of the 57,304-acre area is 573.04 acres) of habitat disturbance allowance within the Yuha Desert Wildlife Management Area. Based on the U.S. Fish and Wildlife Service determination not to list the flat-tailed horned lizard, the success of BLM's *Flat-tailed Horned Lizard Rangewide Management Strategy*, and implementation of mitigation and mitigation measures, Alternative 3, when combined with the other reasonably foreseeable future projects, would not result in a cumulatively adverse impact to flat-tailed horned lizard. With implementation of mitigation measures, Alternative 3, when combined with other past, present and reasonably foreseeable projects in the area, would not result in a cumulatively adverse impact to burrowing owl. With implementation of mitigation measures, Alternative 3 would not result in a cumulatively adverse impact to nesting raptors or migratory birds when combined with other past, present, and reasonably foreseeable projects in the area.	Alternative 4 would not result in impacts to vegetation resources. This alternative would not contribute to cumulative impacts to vegetation in the 2-mile geographic scope area. Alternative 4 would not result in impacts to wildlife resources. This alternative would not contribute to cumulative impacts to wildlife in the 2-mile geographic scope area.	Alternative 5 would not result in impacts to vegetation resources. This alternative would not contribute to cumulative impacts to vegetation in the 2-mile geographic scope area. Alternative 5 would not result in impacts to wildlife resources. This alternative would not contribute to cumulative impacts to wildlife in the 2-mile geographic scope area.

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Biological Resources (continued)				
Irreversible and Irretrievable Commitment of Resources: No irreversible and irretrievable commitment of biological resources would occur, and no unavoidable adverse impacts would occur under Alternative 1.	Construction, operation and maintenance, and decommissioning activities under Alternative 2 would result in direct and indirect impacts to biological resources. Alternative 2 would result in the loss of 100 acres of native vegetation and habitat, as well as 15 acres of disturbed vegetation and habitat. These permanent and temporary losses of native vegetation would result in unavoidable adverse impacts to native vegetation and wildlife. Implementation of avoidance and mitigation measures would minimize adverse impacts. Compensation for permanent impacts to flat-tailed horned lizard habitat within the Yuha Desert Wildlife Management Area will be at a 6:1 ratio. Acquisition of compensation lands would occur within undisturbed habitat suitable for flat-tailed horned lizards. This mitigation would result in beneficial impacts to flat-tailed horned lizards, as well as other species occurring within this habitat, due to an increase in undisturbed area and likely limitations on future disturbance within acquired lands. With these measures, Alternative 2 would not substantially alter or interfere with wildlife or plant populations in the project area. Adverse impacts would be negligible overall and would affect a small, localized area. The impacts to native vegetation and wildlife would not cause an irreversible and irretrievable commitment of the resources.	Construction, operation and maintenance, and decommissioning activities under Alternative 3 would result in direct and indirect impacts to biological resources. Alternative 3 would result in the loss of 100 acres of native vegetation and habitat, as well as 2 acres of disturbed vegetation and habitat. These permanent and temporary losses of native vegetation would result in unavoidable adverse impacts to native vegetation and wildlife. Implementation of avoidance and mitigation measures would minimize adverse impacts. Compensation for permanent impacts to flat-tailed horned lizard habitat within the Yuha Desert Wildlife Management Area will be at a 6:1 ratio. Acquisition of compensation lands would occur within undisturbed habitat suitable for flat-tailed horned lizards. This mitigation would result in beneficial impacts to flat-tailed horned lizards, as well as other species occurring within this habitat, due to an increase in undisturbed area and likely limitations on future disturbance within acquired lands. With these measures, Alternative 3 would not substantially alter or interfere with wildlife or plant populations in the project area. Adverse impacts would be negligible overall and would affect a small, localized area. The impacts to native vegetation and wildlife would not cause an irreversible and irretrievable commitment of the resources.	No irreversible and irretrievable commitment of biological resources would occur, and no unavoidable adverse impacts would occur under Alternative 4.	No irreversible and irretrievable commitment of biological resources would occur, and no unavoidable adverse impacts would occur under Alternative 5.

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Cultural Resources				
No direct or indirect impacts.	There are 12 isolates and one recorded archaeological site within the Ocotillo Sol Project area. The 12 isolates and one recorded site would be destroyed during construction. The isolates that are within the Area of Potential Effect have been determined to be ineligible for the National Register of Historic Places and thus are not historic properties. The one archaeological site has been recommended ineligible for the National Register of Historic Places. The site would be destroyed during construction; however, effects to this resource would not be considered adverse. No historic properties would be impacted under Alternative 2. There is a potential for indirect effects due to increased traffic during construction. It is also possible that grading within the construction area could increase the amount of sheet flow and water runoff during heavy rainfall events that could cause damage to cultural resources outside the construction area. There are four numbered sites within 100 feet of the direct effects; these sites may be indirectly affected by under Alternative 2. Cultural Resources Mitigation Measure 2 has been incorporated as a project design feature in order to ensure that project impacts for the above mentioned four sites do not result in an adverse effect.	There are 12 isolates and one recorded archaeological site within the Ocotillo Sol Project area. The 12 isolates and one recorded site would be destroyed during construction. The isolates that are within the Area of Potential Effect have been determined to be ineligible for the National Register of Historic Places and thus are not historic properties. The one archaeological site has been recommended ineligible for the National Register of Historic Places. The site would be destroyed during construction; however, effects to this resource would not be considered adverse. No historic properties would be impacted under Alternative 3. There is a potential for indirect effects due to increased traffic during construction. It is also possible that grading within the construction area could increase the amount of sheet flow and water runoff during heavy rainfall events that could cause damage to cultural resources outside the construction area. There are four numbered sites within 100 feet of the direct effects; these sites may be indirectly affected by under Alternative 3. Cultural Resources Mitigation Measure 2 has been incorporated as a project design feature in order to ensure that project impacts for the above mentioned four sites do not result in an adverse effect.	No direct or indirect impacts.	No direct or indirect impacts.
Cumulative Impacts: Alternative 1 would not result in impacts to historic properties. This alternative would not contribute to cumulative impacts to historic properties or landscapes in the area.	No cumulative adverse impacts to cultural resources or historic properties are expected under Alternative 2 when combined with other reasonably foreseeable future projects.	No cumulative adverse impacts to cultural resources or historic properties are expected under Alternative 3 when combined with other reasonably foreseeable future projects.	Alternative 4 would not result in impacts to historic properties. This alternative would not contribute to cumulative impacts to historic properties or landscapes in the area.	Alternative 5 would not result in impacts to historic properties. This alternative would not contribute to cumulative impacts to historic properties or landscapes in the area.

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Cultural Resources (continued)				
Irreversible and Irretrievable Commitment of Resources: No unavoidable adverse impacts to cultural resources or historic properties would occur and no irreversible and irretrievable commitment of cultural resources would occur under Alternative 1.	Construction activities under Alternative 2 would result in ground disturbance, but the project area does not contain cultural resources or historic properties. No unavoidable adverse impacts to cultural resources or historic properties would occur and no irreversible and irretrievable commitment of cultural resources would occur under Alternative 2.	Construction activities under Alternative 3 would result in ground disturbance, but the project area does not contain cultural resources or historic properties. No unavoidable adverse impacts to cultural resources or historic properties would occur and no irreversible and irretrievable commitment of cultural resources would occur under Alternative 3.	No unavoidable adverse impacts to cultural resources or historic properties would occur and no irreversible and irretrievable commitment of cultural resources would occur under Alternative 4.	No unavoidable adverse impacts to cultural resources or historic properties would occur and no irreversible and irretrievable commitment of cultural resources would occur under Alternative 5.
Paleontological Resources				
No direct or indirect impacts.	For portions of the 115-acre Ocotillo Sol Project area that fall within Potential Fossil Yield Classification Class 3b, significant fossils could be present and actions under Alternative 2 could adversely impact paleontological resources. Mitigation measures would be implemented to avoid and minimize potential adverse impacts to paleontological resources within Class 3b areas. There would be negligible, if any, direct or indirect impacts to paleontological resources under Alternative 2.	Adverse impacts described for Alternative 2 would also occur under Alternative 3, with the exception of the reduction in temporary right-of-way acreage. Mitigation measures would be implemented to avoid and minimize potential adverse impacts to paleontological resources within Class 3b areas. There would be negligible, if any, direct or indirect impacts to paleontological resources under Alternative 3.	No direct or indirect impacts.	No direct or indirect impacts.
Cumulative Impacts: Alternative 1 would not result in impacts to paleontological resources. This alternative would not contribute to paleontological resource cumulative impacts in the area.	Alternative 2 would not result in adverse impacts to paleontological resources. Activities occurring on lands within a 1-mile radius of the Ocotillo Sol Project area (e.g., recreation, transmission line development and maintenance, and agricultural activities) have had minimal, if any, impacts to paleontological resources within the Ocotillo Sol Project area, and these ongoing activities would likely continue to have minimal, if any, impacts to paleontological resources. Alternative 2, when combined with reasonably foreseeable future projects in the area, would not likely result in significant cumulative impacts to paleontological resources in the area.	Alternative 3 would not result in adverse impacts to paleontological resources. Activities occurring on lands within a 1-mile radius of the Ocotillo Sol Project area (e.g., recreation, transmission line development and maintenance, and agricultural activities) have had minimal, if any, impacts to paleontological resources within the Ocotillo Sol Project area, and these ongoing activities would likely continue to have minimal, if any, impacts to paleontological resources. Alternative 3, when combined with reasonably foreseeable future projects in the area, would not likely result in significant cumulative impacts to paleontological resources in the area.	Alternative 4 would not result in impacts to paleontological resources. This alternative would not contribute to paleontological resource cumulative impacts in the area.	Alternative 5 would not result in impacts to paleontological resources. This alternative would not contribute to paleontological resource cumulative impacts in the area.

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Paleontological Resources (continued)				
Irreversible and Irretrievable Commitment of Resources: No unavoidable adverse impacts to paleontological resources are expected to occur and no irreversible or irretrievable commitment of paleontological resources would occur under Alternative 1.	Construction and decommissioning activities under Alternative 2 could result in negligible, if any, adverse impacts to paleontological resources. Mitigation measures would be implemented to avoid and minimize potential adverse impacts to paleontological resources within Class 3b areas. No unavoidable adverse impacts to paleontological resources would occur and no irreversible or irretrievable commitment of paleontological resources would occur under Alternative 2.	Construction and decommissioning activities under Alternative 3 could result in negligible, if any, adverse impacts to paleontological resources. Mitigation measures would be implemented to avoid and minimize potential adverse impacts to paleontological resources within Class 3b areas. No unavoidable adverse impacts to paleontological resources would occur and no irreversible or irretrievable commitment of paleontological resources would occur under Alternative 3.	No unavoidable adverse impacts to paleontological resources are expected to occur and no irreversible or irretrievable commitment of paleontological resources would occur under Alternative 4.	No unavoidable adverse impacts to paleontological resources are expected to occur and no irreversible or irretrievable commitment of paleontological resources would occur under Alternative 5.
Fire/Fuels				
No direct or indirect impacts.	Under Alternative 2, potential wildland fire related negligible adverse impacts may occur. These impacts would be avoided by implementing a Weed Management Plan and best management practices.	Under Alternative 3, potential wildland fire related negligible adverse impacts may occur. These impacts would be avoided by implementing a Weed Management Plan and best management practices.	No direct or indirect impacts.	No direct or indirect impacts.
Cumulative Impacts: Alternative 1 would not result in fire-related impacts. This alternative would not contribute to wildland fire cumulative impacts in the area.	With implementation of mitigation measures as well as best management practices, Alternative 2 would not likely result in a cumulatively adverse impacts related to wildland fire when combined with other past, present, and reasonably foreseeable projects in the area.	With implementation of mitigation measures as well as best management practices, Alternative 3 would not likely result in a cumulatively adverse impacts related to wildland fire when combined with other past, present, and reasonably foreseeable projects in the area.	Alternative 4 would not result in fire-related impacts. This alternative would not contribute to wildland fire cumulative impacts in the area.	Alternative 5 would not result in fire-related impacts. This alternative would not contribute to wildland fire cumulative impacts in the area.
Irreversible and Irretrievable Commitment of Resources: No unavoidable adverse wildland fire impacts are expected to occur and no irreversible or irretrievable commitment of resources would occur under Alternative 1.	Construction, operation and maintenance, and decommissioning activities under Alternative 2 could result in negligible adverse impacts related to fire and fuels hazards. Mitigation measures would be implemented avoid impacts related to fire and fuels hazards. No unavoidable adverse impacts related to fire and fuels hazards would occur and no irreversible and irretrievable commitment of resources would occur under Alternative 2.	Construction, operation and maintenance, and decommissioning activities under Alternative 3 could result in negligible adverse impacts related to fire and fuels hazards. Mitigation measures would be implemented avoid impacts related to fire and fuels hazards. No unavoidable adverse impacts related to fire and fuels hazards would occur and no irreversible and irretrievable commitment of resources would occur under Alternative 3.	No unavoidable adverse wildland fire impacts are expected to occur and no irreversible or irretrievable commitment of resources would occur under Alternative 4.	No unavoidable adverse wildland fire impacts are expected to occur and no irreversible or irretrievable commitment of resources would occur under Alternative 5.

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Lands and Realty				
No direct or indirect impacts.	Alternative 2 would not result in direct or indirect adverse impacts to lands and realty.	Alternative 3 would not result in direct or indirect adverse impacts to lands and realty.	No direct or indirect impacts.	No direct or indirect impacts.
Cumulative Impacts: Alternative 1 would not result in impacts to lands and realty. This alternative would be consistent with applicable plans, policies, and regulations and would not interfere with existing land uses. Alternative 1 would not contribute to cumulative impacts to lands and realty.	Alternative 2 would not result in adverse impacts to lands and realty. Renewable energy projects and other activities within approximately 20 miles of the Ocotillo Sol Project area have been consistent with applicable plans, policies, and regulations in the region. Alternative 2 would also be consistent with applicable plans, policies, and regulations and would not interfere with existing land uses. Alternative 2, in combination with other reasonably foreseeable future projects, would not contribute to cumulative impacts to lands and realty.	Alternative 3 would not result in adverse impacts to lands and realty. Renewable energy projects and other activities within approximately 20 miles of the Ocotillo Sol Project area have been consistent with applicable plans, policies, and regulations in the region. Alternative 3 would also be consistent with applicable plans, policies, and regulations and would not interfere with existing land uses. Alternative 3, in combination with other reasonably foreseeable future projects, would not contribute to cumulative impacts to lands and realty.	Alternative 4 would not result in impacts to lands and realty. This alternative would be consistent with applicable plans, policies, and regulations and would not interfere with existing land uses. Alternative 4 would not contribute to cumulative impacts to lands and realty.	Alternative 5 would not result in impacts to lands and realty. This alternative would be consistent with applicable plans, policies, and regulations and would not interfere with existing land uses. Alternative 5 would not contribute to cumulative impacts to lands and realty.
Irreversible and Irretrievable Commitment of Resources: No unavoidable adverse impacts to lands and realty and no irreversible and irretrievable commitment of the resource are expected to occur under Alternative 1.	No direct or indirect impacts to lands and realty would occur under Alternative 2. The footprint of the Ocotillo Sol Project under Alternative 2 would limit future use of 100 acres of BLM-administered land for other uses for the life of the project and would result in irreversible and irretrievable commitment of the resource. No unavoidable adverse impacts to lands and realty are expected to occur under Alternative 2.	No direct or indirect impacts to lands and realty would occur under Alternative 3. The footprint of the Ocotillo Sol Project under Alternative 3 would limit future use of 100 acres of BLM-administered land for other uses for the life of the project and would result in irreversible and irretrievable commitment of the resource. No unavoidable adverse impacts to lands and realty are expected to occur under Alternative 3.	No unavoidable adverse impacts to lands and realty and no irreversible and irretrievable commitment of the resource are expected to occur under Alternative 4.	No unavoidable adverse impacts to lands and realty and no irreversible and irretrievable commitment of the resource are expected to occur under Alternative 5.

TABLE ES-1
SUMMARY COMPARISON OF IMPACTS BY ALTERNATIVE

Alternative 1: No Action / No CDCA Plan Amendment	Alternative 2: Applicant's Proposed Project (115 acres)	Alternative 3: Reduced Construction Footprint Alternative (102 acres; Preferred Alternative)	Alternative 4: No Project/Amend CDCA Plan To Identify Area As Suitable For Solar Development	Alternative 5: No Project/Amend CDCA Plan To Identify Area As Unsuitable For Solar Development
Special Designations				
No direct or indirect impacts.	Under Alternative 2, no direct or indirect impacts would occur to special designation areas.	Under Alternative 3, no direct or indirect impacts would occur to special designation areas.	No direct or indirect impacts.	No direct or indirect impacts.
Cumulative Impacts: Alternative 1 would not result in impacts to special designations. This alternative would be consistent with applicable plans, policies, and regulations for these areas and would not interfere with management. Alternative 1 would not contribute to cumulative impacts to special designations.	Alternative 2 would not result in adverse impacts to special designation areas. Renewable energy projects and other activities within approximately 20 miles of the Ocotillo Sol Project area have been consistent with applicable plans, policies, and regulations for these special designation areas. Alternative 2 would also be consistent with applicable plans, policies, and regulations for special designation areas and would not interfere with management. Alternative 2, when combined with other reasonably foreseeable future projects, would not contribute to cumulative impacts to special designations.	Alternative 3 would not result in adverse impacts to special designation areas. Renewable energy projects and other activities within approximately 20 miles of the Ocotillo Sol Project area have been consistent with applicable plans, policies, and regulations for these special designation areas. Alternative 3 would also be consistent with applicable plans, policies, and regulations for special designation areas and would not interfere with management. Alternative 3, when combined with other reasonably foreseeable future projects, would not contribute to cumulative impacts to special designations.	Alternative 4 would not result in impacts to special designations. This alternative would be consistent with applicable plans, policies, and regulations for these areas and would not interfere with management. Alternative 4 would not contribute to cumulative impacts to special designations.	Alternative 5 would not result in impacts to special designations. This alternative would be consistent with applicable plans, policies, and regulations for these areas and would not interfere with management. Alternative 5 would not contribute to cumulative impacts to special designations.
Irreversible and Irretrievable Commitment of Resources: No direct or indirect impacts to special designations would occur and no irreversible or irretrievable commitment of these resources would occur. No unavoidable adverse impacts to special designations are expected to occur under Alternative 1.	No direct or indirect impacts to special designations would occur and no irreversible or irretrievable commitment of these resources would occur. No unavoidable adverse impacts to special designations are expected to occur under Alternative 2.	No direct or indirect impacts to special designations would occur and no irreversible or irretrievable commitment of these resources would occur. No unavoidable adverse impacts to special designations are expected to occur under Alternative 3.	No direct or indirect impacts to special designations would occur and no irreversible or irretrievable commitment of these resources would occur. No unavoidable adverse impacts to special designations are expected to occur under Alternative 4.	No direct or indirect impacts to special designations would occur and no irreversible or irretrievable commitment of these resources would occur. No unavoidable adverse impacts to special designations are expected to occur under Alternative 5.

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Recreation				
No direct or indirect impacts.	Overall, due to minimal recreational use of the area, existing aesthetics, and existing land uses, Alternative 2 would have negligible adverse impacts on recreation.	Overall, due to minimal recreational use of the area, existing aesthetics, and existing land uses, Alternative 3 would have negligible adverse impacts on recreation.	No direct or indirect impacts.	No direct or indirect impacts.
Cumulative Impacts: Alternative 1 would not result in impacts to recreation. This alternative would be consistent with recreational use of the area. Alternative 1 would not contribute to cumulative impacts to recreation.	Alternative 2, in combination with other reasonably foreseeable future projects, would result in negligible adverse impacts to recreational users of the area. Impacts would be negligible overall due to minimal recreational use of the area. Renewable energy projects and other activities within approximately 2 miles of the Ocotillo Sol Project area have been consistent with recreational use of the area near the Ocotillo Sol Project. Alternative 2, when combined with other past, present, and reasonably foreseeable future projects in the area, would not result in a cumulatively adverse impact to recreation.	Alternative 3, in combination with other reasonably foreseeable future projects, would result in negligible adverse impacts to recreational users of the area. Impacts would be negligible overall due to minimal recreational use of the area. Alternative 3, when combined with other past, present, and reasonably foreseeable future projects in the area, would not result in a cumulatively adverse impact to recreation.	Alternative 4 would not result in impacts to recreation. This alternative would be consistent with recreational use of the area. Alternative 4 would not contribute to cumulative impacts to recreation.	Alternative 5 would not result in impacts to recreation. This alternative would be consistent with recreational use of the area. Alternative 5 would not contribute to cumulative impacts to recreation.
Irreversible and Irretrievable Commitment of Resources: No unavoidable adverse impacts to recreation are expected to occur and no irreversible or irretrievable commitment of resources related to recreation would occur under Alternative 1.	Construction, operation and maintenance, and decommissioning activities under Alternative 2 would have negligible adverse impacts on recreation. Overall, due to minimal recreational use of the area, existing aesthetics, and existing land uses, Alternative 2 would have no unavoidable adverse impacts to recreation and no irreversible or irretrievable commitment of resources related to recreation would occur.	Construction, operation and maintenance, and decommissioning activities under Alternative 3 would have negligible adverse impacts on recreation. Overall, due to minimal recreational use of the area, existing aesthetics, and existing land uses, Alternative 3 would have no unavoidable adverse impacts to recreation and no irreversible or irretrievable commitment of resources related to recreation would occur.	No unavoidable adverse impacts to recreation are expected to occur and no irreversible or irretrievable commitment of resources related to recreation would occur under Alternative 4.	No unavoidable adverse impacts to recreation are expected to occur and no irreversible or irretrievable commitment of resources related to recreation would occur under Alternative 5.

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Visual Resources				
No direct or indirect impacts.	For all key observation points, the expected degree of visual contrast of the Ocotillo Sol Project would meet and be compatible with the Visual Resource Management Objective of Class III. The proposed Interim Visual Resource Management Class III assignment for the Ocotillo Sol Project area is consistent with the California Desert Conservation Area prescriptions and the inventory class (Visual Resource Inventory Class III). The project would be constructed and maintained in conformance with the Visual Resource Management Class III objective and would not result in adverse visual impacts under Alternative 2.	Impacts to visual resources under Alternative 3 would be similar to those described for Alternative 2, except the project footprint would be 102 acres under Alternative 3. The expected level of visual contrast is compatible with the Visual Resource Management objectives for Class III, and would not be considered an adverse visual impact under Alternative 3. Alternative 3 would not result in direct or indirect adverse impacts to visual resources.	No direct or indirect impacts.	No direct or indirect impacts.
Cumulative Impacts: Alternative 1 would not result in impacts to visual resources. Alternative 1 would not contribute to cumulative impacts to visual resources.	No cumulative impacts to visual resources are anticipated under Alternative 2 in combination with other reasonably foreseeable future projects in the area.	No cumulative impacts to visual resources are anticipated under Alternative 3 in combination with other reasonably foreseeable future projects in the area.	Alternative 4 would not result in impacts to visual resources. Alternative 4 would not contribute to cumulative impacts to visual resources.	Alternative 5 would not result in impacts to visual resources. Alternative 5 would not contribute to cumulative impacts to visual resources.
Irreversible and Irretrievable Commitment of Resources: No direct or indirect impacts to visual resources would occur and no irreversible or irretrievable commitment of visual resources would occur. No unavoidable adverse impacts to visual resources are expected to occur under Alternative 1.	Impacts to visual resources from dust emissions would be temporary and minimized by implementing dust control measures. This impact would not be avoidable; however, mitigation measures and the short duration of the impact would result in minimal, if any, changes in viewshed. No direct or indirect impacts to visual resources would occur and no irreversible or irretrievable commitment of visual resources would occur under Alternative 2.	Impacts to visual resources from dust emissions would be temporary and minimized by implementing dust control measures. This impact would not be avoidable; however, mitigation measures and the short duration of the impact would result in minimal, if any, changes in viewshed. No direct or indirect impacts to visual resources would occur and no irreversible or irretrievable commitment of visual resources would occur under Alternative 3.	No direct or indirect impacts to visual resources would occur and no irreversible or irretrievable commitment of visual resources would occur. No unavoidable adverse impacts to visual resources are expected to occur under Alternative 4.	No direct or indirect impacts to visual resources would occur and no irreversible or irretrievable commitment of visual resources would occur. No unavoidable adverse impacts to visual resources are expected to occur under Alternative 5.

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Transportation and Access				
No direct or indirect impacts.	Under Alternative 2, construction, operation and maintenance, and decommissioning activities would not result in direct or indirect impacts to traffic conditions in the project area.	Under Alternative 3, construction, operation and maintenance, and decommissioning activities would not result in direct or indirect impacts to traffic conditions in the project area.	No direct or indirect impacts.	No direct or indirect impacts.
Cumulative Impacts: Alternative 1 would not result in impacts to transportation and access. This alternative would not increase traffic volumes or disrupt access. Alternative 1 would not contribute to cumulative impacts to transportation and access.	Alternative 2, in combination with other reasonably foreseeable future projects would not result in an increase of traffic volumes or disrupt access. Renewable energy projects in the vicinity would not likely have the same construction schedule and would not result in a significant increase in traffic volumes. Alternative 2, when combined with other reasonably foreseeable future projects, is not expected to result in cumulative impacts to transportation and access.	Alternative 3, in combination with other reasonably foreseeable future projects would not result in an increase of traffic volumes or disrupt access. Renewable energy projects in the vicinity would not likely have the same construction schedule and would not result in a significant increase in traffic volumes. Alternative 3, when combined with other reasonably foreseeable future projects, is not expected to result in cumulative impacts to transportation and access.	Alternative 4 would not result in impacts to transportation and access. This alternative would not increase traffic volumes or disrupt access. Alternative 4 would not contribute to cumulative impacts to transportation and access.	Alternative 5 would not result in impacts to transportation and access. This alternative would not increase traffic volumes or disrupt access. Alternative 5 would not contribute to cumulative impacts to transportation and access.
Irreversible and Irretrievable Commitment of Resources: No direct or indirect impacts to transportation and access would occur and no irreversible or irretrievable commitment of these resources would occur. No unavoidable adverse impacts to transportation and access are expected to occur under Alternative 1.	No direct or indirect impacts to transportation and access would occur under Alternative 2 and no irreversible or irretrievable commitment of these resources would occur. No unavoidable adverse impacts to transportation and access are expected to occur under Alternative 2.	No direct or indirect impacts to transportation and access would occur under Alternative 3 and no irreversible or irretrievable commitment of these resources would occur. No unavoidable adverse impacts to transportation and access are expected to occur under Alternative 3.	No direct or indirect impacts to transportation and access would occur and no irreversible or irretrievable commitment of these resources would occur. No unavoidable adverse impacts to transportation and access are expected to occur under Alternative 4.	No direct or indirect impacts to transportation and access would occur and no irreversible or irretrievable commitment of these resources would occur. No unavoidable adverse impacts to transportation and access are expected to occur under Alternative 5.

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Noise and Vibration				
No direct or indirect impacts.	Although operational noise levels under Alternative 2 would be louder than current conditions, the resultant noise levels at residences would be below the daytime ambient noise level. With the distances involved between the Ocotillo Sol Project area and sensitive receptors, construction noise would not result in an adverse impact under Alternative 2. Noise impacts under Alternative 2 are not anticipated to conflict with adjacent uses. Implementing mitigation measures would avoid, minimize, or mitigate potential impacts to burrowing owl and raptors during construction activities. No impacts due to operational noise are expected to occur to burrowing owls or raptors. There would be no direct or indirect noise related impacts under Alternative 2.	Although operational noise levels under Alternative 3 would be louder than current conditions, the resultant noise levels at residences would be below the daytime ambient noise level. With the distances involved between the Ocotillo Sol Project area and sensitive receptors, construction noise would not result in an adverse impact under Alternative 3. Noise impacts under Alternative 3 are not anticipated to conflict with adjacent uses. Implementing mitigation measures would avoid, minimize, or mitigate potential impacts to burrowing owl and raptors during construction activities. No impacts due to operational noise are expected to occur to burrowing owls or raptors. There would be no direct or indirect noise related impacts under Alternative 3.	No direct or indirect impacts.	No direct or indirect impacts.
Cumulative Impacts: Alternative 1 would not result in impacts related to noise and vibration. This alternative would not increase noise or cause significant vibration. Alternative 1 would not contribute to cumulative impacts related to noise and vibration.	Alternative 2, in combination with other reasonably foreseeable future projects, would not significantly increase traffic volumes that would result in an increase in traffic noise. Renewable energy projects in the vicinity would not likely have the same construction schedule and would not result in a significant increase in noise and vibration in the vicinity. Alternative 2, when combined with other reasonably foreseeable future projects, is not expected to result in cumulative impacts to noise and vibration in the area.	Alternative 3, in combination with other reasonably foreseeable future projects, would not significantly increase traffic volumes that would result in an increase in traffic noise. Renewable energy projects in the vicinity would not likely have the same construction schedule and would not result in a significant increase in noise and vibration in the vicinity. Alternative 3, when combined with other reasonably foreseeable future projects, is not expected to result in cumulative impacts to noise and vibration in the area.	Alternative 4 would not result in impacts related to noise and vibration. This alternative would not increase noise or cause significant vibration. Alternative 4 would not contribute to cumulative impacts related to noise and vibration.	Alternative 5 would not result in impacts related to noise and vibration. This alternative would not increase noise or cause significant vibration. Alternative 5 would not contribute to cumulative impacts related to noise and vibration.

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Noise and Vibration (continued)				
Irreversible and Irretrievable Commitment of Resources: No direct or indirect impacts from noise would occur and no irreversible or irretrievable commitment of resources from noise impacts would occur. No unavoidable adverse impacts from noise are expected to occur under Alternative 1.	No direct impacts from noise and vibration would occur under Alternative 2. Indirect unavoidable impacts could occur, however, to burrowing owl individuals and/or active burrowing owl burrows during grading, vegetation clearing, and other construction activities if those activities take place within 250 feet of an active burrow during the breeding season. In addition, if construction occurs between February 1 and July 15, impacts to an active raptor nest could occur. These impacts would be mitigated or avoided by mitigation measures. No irreversible and irretrievable commitment of resources from noise or vibration impacts would occur under Alternative 2.	No direct impacts from noise and vibration would occur under Alternative 3. Indirect unavoidable impacts could occur, however, to burrowing owl individuals and/or active burrowing owl burrows during grading, vegetation clearing, and other construction activities if those activities take place within 250 feet of an active burrow during the breeding season. In addition, if construction occurs between February 1 and July 15, impacts to an active raptor nest could occur. These impacts would be mitigated or avoided by mitigation measures. No irreversible and irretrievable commitment of resources from noise or vibration impacts would occur under Alternative 3.	No direct or indirect impacts from noise would occur and no irreversible or irretrievable commitment of resources from noise impacts would occur. No unavoidable adverse impacts from noise are expected to occur under Alternative 4.	No direct or indirect impacts from noise would occur and no irreversible or irretrievable commitment of resources from noise impacts would occur. No unavoidable adverse impacts from noise are expected to occur under Alternative 5.
Public Health and Safety				
No direct or indirect impacts.	No direct or indirect adverse impacts to public health and safety would occur under Alternative 2. Implementation of best management practices would avoid and reduce the potential for release of hazardous materials.	No direct or indirect adverse impacts to public health and safety would occur under Alternative 3. Implementation of best management practices would avoid and reduce the potential for release of hazardous materials.	No direct or indirect impacts.	No direct or indirect impacts.
Cumulative Impacts: Alternative 1 would not result in impacts to public health and safety. This alternative would be consistent with applicable laws, policies, and regulations related to public health and safety. Alternative 1 would not contribute to cumulative impacts to public health.	Alternative 2 would not result in adverse impacts to public health and safety. Renewable energy projects and other activities within approximately 20 miles of the Ocotillo Sol Project area have been consistent with applicable laws, policies, and regulations related to public health and safety. Alternative 2 would also be consistent with applicable laws, policies, and regulations. Alternative 2, when combined with other reasonably foreseeable future projects, is not expected to result in cumulative impacts to public health and safety.	Alternative 3 would not result in adverse impacts to public health and safety. Renewable energy projects and other activities within approximately 20 miles of the Ocotillo Sol Project area have been consistent with applicable laws, policies, and regulations related to public health and safety. Alternative 3 would also be consistent with applicable laws, policies, and regulations. Alternative 3, when combined with other reasonably foreseeable future projects, is not expected to result in cumulative impacts to public health and safety.	Alternative 4 would not result in impacts to public health and safety. This alternative would be consistent with applicable laws, policies, and regulations related to public health and safety. Alternative 4 would not contribute to cumulative impacts to public health.	Alternative 5 would not result in impacts to public health and safety. This alternative would be consistent with applicable laws, policies, and regulations related to public health and safety. Alternative 5 would not contribute to cumulative impacts to public health.

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Public Health and Safety (continued)				
Irreversible and Irretrievable Commitment of Resources: No unavoidable adverse impacts related to public health and safety would occur and no irreversible or irretrievable commitment of resources would occur under Alternative 1.	Construction, operation and maintenance, and decommissioning activities under Alternative 2 could result in release of hazardous materials. Implementation of best management practices would avoid and reduce the potential for release of hazardous materials. No unavoidable adverse impacts related to public health and safety would occur and no irreversible or irretrievable commitment of resources would occur under Alternative 2.	Construction, operation and maintenance, and decommissioning activities under Alternative 3 could result in release of hazardous materials. Implementation of best management practices would avoid and reduce the potential for release of hazardous materials. No unavoidable adverse impacts related to public health and safety would occur and no irreversible or irretrievable commitment of resources would occur under Alternative 3.	No unavoidable adverse impacts related to public health and safety would occur and no irreversible or irretrievable commitment of resources would occur under Alternative 4.	No unavoidable adverse impacts related to public health and safety would occur and no irreversible or irretrievable commitment of resources would occur under Alternative 5.
Socioeconomics				
No direct or indirect impacts.	Under Alternative 2, the Ocotillo Sol Project would generate a marginal economic benefit for the local economy, the impact would be relatively small and would not represent a substantial impact to the regional economy. Under Alternative 2, no impacts to property values, adverse or beneficial, were identified. No impacts to population and housing, adverse or beneficial, were identified under Alternative 2. No social impacts, adverse or beneficial, were identified for the relatively passive and infrequent operation and maintenance activities.	Under Alternative 3, the Ocotillo Sol Project would generate a marginal economic benefit for the local economy, the impact would be relatively small and would not represent a substantial impact to the regional economy. Under Alternative 3, no impacts to property values, adverse or beneficial, were identified. No impacts to population and housing, adverse or beneficial, were identified under Alternative 3. No social impacts, adverse or beneficial, were identified for the relatively passive and infrequent operation and maintenance activities.	No direct or indirect impacts.	No direct or indirect impacts.

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Socioeconomics (continued)				
Cumulative Impacts: Alternative 1 would not result in impacts to socioeconomics. This alternative would not contribute to cumulative impacts related to socioeconomics within Imperial County or near the Ocotillo Sol Project Area.	Alternative 2, in combination with the capital investment and construction of the approved and proposed renewable energy projects for Imperial County, would generate a cumulative economic benefit that is needed for the region. The high levels of chronic unemployment in Imperial County require a major economic stimulus as an alternative to the seasonal employment and low-paying jobs offered by the large agricultural sector. Due to the relatively small size of the Applicant's proposed Ocotillo Sol Project, even in combination with other reasonably foreseeable future projects, no cumulative socioeconomic impacts for the Local Socioeconomic Impact Area or Imperial County were identified under Alternative 2.	Alternative 3, in combination with the capital investment and construction of the approved and proposed renewable energy projects for Imperial County, would generate a cumulative economic benefit that is needed for the region. The high levels of chronic unemployment in Imperial County require a major economic stimulus as an alternative to the seasonal employment and low-paying jobs offered by the large agricultural sector. Due to the relatively small size of the Applicant's proposed Ocotillo Sol Project, even in combination with other reasonably foreseeable future projects, no cumulative socioeconomic impacts for the Local Socioeconomic Impact Area or Imperial County were identified under Alternative 3.	Alternative 4 would not result in impacts to socioeconomics. This alternative would not contribute to cumulative impacts related to socioeconomics within Imperial County or near the Ocotillo Sol Project Area.	Alternative 5 would not result in impacts to socioeconomics. This alternative would not contribute to cumulative impacts related to socioeconomics within Imperial County or near the Ocotillo Sol Project Area.
Irreversible and Irretrievable Commitment of Resources: No unavoidable adverse impacts to economic resources or social condition would occur and no irreversible or irretrievable commitment of resources would occur under Alternative 1.	Construction, operation and maintenance, and decommissioning activities under Alternative 2 would generate a marginal economic benefit for the local economy. The impact would be relatively small and would not represent a substantial impact to the regional economy. No unavoidable adverse impacts to economic resources or social condition would occur and no irreversible or irretrievable commitment of resources would occur under Alternative 2.	Construction, operation and maintenance, and decommissioning activities under Alternative 3 would generate a marginal economic benefit for the local economy. The impact would be relatively small and would not represent a substantial impact to the regional economy. No unavoidable adverse impacts to economic resources or social condition would occur and no irreversible or irretrievable commitment of resources would occur under Alternative 3.	No unavoidable adverse impacts to economic resources or social condition would occur and no irreversible or irretrievable commitment of resources would occur under Alternative 4.	No unavoidable adverse impacts to economic resources or social condition would occur and no irreversible or irretrievable commitment of resources would occur under Alternative 5.

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Environmental Justice				
No direct or indirect impacts.	No adverse socioeconomic impacts were identified for Alternative 2 and Alternative 2 would not generate disproportionate adverse Environmental Justice impacts. Alternative 2 would not result in direct or indirect impacts to Environmental Justice.	No adverse socioeconomic impacts were identified for Alternative 3 and Alternative 3 would not generate disproportionate adverse Environmental Justice impacts. Alternative 3 would not result in direct or indirect impacts to Environmental Justice.	No direct or indirect impacts.	No direct or indirect impacts.
Cumulative Impacts: Alternative 1 would not result in impacts to Environmental Justice. This alternative would not contribute to cumulative impacts related to Environmental Justice within Imperial County or near of the Ocotillo Sol Project Area.	No cumulative adverse Environmental Justice impacts were identified under Alternative 2. This alternative, in combination with other reasonably foreseeable future projects, would not generate a cumulative impact that would yield disproportionate adverse Environmental Justice impacts.	No cumulative adverse Environmental Justice impacts were identified under Alternative 3. This alternative, in combination with other reasonably foreseeable future projects, would not generate a cumulative impact that would yield disproportionate adverse Environmental Justice impacts.	Alternative 4 would not result in impacts to Environmental Justice. This alternative would not contribute to cumulative impacts related to Environmental Justice within Imperial County or near of the Ocotillo Sol Project Area.	Alternative 5 would not result in impacts to Environmental Justice. This alternative would not contribute to cumulative impacts related to Environmental Justice within Imperial County or near of the Ocotillo Sol Project Area.
Irreversible and Irretrievable Commitment of Resources: No direct or indirect impacts to Environmental Justice would occur and no irreversible or irretrievable commitment of resources would occur. No unavoidable adverse impacts to Environmental Justice are expected to occur under Alternative 1.	The Ocotillo Sol Project area is located within a rural area and within a designated utility corridor. The project area is not located in or near an urban area and would not disproportionately have an effect on low income or minority populations. No direct or indirect impacts to Environmental Justice would occur under Alternative 2 and no irreversible or irretrievable commitment of resources would occur. No unavoidable adverse impacts to Environmental Justice are expected to occur under Alternative 2.	The Ocotillo Sol Project area is located within a rural area and within a designated utility corridor. The project area is not located in or near an urban area and would not disproportionately have an effect on low income or minority populations. No direct or indirect impacts to Environmental Justice would occur under Alternative 3 and no irreversible or irretrievable commitment of resources would occur. No unavoidable adverse impacts to Environmental Justice are expected to occur under Alternative 3.	No direct or indirect impacts to Environmental Justice would occur and no irreversible or irretrievable commitment of resources would occur. No unavoidable adverse impacts to Environmental Justice are expected to occur under Alternative 4.	No direct or indirect impacts to Environmental Justice would occur and no irreversible or irretrievable commitment of resources would occur under Alternative 5. No unavoidable adverse impacts to Environmental Justice are expected to occur.

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CHAPTER 1.0 INTRODUCTION AND PURPOSE AND NEED

San Diego Gas & Electric (Applicant) has filed a right-of-way (ROW) application (CACA-51625) with the Bureau of Land Management (BLM) for a ROW grant to construct, operate, maintain, and decommission a 100-acre solar photovoltaic (PV) facility on BLM-managed lands. The Applicant's Ocotillo Sol Project would interconnect with the existing Imperial Valley Substation and generate up to 20 megawatts (MW) of electricity. In connection with its consideration of the Applicant's ROW application, the BLM will also be considering whether or not to amend the California Desert Conservation Area (CDCA) Plan of 1980, as amended.

The decision regarding the issuance of the ROW grant and potential amendment to the CDCA Plan will be based in part on an evaluation of the potential environmental effects through the environmental review process under the National Environmental Policy Act of 1969 (NEPA) and the requirements of the Federal Land Policy and Management Act of 1976 (FLPMA). As part of the ROW grant application process, the Applicant submitted a Plan of Development (POD) for the Ocotillo Sol Project to the BLM in August 2010. A revised POD was submitted to the BLM in December 2010.

This Environmental Impact Statement (EIS) follows regulations promulgated by the Council on Environmental Quality (CEQ) for Implementing the Procedural Provisions of NEPA (40 Code of Federal Regulations [CFR] 1500-1508); the Department of the Interior's NEPA regulations, 43 CFR Part 46; the BLM NEPA Handbook, H-1790-1; Sections 201, 202, and 206 of FLPMA (43 CFR 1600); and the BLM Land Use Planning Handbook, H1601-1. This EIS describes the components of and reasonable alternatives to the proposed action and environmental consequences of the proposed action and the alternatives. It also presents recommended mitigation measures that would avoid, minimize, or mitigate the significant environmental impacts identified.

A Notice of Availability of this draft EIS and proposed CDCA Plan Amendment published by the Environmental Protection Agency (EPA) in the *Federal Register* initiates a 90-day public comment period.

1.1 PROJECT OVERVIEW

The Applicant's proposed 100-acre solar PV generation facility and 15-acre temporary laydown area would be sited entirely on BLM-managed lands adjacent to the existing Imperial Valley Substation in Imperial County, California (Figure 1-1 in Appendix A). The project site would lie within the BLM's Yuha Basin Area of Critical Environmental Concern (ACEC), which contains the Yuha Desert Management Area. The Yuha Desert Management Area was created for the

conservation and management of the flat-tailed horned lizard as identified in the *Flat-tailed Horned Lizard Rangewide Management Strategy, 2003 Revision, An Arizona-California Conservation Strategy* (Flat-tailed Horned Lizard Interagency Coordinating Committee) and incorporated through an amendment to the CDCA Plan.

The Ocotillo Sol Project components would include the PV modules and mounting structures, a maintenance building with an associated parking area, internal roads, inverters, transformers, and the combining switchgear.

The Imperial Valley Substation lies directly north of the project site. Transmission lines connect to the substation from the east and west. The substation is visible from Highway 98. There are several communication towers near the project site, and construction for an unrelated project (Sunrise Powerlink) is under way to the west of the project site, connecting to the Imperial Valley Substation.

1.2 GENERAL LOCATION AND MAP

The Ocotillo Sol Project location is in Imperial County, California, approximately 82 miles east of San Diego, approximately 9 miles southwest of El Centro, 5 miles south of Seeley, and approximately 5 miles north of the U.S.–Mexico border. A portion of the Juan Bautista de Anza National Historic Trail lies approximately 5 miles to the west of the project site and runs approximately north–south. The Jacumba Mountains Wilderness lies 11.6 miles to the west of the project site (see Figure 1-1 in Appendix A).

The Ocotillo Sol Project area is in the Yuha Desert and within the boundaries of BLM's Yuha Basin ACEC. The northern boundary of the 115-acre site abuts the existing Imperial Valley Substation. High-voltage power lines and supporting structures are aligned just east of the Ocotillo Sol Project area, extending south.

Pinto Wash lies immediately south of the project site. The Westside Main Irrigation Canal is located approximately 2 miles east of the Ocotillo Sol Project area. This north–south canal serves as the eastern boundary of the Yuha Basin ACEC. A dense band of tamarisk and other vegetation parallel the west side of this canal, east of which are cultivated, private agricultural lands.

The regional location is the western portion of the Salton Trough, in the Basin and Range Province, and east of the rugged mountainous terrain of the Peninsular Ranges in the Lower California Province (California Geologic Survey 2002). This transitional zone between physiographic provinces is characterized by badlands landscape features, very rugged and sparsely vegetated low mountains, and relatively level alluvial plains with a sparse to moderate vegetated cover of creosote, saltbush, prickly pear, and other small subshrubs and grasses (creosote flats). The landscape type is panoramic, with a broad horizontal composition and little sense of boundary restriction other than distant views of rugged mountainous terrain.

1.3 BLM PURPOSE AND NEED

In accordance with FLPMA (Section 103[c]), public lands are to be managed for multiple use that takes into account the long-term needs of future generations for renewable and non-renewable resources. The Secretary of the Interior is authorized to grant ROWs on public lands for systems of generation, transmission, and distribution of electric energy (Section 501[a][4]). Taking into account the BLM's multiple use mandate, the purpose and need for the proposed action is to respond to a FLPMA Title V ROW application submitted by the Applicant to construct, operate, maintain, and decommission a solar PV facility and associated infrastructure on public lands administered by the BLM in compliance with FLPMA, BLM ROW regulations, and other applicable federal laws and policies. The BLM will decide whether to deny the proposed ROW, grant the ROW, or grant the ROW with modifications. The BLM may include any terms, conditions, and stipulations it determines to be in the public interest, and may include modifying the proposed use or changing the route or location of the proposed facilities (43 CFR 2805.10[a][1]).

The Ocotillo Sol Project would, if approved, assist the BLM in addressing the following management objectives, and would help further the development of environmentally responsible renewable energy:

- Executive Order (EO) 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.
- Section 211 of the Energy Policy Act of 2005, which sets forth the "sense of Congress" that the Secretary of the Interior should seek to have approved 10,000 MW of non-hydropower renewable energy on public lands by 2015.
- Secretarial Order (SO) 3285A1, dated February 22, 2010, which establishes the development of renewable energy as a priority for the Department of the Interior (DOI).

In connection with its decision on the Ocotillo Sol Project ROW grant application, the BLM's action will also include consideration of potential amendments to the CDCA land use plan, as analyzed in the Draft EIS alternatives. The CDCA Plan, while recognizing the potential compatibility of solar energy facilities on public lands, requires that all sites associated with power generation or transmission not identified in that plan be considered through the land use plan amendment process. BLM policy encourages the avoidance of development on lands with high conflict or sensitive resource values (IM 2011-061). While the BLM is not required formally to determine whether certain high conflict lands are or are not available for solar energy development, BLM must amend the CDCA Plan if it decides to make that decision. The BLM is deciding whether to amend the CDCA Plan to identify the Ocotillo Sol Project site as available and whether to amend the CDCA Plan to make high conflict or sensitive resource value areas within the Ocotillo Sol Project application unavailable for solar energy development.

Additionally, the CDCA Plan requires that transmission lines above 161 kilovolts (kV) either be within a designated corridor or allowed outside of a designated corridor. The Ocotillo Sol Project would use an existing transmission line that is entirely within a designated corridor, so a

Plan Amendment would not be required. Therefore, the proposed transmission line associated with this project would comply with the applicable CDCA Plan requirements.

1.4 APPLICANT'S OBJECTIVES

The applicant's interests and objectives, including any constraints or flexibility with respect to their proposal, help to inform the BLM's decision and cannot be ignored in the NEPA process. (BLM Instruction Memorandum [IM] 2011-059).

The Applicant's fundamental objective for the Ocotillo Sol Project is to develop, own, and operate a renewable energy generation facility in the Imperial Valley region of southern California, and to deliver the renewable energy generated by the project to the Applicant's customers consistent with California laws, policies, and mandates. Additional objectives for the Ocotillo Sol Project include the following:

1. Increase the use of renewable energy and reduce greenhouse gas emissions in California consistent with existing California laws, orders, and policies.
2. Develop and refine the project concept and details with input and guidance from the BLM and Imperial County.

In developing their proposed action, the Applicant, in consultation with the BLM, used the following siting criteria to evaluate potential project sites:

- A contiguous site, with flat topography (grade of less than 3 percent) large enough for siting a 20-MW solar PV facility with minimal land disturbance
- Avoidance or mitigation for disturbance of areas that are pristine and biologically sensitive
- Avoidance of high-quality habitat for federally listed species
- Avoidance of known cultural or historic sites and recreational resource areas
- Proximity to transmission facilities with sufficient capacity for the Ocotillo Sol Project output and suitable locations for interconnection
- Proximity to highway and road access
- Availability of contiguous land for sale or lease at a feasible cost

These criteria led the Applicant to further evaluate seven private parcels and one additional BLM parcel. These alternative sites and the reasons for their dismissal from detailed analysis under NEPA are discussed in Section 2.3. In addition, the Applicant conducted preliminary biological, cultural, hydrological, and geological reviews to evaluate site conditions. Based on these reviews, portions of the initial 350-acre Ocotillo Sol Project survey area were considered unsuitable for development and were eliminated from consideration.

Alternative site configurations were developed to avoid or minimize impacts to sensitive environmental resources, such as biological, cultural, and visual resources, to the extent possible. Specific consideration was given to avoiding active flat-tailed horned lizard areas, sensitive plant species concentrations, burrowing owl signs, Pinto Wash, and cultural resources. When

determining the optimum configuration for the Ocotillo Sol Project, the BLM also considered stakeholders' comments made during scoping.

Additional factors considered by the Applicant include engineering constraints, such as those for existing easements, grading, hydrological, electrical, and security; construction constraints, such as those for safety, cost, and constructability; and interconnection constraints.

1.5 ISSUES

For the purpose of the BLM's NEPA analysis, an issue is a point of disagreement, debate, or dispute with a proposed action based on some anticipated environmental effect (BLM National Environmental Policy Act Handbook, H-1790-1). Issues are identified through scoping, which is the process by which the BLM solicits internal and external input on the project.

The BLM hosted two public scoping meetings in El Centro, California, on August 10, 2011. During these meetings, participants reviewed maps and display boards, and asked specific questions of BLM staff. The BLM invited participants to submit comments via comment forms, letters, and e-mail. External Scoping is discussed further in Chapter 5 of this EIS.

The issues evaluated in this EIS include the physical, biological, cultural, socioeconomic, and other resources that have the potential to be affected by activities related to the Applicant's proposed Ocotillo Sol Project and alternatives. The issues are:

- Air Quality
- Greenhouse Gases and Climate Change
- Geology and Soils
- Water Resources
- Biological Resources
- Cultural Resources
- Paleontological Resources
- Fire/Fuels
- Lands and Realty
- Special Designations
- Lands with Wilderness Characteristics
- Recreation
- Visual Resources
- Transportation and Public Access
- Noise and Vibration
- Public Health and Safety
- Socioeconomics
- Environmental Justice

Resources that do not exist in the project vicinity and, therefore, do not warrant analysis in the EIS include Grazing, Wild Horses and Burros, and Mineral Resources.

1.6 AGENCY ROLES AND AUTHORIZATIONS

The BLM is preparing this EIS, in compliance with NEPA, FLPMA, and applicable regulations to inform the public about the Ocotillo Sol Project. As noted above, a BLM authorization of a ROW grant for the Ocotillo Sol Project would require an amendment to the CDCA Plan (BLM 1980), as amended. Other state and local agencies may issue additional potential project permits and approvals, which may have associated NEPA compliance requirements. It is the Applicant's responsibility to obtain these permits; however, other federal, state, and local permitting authorities may rely upon the analysis presented in this EIS for fulfillment of their respective regulatory obligations.

1.7 POLICY CONSISTENCY AND PLAN CONFORMANCE

This section provides an overview of the major federal (BLM and non-BLM) policies, plans, programs, and laws that would apply to the Ocotillo Sol Project. State and local policies, plans, and programs are discussed in Section 1.8 below. Additional requirements are discussed for each environmental resource in Chapter 3.

1.7.1 FEDERAL LAND POLICY AND MANAGEMENT ACT OF 1976

Pursuant to FLPMA of 1976, 43 United States Code (USC) 1701 et seq., the BLM is directed to manage the public lands and their resources based on multiple use and sustained yield principles. As required by FLPMA, public lands must be managed in a manner that: protects the quality of scientific, scenic, historical, ecological, environmental, air and atmospheric, water resource, and archaeological values; preserves and protect, where appropriate, certain public land in their natural condition; provides food and habitat for fish, wildlife, and domestic animals; and provides for outdoor recreation and human occupancy and use by encouraging collaboration and public participation throughout the planning process. In addition, public land must be managed in a manner that recognizes the nation's need for domestic sources of minerals, food, timber, and fiber from public land. Land use plans are the primary mechanism for guiding BLM activities to achieve the BLM's mission and goals. In processing a land use plan amendment, BLM must also comply with the BLM Planning Regulations (43 CFR Part 1600) and the BLM Land Use Planning Handbook (H-1601-1). FLPMA also authorizes BLM to issue ROW grants for systems intended for generation, transmission, and distribution of electric energy.

In addition, FLPMA provides guidance for ACEC management (43 USC 1702). ACECs must meet the relevance and importance criteria in 43 CFR 1610.7-2(b) and must require special management (43 CFR 1601.0-5[a]) to protect the area and prevent irreparable damage to resource or natural systems, or to protect life and promote safety in areas where natural hazards

exist. The values for which ACECs are designated are considered the highest and best use for those lands, and protection of those values would take precedence over multiple uses.

1.7.2 NATIONAL ENVIRONMENTAL POLICY ACT

NEPA (42 USC 4321 et seq.) declares a continuing federal policy that directs "a systematic, interdisciplinary approach" to planning and decision-making and requires the preparation of environmental statements for "major federal actions significantly affecting the quality of the human environment." The NEPA process is an overall framework for the environmental evaluation of federal actions. The CEQ has issued regulations for implementing NEPA, which establish procedures to ensure proper consideration of environmental concerns (40 CFR 1500-1508). In processing ROW applications, BLM must also comply with the Department of the Interior's regulations applicable to implementing the procedural requirements of NEPA (43 CFR Part 46), as well as BLM's NEPA Handbook (H-1790-1).

1.7.3 CLEAN AIR ACT

The Clean Air Act (42 USC 7401 et seq.), as amended, regulates air pollution to improve air quality. This act regulates air emissions from area, stationary, and mobile sources. The Clean Air Act also authorizes the EPA to establish National Ambient Air Quality Standards (NAAQS) to protect public health and the environment. General Conformity (40 CFR Part 93) requires a determination of conformity with the State Implementation Plan for a project that requires federal approval if the project's annual emissions are above specified levels. The Applicant's proposed Ocotillo Sol Project would fall under the general conformity requirements.

1.7.4 ENERGY POLICY ACT

The Energy Policy Act of 2005 (Public Law [PL] 109-58) established a comprehensive, long-range, national energy policy that included a goal for the Secretary of the Interior to approve 10,000 MW of renewable energy on public lands by 2015. It provides incentives for traditional energy production as well as newer, more efficient energy technologies and conservation. It contains several provisions related to geothermal energy to make it more competitive with traditional methods of energy production. The approval of the Ocotillo Sol Project, which would be on public lands, would contribute to the 10,000 MW goal.

1.7.5 NATIONAL HISTORIC PRESERVATION ACT

The National Historic Preservation Act (NHPA) of 1966 (PL 89-665, as amended by PL 96-515 [16 USC 470 et seq.]) provides for the establishment of the National Register of Historic Places (NRHP) to include historic properties such as districts, sites, buildings, structures, and objects that are significant in American history, architecture, archaeology, and culture. Section 106 of the act requires federal agencies with jurisdiction over a proposed federal undertaking to take into account the effect of the undertaking on historic properties listed or eligible for listing on the NRHP, and to afford the Advisory Council on Historic Preservation an opportunity to comment on the undertaking. The NRHP eligibility criteria are defined at 36 CFR 60.

1.7.6 RENEWABLE ENERGY DEVELOPMENT BY THE DEPARTMENT OF THE INTERIOR

As noted above, SO 3285A1 made production and transmission of renewable energy on public lands a priority for the DOI. It established a DOI-wide approach for applying scientific tools to increase understanding of climate change and to coordinate an effective response to impacts on tribes and on the land, water, ocean, fish and wildlife, and cultural heritage resources that are managed within the DOI. SO 3285A1 also established an energy and climate change task force that identifies specific zones on U.S. public lands where the DOI can facilitate a rapid and responsible move to large-scale production of solar, wind, geothermal, and biomass energy. The approval of the Ocotillo Sol Project would contribute to the priority goals of the DOI.

1.7.7 CALIFORNIA DESERT CONSERVATION AREA PLAN

The CDCA encompasses 25 million acres in southern California designated by Congress in 1976 through FLPMA. The BLM manages about 10 million of those acres. Congress directed the BLM to prepare and implement a comprehensive long-range plan for the management, use, development, and protection of public lands within the CDCA. The 1980 CDCA Plan, as amended, is based on the concepts of multiple use, sustained yield, and maintenance of environmental quality. The CDCA Plan provides overall regional guidance for BLM-administered lands in the CDCA and establishes long-term goals for protection and use of the California desert.

The CDCA Plan establishes four multiple use classes, multiple use class guidelines, and plan elements for specific resources or activities, such as motorized vehicle access, recreation, and vegetation. The Ocotillo Sol Project site is currently classified as Multiple Use Class L (Limited Use). Approximately 4 million acres of public lands are classified as Class L. These lands are managed to protect sensitive, natural, scenic, ecological, and cultural resource values. They provide for generally lower-intensity, carefully controlled multiple uses that do not significantly diminish resource values (BLM 1999).

The CDCA Plan also includes ACEC designations to protect sensitive cultural and natural resources. The project site is located within the Yuha Basin ACEC, which was designated to protect cultural and natural resources within the area. Since 1980, the CDCA Plan has been amended periodically to reflect changing conditions, including the acquisition of new knowledge relating to natural resources and updates of management strategies. BLM authorization of a ROW grant for the Ocotillo Sol Project would require a resource management plan amendment to the CDCA Plan in accordance with BLM planning regulations, Part 43, CFR, Subpart 1610.3-2. The Yuha Basin ACEC Management Plan allows for the "traversing of the ACEC by proposed transmission lines and associated facilities if environmental analysis demonstrates that it is environmentally sound to do so." The Ocotillo Sol Project would, if approved, be consistent with the management plan for the Yuha Basin ACEC and the values for which it was designated.

The CDCA Plan was amended in 2004, for the adoption of the *Flat-tailed Horned Lizard Rangewide Management Strategy, 2003 Revision, An Arizona-California Conservation Strategy*. The purpose of this strategy is to provide a framework for conserving sufficient habitat to

maintain four viable populations of the flat-tailed horned lizard throughout the species' range. Planning actions and prescriptions that guide the management of lands within the designated management areas are designed primarily to reduce new surface disturbance and to promote reclamation of disturbed sites. The strategy provides standards for mitigation measures (Appendix 3 of the strategy) and a compensation formula (Appendix 4 of the strategy) to be incorporated into all authorized surface-disturbing projects where applicable. BLM authorization of a ROW grant for the Ocotillo Sol Project would require appropriate mitigation measures and habitat compensation to offset unavoidable residual effects of the project to achieve no net adverse impact on the species. BLM would coordinate with the Applicant to determine mitigation measures.

1.7.7.1 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 or transmission not identified in the Plan will be considered through the Plan Amendment process."

Because the Applicant's proposed facility is not currently identified within the CDCA Plan, an amendment to identify the proposed facility within the CDCA Plan is hereby proposed. As specified in the CDCA Plan Chapter 7, Plan Amendment Process, there are three categories of Plan Amendments as follows:

- 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 Applicant's proposed Ocotillo Sol Project would require a Category 3 amendment. The section below (Statement of Plan Amendment) summarizes the procedures necessary to evaluate the proposed Plan Amendment, as well as the procedures required to perform the environmental review of the ROW application.

1.7.7.2 STATEMENT OF PLAN AMENDMENT

The Implementation section of the Energy Production and Utility Corridors Element of the CDCA Plan 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 Plan and would read, "Permission granted to construct solar energy facility (proposed Ocotillo Sol Project)."

1.7.7.2.1 Plan Amendment Process

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

- Determine if the request has been properly submitted and if any law or regulation prohibits granting the requested amendment.
- Determine if alternative locations within the CDCA Plan are available which would meet the Applicant's needs without requiring a change in the Plan's classification, or an amendment to any Plan element.
- Determine the environmental effects of granting and/or implementing the Applicant's request.
- Consider the economic and social impacts of granting and/or implementing the Applicant's request.
- 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.
- 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.

1.7.7.2.2 Decision Criteria for Evaluation of 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:

- The proposed plan amendment is in accordance with applicable laws and regulations; and
- 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.

1.7.7.2.3 Decision Criteria for Evaluation of Application

In addition to defining the required analyses and Decision Criteria for Plan Amendments, the CDCA Plan Energy Production and Utility Corridors Element (Energy Element) provides additional guidance for the location of energy facilities and utility corridors. The Energy Element identifies nine decision criteria to be evaluated when considering locating a new energy facility within the CDCA Plan area. These criteria are as follows:

- Minimize the number of separate ROWs by using existing ROWs as a basis for planning corridors.
- Encourage joint use of corridors for transmission lines, canals, pipelines, and cables.
- Provide alternative corridors to be considered during the processing of applications.
- Avoid sensitive resources wherever possible.
- Conform to local plans whenever possible.
- Consider wilderness values and be consistent with final wilderness recommendations.

- Complete the delivery system network.
- Consider ongoing projects for which decisions have been made.
- Consider corridor networks that take into account power needs and alternative fuel resources.

These criteria were considered by BLM when establishing the range of alternatives and when determining whether to proceed with preparation of the EIS. These criteria were also used by the Applicant when establishing the 115-acre project site within the 350-acre survey area. Where relevant (e.g., to avoid sensitive resources, consider wilderness [visual] values), these criteria are discussed in the EIS.

1.7.8 FLAT-TAILED HORNED LIZARD MANAGEMENT AREA

The *Flat-tailed Horned Lizard Rangewide Management Strategy, 2003 Revision, An Arizona-California Conservation Strategy* encourages surface-disturbing projects to be located outside of Management Areas whenever possible. It does not preclude such projects from being located in a Management Area, however. If a project must be located within a Management Area, effort should be made to locate the project in a previously disturbed area or in an area where habitat quality is poor and construction should be timed to minimize mortality. New ROWs may be permitted along the boundaries of Management Areas, but only if impacts can be mitigated to avoid long-term effects on flat-tailed horned lizards in the Management Area. For ROWs within the boundaries of Management Area, mitigation would need to be incorporated. Additionally, the cumulative disturbance area per Management Area from all projects may not exceed 1 percent. To discourage development in the Management Areas the mitigation ratio can be as high as 6:1. The Ocotillo Sol Project would be located within the Yuha Desert Management Area of this Strategy, and would be subject to these disturbance limits and mitigation requirements.

1.8 OTHER APPLICABLE PLANS AND PROGRAMS

This section summarizes some of the other major plans, policies, programs, and laws that apply to the BLM's proposed action. Resource-specific plans (e.g., specific to natural or cultural resources) are discussed in their respective sections in Chapter 3.

1.8.1 STATE OF CALIFORNIA RENEWABLES PORTFOLIO STANDARD PROGRAM

California's Renewables Portfolio Standard (RPS) requires each of the state's investor-owned utilities to supply 20 percent of its total electricity through renewable energy generation by the year 2010, as set forth in Senate Bill (SB) 1078 (establishing the California RPS Program) and SB 107 (accelerating the 20 percent requirement to the year 2010). Additionally, SB X1 2, signed into law on April 12, 2011, set an RPS mandate of 33 percent by 2020. The approval of the Ocotillo Sol Project would contribute to the state RPS goals.

1.8.2 STATE IMPLEMENTATION PLAN FOR PARTICULATE MATTER LESS THAN 10 MICRONS IN DIAMETER

Imperial County is currently federally designated as a "serious" non-attainment area for Particulate Matter Less Than 10 Microns in Diameter (PM_{10}) NAAQS, which requires that the Imperial County Air Pollution Control District (ICAPCD) develop an implementation plan describing the mechanisms that will be used to bring particulate matter emission levels back into attainment as expeditiously as practicable. ICAPCD adopted the *Final Imperial County 2009 PM_{10} State Implementation Plan* in August 2009. The 2009 State Implementation Plan (SIP) for PM_{10} meets the elements required under the Clean Air Act, as amended, for areas classified as "serious" non-attainment of the NAAQS. The elements of the plan are as follows:

- Air quality data analysis for the years 2006 through 2008 including exceptional events
- An updated emissions inventory
- A determination of significant sources of PM_{10} and classification of these sources
- Best available control strategies along with an impact analysis

Although the 2009 SIP has not been approved by the EPA, BLM will adhere to it in the expectation that it will be approved. As noted above, the Applicant's proposed Ocotillo Sol Project would need to conform to the SIP pursuant to general conformity requirements of the Clean Air Act.

1.8.3 IMPERIAL COUNTY GENERAL PLAN (1993)

The full extent of the lands requested for ROW authorization lies within the planning area for the Imperial County General Plan. The Imperial County General Plan Update aims to create a comprehensive guide for development within Imperial County and to provide mechanisms to achieve desired community goals and objectives through a coordinated implementation program. The objectives of the Imperial County General Plan include the following:

- To more effectively and comprehensively plan for the long-term physical development of Imperial County
- To maintain agricultural production as a major economic activity
- To provide short-term and long-term employment opportunities in Imperial County
- To generate tax revenue and foster economic growth
- To provide adequate housing, public services, and public safety for increasing numbers of people residing in Imperial County
- To preserve the unique visual and recreational amenities available in Imperial County
- To protect Imperial County's biological and cultural resources

Although the Ocotillo Sol Project would be located entirely on federal lands and not subject to the Imperial County General Plan, it would be consistent with this plan.

CHAPTER 2.0
DESCRIPTION OF ALTERNATIVES

This chapter of the Draft EIS describes the following five alternatives: 1) No Action/No CDCA Plan Amendment; 2) Applicant's proposed Ocotillo Sol Project and associated CDCA Plan Amendment; 3) Reduced Construction Footprint Alternative and associated CDCA Plan Amendment; 4) No Project but CDCA Plan amendment to identify the area as suitable for solar development; and 5) No Project but CDCA Plan amendment to identify the area as unsuitable for solar development. This chapter also discusses the alternatives development process more generally and additional alternatives considered but eliminated from detailed analysis.

This document provides information to the authorized officer to make the following decisions:

- Should the BLM deny the proposed ROW, grant the ROW, or grant the ROW with modifications?
- If the BLM grants the ROW, what terms, conditions, and stipulations are determined to be in the public interest, and what modifications to the proposed use are appropriate?
- If the BLM does not grant the ROW, should the CDCA Plan be amended to identify the project site as suitable or unsuitable for solar energy development?

The Applicant provided technical information about the proposed Ocotillo Sol Project reflected in this chapter. All numbers referring to land disturbance, equipment, schedule, mileage, and workforce are based on the most up-to-date engineering available from the Applicant and generally represent conservative estimates for purposes of analyzing impacts. The numbers may change based on final engineering and permit requirements for particular project components. The Applicant's information was provided in the Draft POD submitted to the BLM in December 2010, with updates and additional details provided directly by the Applicant.

2.1 OVERVIEW OF ALTERNATIVES DEVELOPMENT

The Applicant's interests and objectives, including any constraints or flexibility with respect to their proposal, help to inform the BLM's decision and cannot be ignored in the NEPA process (BLM IM 2011-059). Therefore, the BLM will consider the Applicant's action as proposed. In developing the proposed Ocotillo Sol Project, the Applicant, in consultation with the BLM, used the following siting criteria to evaluate potential project sites:

- A contiguous site, with flat topography (grade of less than 3 percent) large enough for siting a 20 MW solar PV facility with minimal land disturbance

- Proximity (within 1.5 miles) to the Imperial Valley Substation (based on the project's connection to a 12.47-kV site within the Imperial Valley Substation that limits the feasible length of an interconnection)
- Avoidance or mitigation for disturbance of areas that are largely pristine and biologically sensitive
- Avoidance of high-quality habitat for federally listed species
- Avoidance of known cultural or historic sites and recreational resource areas
- Proximity to transmission facilities with sufficient capacity for the proposed Ocotillo Sol Project output and suitable locations for interconnection
- Proximity to highway and road access
- Availability of contiguous land for sale or lease at a feasible cost

These criteria led the Applicant to further evaluate seven private parcels and one additional BLM-administered parcel. These alternative sites and the reasons for their dismissal from detailed analysis under NEPA are discussed below in Section 2.3. As part of the alternatives development process, the Applicant conducted preliminary biological, cultural, hydrological, and geological reviews to evaluate site conditions within a larger (350-acre) area surrounding the proposed Ocotillo Sol Project site. Based on these reviews, portions of the initial proposed 350-acre Ocotillo Sol Project application area (referred to as the original study area, spring survey area, and area of potential effect in Chapter 3) were determined to be unsuitable for development and were eliminated from further consideration.

Additional factors considered by the Applicant included engineering constraints, such as those for existing easements, grading, hydrological, electrical, and security; construction constraints, such as those for safety, cost, and constructability; and interconnection constraints. These considerations led to the development of alternative site configurations to avoid or minimize impacts to sensitive environmental resources, such as biological, cultural, and visual resources, to the extent possible. Specific consideration was given to avoiding designated flat-tailed horned lizard habitat found to be occupied during surveys, sensitive plant species, occupied burrowing owl foraging or sheltering areas, a potential riparian alluvial wash habitat and buffer area, and cultural resources. When determining the optimum configuration for the proposed Ocotillo Sol Project, BLM also considered stakeholder comments made during scoping.

In addition to considering the Applicant's proposed Ocotillo Sol Project, alternatives considered in the EIS are based on issues identified by the BLM, comments received during the public scoping process, and the Applicant's process for evaluating and selecting potential project locations. The BLM is required to "study, develop, and describe appropriate alternatives to recommended course of action in any proposal that involves unresolved conflicts concerning alternative uses of available resources" (42 USC § 4332). In determining the alternatives to be considered, the emphasis is on what is reasonable: "Reasonable alternatives include those that are practical or feasible from the technical and economic standpoint and using common sense, rather than simply desirable from the standpoint of applicant" (46 *Federal Register* 18026). Alternatives must also meet the purpose and need to be considered reasonable.

Alternatives considered by the BLM, along with those suggested by the public during the scoping process, were evaluated using the following criteria:

- Does the alternative fulfill the purposes, needs, and objectives identified in Chapter 1 for both the BLM and the Applicant?
- Does the alternative minimize effects on human and environmental resources and therefore resolve identified resource conflicts?
- Is the alternative technically and economically feasible to construct, operate, maintain, and decommission?

Alternatives that met all the criteria above were analyzed and are presented in detail in Section 2.2 below. Section 2.2 also analyzes the No Action alternatives, as required by CEQ regulations. Although these alternatives do not meet the BLM's purpose and need, they provide a useful baseline for comparison of environment effects and demonstrate the consequences of not meeting the purpose and need.

Various renewable and nonrenewable generation technologies and alternative locations were considered but eliminated from detailed analysis under NEPA. These alternatives are described in Section 2.3, along with the reasons for elimination.

2.2 ALTERNATIVES CONSIDERED AND CARRIED FORWARD FOR DETAILED ANALYSIS

This section describes the alternatives carried forward for detail analysis, consisting of the no action alternative, the Applicant's proposed project, a reduced construction footprint alternative, and two no project alternatives. Features common to the two action alternatives (e.g., project components and construction methods) are detailed in Section 2.2.2. Project features and construction methods listed in this section will serve as the basis of the impacts analysis in Chapter 4.

2.2.1 ALTERNATIVE 1: NO ACTION / NO CDCA PLAN AMENDMENT

Under NEPA, the No Action Alternative (Alternative 1) serves as a benchmark of existing conditions (as described in Chapter 3) by which the public and decision makers can compare the environmental effects of the Applicant's proposed project and the alternatives. Under the No Action Alternative, the Ocotillo Sol Project would not be approved (all components of the project would be denied), no ROW grant would be issued, and no CDCA Plan Amendment would be approved.

If this No Action Alternative (Alternative 1) were selected, the construction, operation, maintenance, and decommission of the Ocotillo Sol Project would not occur, and there would be no CDCA Plan Amendment regarding the suitability of the site for solar development. This No Action Alternative does not preclude future solar development in the Ocotillo Sol Project area, subject to compliance with the applicable statutory and regulatory requirements at the time such a project were proposed.

2.2.2 ALTERNATIVE 2: APPLICANT'S PROPOSED PROJECT

Under Alternative 2, the Applicant's proposed project, the Applicant would construct, operate, maintain, and decommission a 100-acre, up to 20 MW, solar PV generation facility on BLM-managed lands pursuant to a ROW authorization (see Figure 1-1 in Appendix A). In addition, this alternative includes a 15-acre temporary ROW for use as a laydown area during construction of the solar facility. This alternative would also include a 12.47 kV, 2,000-foot underground generation tie line from the generation facility to the adjacent Imperial Valley Substation. It would also include interconnection facilities within the Imperial Valley Substation consisting of breakers, switches, racking systems, and cabling. The Applicant would develop, execute, own, and operate the Ocotillo Sol Project. The Applicant has requested a 30-year ROW[1], with renewal terms, for the 100 acres that would encompass the solar PV facility. The term of the temporary ROW for the 15-acre laydown area would be long enough to cover the construction period for the project and the time required to reclaim the laydown area.

2.2.2.1 CDCA PLAN AMENDMENT

Under Alternative 2, BLM would amend the CDCA Plan to identify all 115 acres as suitable for solar energy development and allow solar development on this land. A Plan Amendment would not be required for the proposed generation tie line and interconnection facilities as they lie fully within a previously designated corridor (Utility Corridor N) for such facilities within the existing CDCA Plan.

2.2.2.2 PROJECT COMPONENTS

Under Alternative 2, the Ocotillo Sol Project components, including the temporary 15-acre construction laydown area, would be on BLM-administered lands subject to a ROW grant.

Within the proposed ROW, the solar field, operations and maintenance building, laydown area, and the switchyard would occupy the majority of the site. About 75 percent (86 acres) of the 115-acre ROW would be used for the solar panels. The remaining acreage would be used for internal access roads, power lines, switchgear, a step-up transformer, an operations and maintenance building (together approximately 14 acres), and the temporary laydown area (15 acres).

The Ocotillo Sol Project would be a solar PV facility generating approximately 15 to 20 MW[2] of renewable energy from sunlight. The project components would include the PV modules and mounting structures, a maintenance building, an associated parking area, access roads, internal roads, perimeter fencing, inverters, transformers, and the combining switchgear. An

[1] The 30-year ROW term covers 25 years of commercial operation and 5 years for facility decommissioning and site remediation. If the facilities are determined by the Applicant to have considerable life remaining, the Applicant could seek renewal of the ROW after the 25-year period.

[2] Unless specified differently, all capacity values are stated in MW alternating current.

underground 12.47 kV interconnection line would lie in an approximately 2,000-foot trench. This trench would run from the combining switchgear located in the northern Ocotillo Sol Project area boundary to a 12.47 kV bus and circuit breaker that would be installed in the Imperial Valley Substation. All interconnection equipment and construction activities would be within the boundary of the Imperial Valley Substation. No transmission system upgrades or modifications outside the Imperial Valley Substation would be required. The 15-acre construction laydown area would be restored upon completion of project construction and relinquished to the BLM, once BLM agrees that the initial site restoration has been completed to agreed-upon conditions. Restoration, including weed management, would continue until the final restoration condition is acceptable to the BLM. The Applicant has prepared a draft Decommissioning and Restoration Plan to address temporary and long-term restoration efforts to return the site to as near as pre-construction state as possible (Appendix B).

2.2.2.2.1 Solar PV Facility

The solar PV facility would produce electrical energy in the form of direct current (DC). The facility would convert the DC energy into a useable alternating current (AC) and place the power on the transmission grid. Power would also be used for the Imperial Valley Substation. PV modules, mounted on racks, would generate electrical energy by converting sunlight (photo) directly into electricity (voltaic). Figures 2-1 and 2-2 provide example PV modules that could be used for the Ocotillo Sol Project.

Figure 2-1. Example PV Module

Figure 2-2. Example PV Module and Rack System

The Ocotillo Sol Project would use conventional crystalline (silicon) or thin-film PV module technology. The means of energy production, disturbed acreage, equipment configuration, construction activities, and the operation and maintenance requirements are very similar for these two PV module technologies. Module efficiency is the major difference between the two. Under the crystalline PV technology option, the Ocotillo Sol Project would generate approximately 20 MW of energy. Under the thin-film PV technology option, the Ocotillo Sol Project would generate approximately 15 MW of energy.

The modules would be placed in a series called a module string, consisting of 8 to 33 modules. The number of modules in a string would depend on the PV module technology and the operating voltage of the system. The module strings would be wired and routed underground to a collection point and combiner box. The combiner box would collect the DC circuits from multiple module strings and combine them into one circuit for routing to the inverter.

The modules would be physically laid out in rows and mounted on the racking systems. If mounted for fixed tilt, these PV modules (arrays) would be 3 to 5 feet above the ground at the highest point. These rows of rack-mounted PV modules would be oriented upward toward the sun in a south or southwest orientation to maximize energy production. If mounted for single axis tracking, the PV arrays would be 6 to 8 feet above the ground at the highest point. These PV arrays would be oriented upward toward the sun in a north–south orientation designed to follow the sun throughout the day. Rows of arrays would be spaced to avoid shading each other as well as to provide maintenance access.

The DC power generated by the rows of PV arrays would be wired to collection boxes and then to DC fuse boxes and inverters. Inverters would convert the DC energy generated by the PV arrays to useable AC power at a low voltage (300 to 400 volts). AC output would be required to deliver power to the transmission grid and to provide power to the Imperial Valley Substation.

The low-voltage AC output from the inverters would be stepped up to the required 12.47 kV by transformers located next to the inverters. This 12.47 kV output from the transformers would be collected and sent to the substation interconnection point through a combining switchgear. The output of the combining switchgear would continue on to the Imperial Valley Substation.

The preliminary site layout for the solar facility includes 1 MW blocks to match typical inverter sizing available on the market today, as shown in Figure 2-3 (see Appendix A). The site layout shown in Figure 2-3 (see Appendix A) contains 20 1 MW blocks. As described above, the current generated by module strings in each 1 MW block would be collected in several combiner boxes throughout the project site and would then be routed to the DC fuse box, inverters, and transformers. The inverters and transformers would be sized to handle 1 MW of capacity. Typical arrays would measure approximately 40 inches by 60 inches. The project would need about 64,000 to 200,000 arrays, depending on the PV technology selected. The project would need about 20 to 80 inverters depending on current technology type used, and would also use about 20 small transformers. Figure 2-3 (see Appendix A) also indicates the Applicant's proposed route for the interconnection between the Ocotillo Sol Project and the existing Imperial Valley Substation.

2.2.2.2.2 Access Roads, Internal Roads, and Parking

An existing access road for the Imperial Valley Substation within an existing BLM ROW provides access to the Ocotillo Sol Project site (see Figure 1-1 in Appendix A). New, minor access roads would be constructed between the module rows within the Ocotillo Sol Project area fence line. Existing access roads would be used where possible. A gravel parking area would provide parking for up to 15 vehicles and would be located adjacent to the maintenance building.

The majority of the construction workforce would access the site each day from Highway 98, also called the Yuha Cutoff, from the east. Equipment such as grading equipment, water trucks, and common carrier trucks would use this access route.

2.2.2.2.3 Electric Transmission and Interconnect

The Ocotillo Sol Project's transmission line would interconnect to the Imperial Valley Substation at 12.47 kV. The interconnection facilities would consist of the following existing equipment within the Imperial Valley Substation: three 12.47 kV breakers, six 12.47 kV disconnects, a 12.47 kV switch rack, 2,000 feet of underground 12.47 kV cable, associated protection relaying, and a fiber communication cable buried in the 12.47 kV cable trench. No new transmission facilities or transmission upgrades would be necessary for the Ocotillo Sol Project.

The Imperial Valley Substation is an existing major substation that serves San Diego Gas & Electric Company, the Imperial Irrigation District, and merchant generators, and provides an intertie to Comisión Federal de Electricidad in México. The Applicant (the interconnecting utility) and California Independent System Operator (CAISO, the grid operator) would be responsible for ensuring grid reliability. These two entities determine the transmission system impacts of the Ocotillo Sol Project and any measures needed to ensure system conformance with utility reliability criteria. All interconnect design and details would follow the Applicant's and CAISO standards and regulations. No new additions to the existing electrical grid would be necessary for the Ocotillo Sol Project.

2.2.2.2.4 Operation and Maintenance Building

A maintenance building would be constructed on the north end of the Ocotillo Sol Project area adjacent to the existing access road. The building would have a gravel parking area and would house maintenance equipment, spare parts, and the electronic plant monitoring system. This pre-engineered, metal building would be approximately 60 feet by 30 feet, and would not exceed 25 feet in height. This maintenance building would house electronics to monitor the energy generated at the site. It would also store materials required to maintain the solar PV facility. Limited quantities of hazardous materials, such as petroleum products, gasoline, diesel fuel, lubricants, hydraulic fluid, and transmission fluid would be stored and used on-site for operation and maintenance. All hazardous materials would be required to be stored and managed per the requirements of the local Certified Unified Program Agencies. Access roads within the project site boundary would allow equipment and maintenance access around the project site and within the individual solar module blocks. Security system components may be installed inside the building and around the area as deemed necessary.

2.2.2.2.5 Site Communication

A fiber communication cable would be buried in the 12.47 kV cable trench and used for site communication. Site communication would be conducted via remote access.

2.2.2.2.6 Site Security and Fencing

The perimeter of the proposed Ocotillo Sol Project area would be secured with chain link fencing, which would consist of 8 foot tall fencing and one-foot barbed wire or razor wire on top. This type of fencing would be consistent with security requirements for similar Applicant facilities, such as the adjacent Imperial Valley Substation. Fencing design would minimize potential impacts to wildlife. A 2-inch bottom gap on the fencing would allow small wildlife (e.g., lizards) movement through the area and minimize the potential of trapping wildlife within the fenced enclosure or beneath the fence.

During operations, the solar field enclosure would be equipped with a security system, including cameras, to monitor the facility. The Ocotillo Sol Project would have no full-time staff and staff would be on-site only to perform maintenance activities. Day-to-day monitoring of electrical output at the site would be done remotely via the Internet by the Applicant. Only authorized personnel would be allowed to enter the facility. The Applicant will comply with all applicable Imperial County building safety requirements, including those for fire safety.

The Applicant would also provide access to the secured area to the U.S. Border Patrol, allowing them to perform their duties.

2.2.2.2.7 Erosion Control and Stormwater Drainage

The Ocotillo Sol Project's design would include erosion control and stormwater drainage with the following objectives:

- Protection of the facilities from erosion and stormwater damage
- Minimization of off-site downstream effects of erosion and stormwater flow
- Minimization of impacts that would reduce the ability to rehabilitate the land following the end of the Ocotillo Sol Project lease

- Continuation of existing sheet flow drainage patterns

The Applicant's proposed Ocotillo Sol Project site was selected to minimize grading and to allow site hydrology to remain in a quasi-natural state. Minimal release of water and sediment outside the project boundary would be in equilibrium with water and sediment entering the project boundary. Any topsoil removed from the laydown area would be stored in windrows and replaced during post-construction restoration.

Site grading would match existing slopes and grades, minimize disturbance, and preserve existing drainage patterns. Soil would not be imported to or exported from the site. All electrical equipment and foundations would be elevated above the 100-year flow depth. Gravel would be placed on all site roadways to permit travel during storm events.

The Ocotillo Sol Project would comply with all water quality standards or waste discharge requirements. Discharge would be limited to stormwater runoff occurring during construction and operation, which would conform to California's National Pollutant Discharge Elimination System (NPDES) Construction Permit, and the Applicant's standard operating procedures and protocols. Construction associated with the project would require grading of one or more acres of land and require preparation of a Storm Water Pollution Prevention Plan (SWPPP), which would be implemented during construction activities in compliance with the NPDES Construction Permit requirements. The SWPPP would identify project-specific construction Best Management Practices (BMPs) from the Applicant's Water Quality Construction BMP Manual (Sempra Energy Utilities 2002) as well as the Renewable Energy Action Team BMPs and Guidance Manual (2010), augmented as necessary according to standards set by the BLM authorized officer. These BMPs would minimize potential impacts to water quality during construction activities. The SWPPP would also include vehicle and equipment fueling, and spill control BMPs for the on-site refueling component of the Ocotillo Sol Project (Renewable Energy Action Team 2010; Sempra Energy Utilities 2002). As noted above, limited quantities of hazardous materials would be stored and used on-site for operation and maintenance. All hazardous materials are required to be stored and managed per the requirements of the local Certified Unified Program Agencies.

In addition, the Applicant would provide monitoring of the water quality BMPs. Monitoring would be conducted according to guidance provided in the Renewable Energy Action Team BMPs and Guidance Manual (2010). Applicant project monitors would provide oversight to crews who implement the BMPs and conduct routine inspections of disturbed areas to ensure that the BMPs remain effective. Monitors would be Qualified SWPPP Practitioners or Qualified SWPPP Practitioner supervised inspectors. Qualifications for these monitors will be outlined in the Ocotillo Sol Project Construction General Permit from the State Water Resources Control Board. To ensure compliance with SWPPP requirements and the State's General Construction Storm Water Permit, monitors would provide training to construction workers, document inspections, and maintenance of the project's SWPPP.

2.2.2.2.8 Vegetation Treatment and Weed Management

The Ocotillo Sol Project area would be located in sparse Sonoran creosote bush scrub habitat. Native shrub cover on-site is approximately 10 percent and the average shrub height is 45 centimeters (1.5 feet; Appendix C).

Initial construction activities would include complete vegetation grubbing of the area after site boundary land survey staking and prior to full site land survey. Grubbing would incorporate the clearing of vegetation, use of herbicides, and a water truck for fugitive dust control. Herbicides may be applied during construction as specified in the approved Ocotillo Sol Project Weed Management Plan (Appendix D).

Vegetation treatment and weed management would be ongoing throughout the life of the project. The site would be maintained free of vegetation with BLM-approved herbicides. The Ocotillo Sol Weed Management Plan, developed in consultation with the BLM, would outline the vegetation treatment and weed management program for the site (see Appendix D).

2.2.2.2.9 Fire Protection

Although the Ocotillo Sol Project would be unmanned during operation, the Applicant would incorporate a fire detection system into the maintenance building as part of the Fire Protection Plan. To minimize fuels and ignition potential in the Ocotillo Sol Project area, the site would be cleared of vegetation and maintained as a vegetation free environment. The fire protection system would consist of personal fire extinguishers throughout the site.

The existing Imperial Valley Substation adjacent to the Ocotillo Sol Project area has a water tank, which the Ocotillo Sol Project would be able to use in the event of fire. The water tank in the Imperial Valley Substation is 22 feet in diameter and 30 feet high, with an approximate 45,000-gallon capacity. It is located approximately 400 feet north of the Imperial Valley Substation access road near the main gate. The water connection is on the east side of the tank.

2.2.2.2.10 Hazardous Materials and Waste

Construction, operation, and maintenance activities would comply with applicable federal, state, and local regulations regarding the use of hazardous substances. Imperial County Public Health, Environmental Health and Consumer Protection Services, provides health and safety expertise in the containment and cleanup of accidental spills. The California Department of Toxic Substances Control is the appointed Certified Unified Program Agency in Imperial County and manages the regulation and permitting of businesses that handle hazardous materials and/or waste.

Construction, operation, and maintenance activities would involve hazardous chemicals such as petroleum products, gasoline, diesel fuel, lubricants, hydraulic fluid, and transmission fluid. These products would be used to fuel and lubricate vehicles and equipment, but would be contained within fuel trucks or in approved containers. When not in use, such materials would be periodically transported, stored properly off-site, and legally disposed of to prevent contamination and accidents. These materials would not be drained onto the ground, or into streams or drainage areas.

All trash would be totally enclosed. All construction, operation, and maintenance waste, including trash and litter, other solid waste, and other potentially hazardous materials, would be removed and transported to the nearest Type I or II landfill or to a nearby transfer station authorized to accept such materials. The only landfill of these types in Imperial County is Safety-Kleen (Laidlaw; Type I facility) located in Westmorland. No Type II facilities are present in Imperial County (California Environmental Protection Agency 2012). During

construction, trash and other materials for disposal would be removed on a routine basis. Operations and maintenance activities are expected to produce only small quantities of trash and other materials for disposal; removal would be on an as-needed basis.

If spills occur, the Applicant would implement standard spill cleanup procedures, including recycling and disposal at an approved facility. Oil spills would be reported to the California Department of Fish and Game, Office of Spill Prevention and Response, at (800) 852-7550.

To avoid inadvertent release of materials and ensure proper response actions, the Applicant and its contractors would implement the Applicant's standard operational procedures and protocols, including BMPs, to reduce potential impacts relative to hazardous material transport, use, storage, or disposal. Accidental leakage of fuel or lubricants from construction, operation, and maintenance equipment would be remediated in accordance with the environmental controls plan for the site. Maintenance activities such as painting, module cleaning, and equipment lubrication would be conducted in accordance with approved practices for minimizing environmental contamination. Any electrical equipment containing oil or liquids determined to be a contamination hazard would be mounted on sump foundations designed to contain any leakage that may occur. The containment system would conform to the National Fire Protection Association, state of California, and Imperial County fire protection codes and regulations. Other mitigation measures would be developed where necessary to minimize potential environmental impacts.

A thin-film PV module technology that may be used for the Ocotillo Sol Project contains cadmium telluride (CdTe). Human exposure of CdTe would only occur if the module, which is sealed in glass, generated flake or dust particles. The potential for CdTe release could only occur if severe pitting of the panel surface occurred. If thin film technology is used, routine monitoring and inspection activities by the Applicant would occur to identify any potentially damaged panels. If a damaged panel is discovered, the panel would be replaced prior to any degeneration that may result in the release of CdTe. The Applicant is only considering CdTe thin film technology as an option to crystalline silicon. The requisite Title V compliance during commercial operation and decommissioning plan after commercial operation should eliminate the need for further risk assessment.

Dust particles would not be generated unless the modules disintegrated during final disposal or vaporized in a fire. Final disposal of modules would occur off-site and would be covered under the decommissioning plan. The Applicant would also prepare a fire safety plan to address potential exposure to hazardous materials.

The Applicant would use contractors and workers who are skilled in the installation of the solar modules, further reducing the likelihood of modules being disintegrated or vaporized in a fire. In addition, contractors must operate in strict compliance with California Occupational Safety and Health Administration requirements and the hazardous materials release response plan to be produced in connection with the Applicant's proposed Ocotillo Sol Project. Accordingly, any potential impact from the accidental exposure of CdTe, should such modules be used at the site, would be minimal.

2.2.2.2.11 Dust Control

Dust control measures, as detailed in the Water Quality Construction BMP Manual (Sempra Energy Utilities 2002) and Renewable Energy Action Team BMPs and Guidance Manual (2010), would be implemented to help reduce potential air quality concerns associated with the construction and operational phases of the Ocotillo Sol Project.

The Applicant would accomplish construction dust control of the Ocotillo Sol Project area, the construction laydown areas, and the access road during construction by using water applied by trucks or other palliative means deemed acceptable by BLM. Wind erosion control techniques (such as windbreaks, water, chemical dust suppressants, and/or vegetation) would be used where soils are disturbed (Renewable Energy Action Team 2010).

2.2.2.3 CONSTRUCTION

The Ocotillo Sol Project construction would move continuously across the project area. PV module mounting and electrical system installation would follow as the racking systems are erected. Construction would continue through completion to commissioning, without phasing of the Ocotillo Sol Project.

The Ocotillo Sol Project area would encompass 100 acres for the solar arrays, associated equipment, and internal access roads. Ocotillo Sol Project site construction would include the following major activities:

- Preparation of site, including grubbing of site vegetation
- Installation of minor site access roads, including within the temporary laydown area
- Installation of perimeter fencing
- Installation of module rack support posts
- Installation of module racking systems on the support posts
- Attachment of the PV modules to the racking systems
- Wiring and cabling aboveground (from modules to underground wiring system)
- Wiring and cabling underground (from panel rows to inverters)
- Construction of the inverters and transformer stations
- Construction of the maintenance building
- Installation of the combining switchgear
- Construction of the interconnection facilities
- Commissioning and testing of the facility

The Applicant selected the Ocotillo Sol Project area location to minimize the grading requirements and to allow the site hydrology to remain in a quasi-natural state. Cut and fill activities would occur in the areas of access road construction, trenching for underground cables, and foundation preparation. On-site storage of soil materials would be minimal and of short duration. Cut and fill quantities would be balanced to ensure no net import or export of materials to the site. No soil would be removed from or brought onto the project site. The construction laydown area and the site access roads would be compacted and covered with gravel to minimize

settlement and dust during construction. The general slope across the site would remain unchanged. BMPs would include periodic filling of rills from adjacent on-site deposited materials. Filled material would be compacted to a condition similar to its off-site condition.

Construction workflow would proceed as follows:

- Hold on-site pre-construction meetings that include safety and environmental training for pertinent project staff, all construction personnel, and environmental monitors. Safety and environmental training for new personnel as well as refresher trainings would be part of pre-construction meetings.
- Survey and mark the site for construction.
- Install temporary construction fencing at the direction of biological and cultural monitors to keep construction crews out of sensitive environmental or cultural areas.
- Install stormflow BMPs (e.g., silt fences) as needed.
- Grade and compact site laydown, construction parking, construction office area, and permanent and construction site (temporary) access roads with heavy earthmoving equipment.
- Drive steel posts into the ground to support the PV racking system. Posts will be capped to decrease the likelihood that birds or bats become trapped. Posts for racking are anticipated to be 5 to 8 feet deep. Actual depth would be determined upon completion of geotechnical studies.
- Erect PV racking system and place per manufacturer recommendations and engineering documents.
- Begin trenching for the underground collection system.
- Form and pour foundations.
- Set inverters and transformers.
- Pull cables through the conduit or tray system, wiring rows of PV modules to intermediate collection points with termination in combiner boxes.
- Connect cables from the combiner boxes to DC fuse boxes and inverters.
- Connect cables or bus ducts to the AC side of the inverters to low side of the step-up transformers.
- Route the 12.47 kV system wiring from the step-up transformers to a combining switchgear. The switchgear would combine all of the incoming circuits from the transformers into one circuit that would connect to the transmission system via an underground interconnection line brought to the fence of the existing Imperial Valley Substation. The combining switchgear would also provide an on-site means of disconnect.
- Commission the 12.47 kV collector system loops on an ongoing basis as they are completed during the installation of the solar collection field. Inverters would be commissioned when interconnection is made and the 12.47 kV collection system is commissioned.
- Construct the generation tie-in line and interconnection facilities within the Imperial Valley Substation in parallel with construction of the generation facility.
- Commission and test the generation facility system.
- Begin commercial operation after all steps above have been completed.

Construction and commissioning activities would occur over 8 to 11 months. Construction would occur five days per week for eight hours a day. Construction days and times may vary due to weather (such as extreme heat, storms, and high winds), seasons in regards to wildlife and plant sensitivity or avoidance periods, and construction timelines. Vehicle use during construction would occur during daytime hours in compliance with Imperial County regulations. Routine operation and maintenance activities, with the exception of an emergency, are expected to occur during daytime hours.

All construction roadways would consist of construction road base, an aggregate of gravel and sandy gravel soils. Permanent roads and parking would consist of compacted gravel as required for maintenance and access throughout the life of the Ocotillo Sol Project, and would be maintained regularly for dust control. All other areas would remain with the natural soil as the final surface.

A local plant would provide concrete, which would be trucked in for the required foundations. Off-site, existing commercial operations in the Imperial County area would provide gravel or aggregate, which would be trucked to the Ocotillo Sol Project area. Approximately 3,400 cubic yards of aggregate would be required for construction of the Ocotillo Sol Project. Gravel would be used as needed for road maintenance during operation of the solar PV facility.

Water needs for construction activities would be limited. During construction, water would be used primarily for fugitive dust control and for foundation work. Water use would be approximately 150 acre-feet total during the 8- to 11-month construction period, with most water being used for dust control purposes. The amount of water required for foundation work and dust control on the access road would be minimal.

Construction water quality would need to be reasonably clear without oil, salt, acid, alkali, organic, and other injurious substances. Non-potable construction water shall conform to state and local regulations. Potable water would be allowed without testing.

Potable water would need to be trucked in to the site each day during the construction period for drinking water, hand washing, and other personal uses. Approximately 1,350 gallons per day (gal/day) would be needed for about 270 workers during the peak construction period. Approximately 4 gallons of drinking water per person per day (1,080 gal/day) would be needed during the construction period. Approximately 1 gallon per person per day (270 gal/day) of water for hand washing and other personal uses would be needed during the construction period. Potable water should be provided for personnel use only; non-potable water would be sufficient for washing construction equipment and dust control.

Possible water sources for construction include surface water trucked to the Ocotillo Sol Project area from the Imperial Irrigation District and from municipal water systems near the Ocotillo Sol Project.

2.2.2.3.1 Temporary Workspace, Yards, and Staging Areas

A 15-acre temporary construction workspace adjacent to the Ocotillo Sol Project area would house construction offices, parking for the construction workforce, and a temporary staging area for construction materials (Table 2-1; see also Figure 2-3 in Appendix A).

TABLE 2-1
ALTERNATIVE 2: CONSTRUCTION WORKSPACE ACREAGES

Construction Workspace Area	Acreage
Construction Workforce Parking	2
Construction Offices	1
Construction Vehicle Parking	1
Construction Laydown/Staging	11
Total	**15**

The temporary laydown area would be directly east of and adjacent to the existing access road with temporary construction power provided from the Imperial Valley Substation. The laydown area would be fenced and secured during the construction period. Fencing of the laydown area would consist of an 8-foot chain link fence around the perimeter. The fence may include a one-foot barbed wire or razor wire top. This fence is not anticipated to restrict the movement of wildlife. The temporary laydown area would be left in its native state to the fullest extent possible. The temporary construction workspace would only be graded and compacted with a gravel overlay to mitigate unsuitable conditions only as a last resort. Those portions of the temporary laydown area where perennial shrubby vegetation is present would be pruned by hand, mowed, chained, and/or mulched prior to the commencement of other construction activities.

Temporary restroom facilities would be provided during construction. Water would be trucked in from either Imperial Irrigation District or municipal sources. Waste would be trucked out by a waste contractor to a waste treatment facility. The temporary laydown area would be returned to its pre-construction condition upon commissioning of the Ocotillo Sol Project. Imported gravel would be removed for off-site disposal.

2.2.2.3.2 Schedule

The sequence of construction would be defined by the general contractor and based on BMPs. The schedule would generally follow the sequence of staking and flagging the perimeter of the Ocotillo Sol Project area, construction of internal access roads, site grading, installation of the grounded fence, installation of foundations, assembly and installation of all project facilities, cleanup, and site reclamation of the temporary work area. As noted above, construction and commissioning activities would occur over 8 to 11 months, five days per week for eight hours a day.

2.2.2.3.3 Workers, Vehicles, and Equipment Timeframes

Prior to mobilization for construction, a detailed construction plan would be developed to define the construction supervisory and technical field organizations and required staffing levels. On average, 80 to 120 construction and supervisory personnel would be on-site for the duration of construction, with up to 270 workers at peak construction. Some workers would be local, but it is expected that some would be migrating to the work site from outside of the area. Table 2-2 shows the number of personnel per month required for construction of the Ocotillo Sol Project.

TABLE 2-2
ALTERNATIVE 2: CONSTRUCTION LABOR FORCE BY MONTH

Month	Personnel
1	10
2	10
3	32
4	44
5	50
6	115
7	250
8	270
9	192
10	60
11	10

The construction workforce would consist of, but not be limited to, surveyors, inspectors, linemen, laborers, operators, supervisors, health and safety personnel, and environmental monitors.

Several types of vehicles, including personnel transport, water wagons, bulldozers, motor graders, paddle-wheel loaders, pan scrapers, backhoes, front-end loaders, dump trucks, trenchers, construction equipment, material delivery, and line trucks would be on-site at various stages during construction. Table 2-3 shows the amount of equipment required and the amount of time they would run for the duration of construction.

TABLE 2-3
ALTERNATIVE 2: CONSTRUCTION EQUIPMENT LIST AND HOURS OF USE

Equipment Type	Engine HP	Estimated Hours of Use
Grader	350	440
Scraper/Dozer	400	336
Front End Loader	350	168
Roller/Compactor	350	512
Dump Truck	350	160
Vibratory Post Driver	100	240
Backhoe/Trencher	350	232
Generator/Compressor	100	320
Forklift	100	1,384
Flat-bed Truck	200	552
Water Truck	350	1,760
Hand Held Vibrator	50	320
Crane/Lift	150	560
ATV	50	2,880
Concrete Truck	350	400
Crew Delivery Bus	250	540
Semi (equipment and supply delivery) Truck	350	1,260
Personal Car	150	380

ATV = all-terrain vehicle

2.2.2.4 OPERATIONS AND MAINTENANCE

Solar PV facilities generate electric energy whenever sunlight hits the PV modules. Energy generation from a solar PV facility occurs without on- or off-switching, requiring no direct intervention or control by on-site operations personnel.

Performance monitoring would evaluate system reliability, compare actual versus predicted generation values, identify malfunctioning equipment/systems, and provide operational indications that are outside expected ranges. Solar PV facilities are capable of providing performance monitoring from remote locations via electronic communications devices. The Applicant's personnel currently operate other electricity-generating facilities, and it is anticipated that these same personnel would monitor the Ocotillo Sol Project via remote communication systems, including cameras. If the site endures vandalism or is determined to be highly susceptible to vandalism, the Applicant may have the site guarded by security personnel. Remote sensing via security cameras would allow the Applicant to notify the appropriate emergency first responders in the case of trespass/vandalism that would not otherwise trigger attention due to a change in energy output.

Operation and maintenance needs for the PV facility would be determined through a combination of continuous performance monitoring and an Operation and Maintenance Plan. The Operations and Maintenance Plan, which would be completed approximately one to two months prior to commercial operation, would include equipment protection, equipment supplier recommendations, environmental compliance, safety, and industry best practices and procedures.

Scheduled maintenance activities would include electrical system maintenance, transformer/breaker maintenance, road maintenance, lubrication, system integrity checks, vegetation management, cleaning of module surfaces, and repair or replacement of defective components. Routine maintenance activities would occur. Routine maintenance is predicated based on the monitoring of energy production. When abnormalities or declining trends in energy output are detected, the appropriate maintenance activity would be initiated. The most common maintenance activities would be panel washing (once or twice per year) and scanning of wire connections. Operations and maintenance of the solar PV systems would include a combination of performance based monitoring, manufacturer recommendations and visual inspections. Annual maintenance would consist of a visual and infrared scanning of connections, and checking of inverter(s), including maintaining inverter filters. Systems would be monitored with alarms for operational issues. Predicted performance would be compared with actual performance to detect issues. If system performance drops notably below expectations, a check of output at key points would be undertaken to isolate and resolve the issue.

Weed management during the operations and maintenance period would be conducted as described above in Section 2.2.2.2.8—Vegetation Treatment and Weed Management. In the event of any ground-disturbing activities during operations and maintenance, dust control measures would be conducted as described above in Section 2.2.2.2.11—Dust Control.

During operation of the solar PV facility, the arrays would be periodically washed, likely once or twice per year, using approximately 1 acre-foot of water per wash. This assumption is based on the conditions and dust levels in the Imperial Valley. All panel washing maintenance activities

would occur during daytime hours and would be contracted. No evaporation ponds or other water holding facilities would be required. Potable water would be used for array washing, unless de-mineralized water could be obtained at a reasonable cost. As described above, potential water sources include Imperial Irrigation District and municipal sources. Array washing would occur when plant performance feedback indicates a drop in generation, thus warranting cleaning. A solar PV facility has no processed water discharge. Water from panel washing would not likely pond due to the low levels of water needed and likelihood of rapid infiltration and evaporation.

Table 2-4 below shows the anticipated equipment and estimated hours of use during operation and maintenance of the Ocotillo Sol Project.

TABLE 2-4
ALTERNATIVE 2: OPERATIONS AND MAINTENANCE EQUIPMENT LIST AND HOURS OF USE

Equipment Type	Engine HP	Estimated Hours of Use
Forklift	100	360
Flat-bed Truck	200	120
Water Truck	350	20
Crane/Lift	150	40
ATV	50	720
Semi (equipment and supply delivery) Truck	350	20
Personal Car	150	720

ATV = all-terrain vehicle

2.2.2.4.1 Unscheduled Maintenance

The Ocotillo Sol Project would not have an on-site workforce performing operation and maintenance activities on a continuous, shift-type basis. Security cameras would be installed to monitor the site. PV systems are capable of remote operation and maintenance monitoring. The Applicant or contract personnel would perform maintenance activities consistent with the Operations and Maintenance Plan or when the facility's communication devices provide operation and maintenance feedback.

2.2.2.4.2 Operations Workforce and Equipment

Routine maintenance activities would require two to three people onsite weekly. PV panel washing would require four to six people on-site one to two times per year.

Normal maintenance equipment would consist of trucks (primarily pickup or module trucks) or small, 4-wheeled carts pulling small trailers. Large equipment for maintenance would be used if large equipment or components require removal and replacement.

2.2.2.5 DECOMMISSIONING

The expected life of the project is 30 years. Once the site is retired from power generation service, the site would be reclaimed with all equipment, buildings, foundations, and driven piles being removed from the site. The site would be restored to pre-project conditions as much as feasible. To minimize erosion after decommissioning, the Applicant would document the

topographical and erosional condition of the site before and after decommissioning. The Applicant would develop and implement a post-project erosion control plan and inspect the site quarterly for five years following decommissioning to determine the status of erosion. The Applicant would submit an annual report to the BLM documenting the status, and the BLM would determine if corrective actions were necessary to reduce the amount of erosion taking place.

Consistent with BLM requirements, the Applicant would prepare a detailed decommissioning plan that includes specific decommissioning procedures that both protect public health and safety and is environmentally acceptable. The BLM would have to approve the decommissioning plan before permanent decommissioning. When the BLM begins to consider decommissioning, it would contact applicable agencies to determine whether additional consultation would be appropriate. Materials used on-site would be reused at other locations, sold as scrap, or recycled wherever possible.

A separate NEPA document would be completed to develop alternatives to consider and to analyze the potential effects of the alternatives for decommissioning and reclamation. A bond would be required from the Applicant to ensure that decommissioning and reclamation is completed.

2.2.3 ALTERNATIVE 3: REDUCED CONSTRUCTION FOOTPRINT ALTERNATIVE (PREFERRED ALTERNATIVE)

Alternative 3, the reduced footprint alternative, is the BLM's Preferred Alternative. Alternative 3 would be the same as Alternative 2 except that it would be modified to reduce the total area of disturbance in the Yuha Desert associated with the Ocotillo Sol Project. The temporary construction laydown area described under Alternative 2 would be reduced to 2 acres under Alternative 3 (Figure 2-4 in Appendix A) as compared to 15 acres under Alternative 2. The construction office, restrooms, and other facilities would be placed within the 100-acre or 2-acre laydown area, as needed. By reducing the laydown area, Alternative 3 would necessitate the Applicant's management of laydown and staging within the 100-acre Ocotillo Sol Project site as construction activities progress. Under Alternative 3, the 2-acre temporary laydown area would be used for construction workforce parking. Alternative 3 would also allow off-site parking and busing the work force to the construction site.

Under Alternative 3, BLM would amend the CDCA Plan to identify all 102 acres as suitable for solar development and allow solar development on this land. The 13 acres excluded from the ROW grant would be amended to be unsuitable for solar development. A Plan Amendment would not be required for the generation tie line as the generation tie line and interconnection facilities under this alternative lie fully within a BLM-designated corridor and would be compliant with the CDCA Plan.

2.2.4 ALTERNATIVE 4: NO PROJECT /AMEND CDCA PLAN TO IDENTIFY AREA AS SUITABLE FOR SOLAR DEVELOPMENT

Under this No Project Alternative (Alternative 4), the Ocotillo Sol Project would not be approved (all components of the project denied), and no ROW grant would be issued to the Applicant. The CDCA Plan, however, would be amended to identify the Ocotillo Sol Project area as suitable for solar energy development.

If Alternative 4 were selected, no impacts associated with the construction, operation, maintenance, and decommission of the Ocotillo Sol Project would occur.

Because the CDCA Plan would be amended to allow for solar energy development at this site, solar electricity could be produced at the site by some future project. Impacts associated with such a future project would likely be similar to the proposed Ocotillo Sol Project; however, such future projects and associated impacts are too speculative to be determined at this time. Additionally, any new project proponent would have to apply for a new interconnection queue position for such a project, and would be unlikely to obtain an interconnection agreement within the next several years.

2.2.5 ALTERNATIVE 5: NO PROJECT /AMEND CDCA PLAN TO IDENTIFY AREA AS UNSUITABLE FOR SOLAR DEVELOPMENT

Under this No Project Alternative (Alternative 5), the Ocotillo Sol Project would not be approved (all components of the project denied), and no ROW grant would be issued to the Applicant. The CDCA Plan would be amended to identify the Ocotillo Sol Project area as unsuitable for solar energy development.

If Alternative 5 were selected, no impacts associated with the construction, operation, maintenance, and decommission of the Ocotillo Sol Project would occur. Additionally, the CDCA Plan would be amended to identify the site as unsuitable for solar energy development, and the site would not be available for such development in the future. The site, however, would continue to be available for other types of uses allowable on BLM-administered land, and the site would remain within a designated utility corridor (Utility Corridor N).

2.3 ALTERNATIVES CONSIDERED BUT ELIMINATED FROM DETAILED ANALYSIS

In accordance with 43 CFR 2804.10, the BLM worked closely with the Applicant during the pre-application phase to identify other potential areas for their proposed project before the Applicant filed their ROW application. For example, the BLM discouraged the Applicant from including in their application alternate BLM locations with significant environmental concerns, such as critical habitat, ACECs, Desert Wildlife Management Areas, designated off-highway vehicle areas, wilderness study areas, and designated wilderness areas, or other sensitive resources. The

BLM encouraged the Applicant to locate its project on public land with the fewest potential conflicts. Other alternative sites and various renewable and nonrenewable generation technologies 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 (2008) apply:

- It would not respond to the BLM purpose and need.
- It is technologically or economically infeasible.
- It is inconsistent with the basic policy objectives for the management of the area (not conforming to the CDCA Plan).
- Its implementation is remote or speculative.
- It is substantially similar in design to an alternative that is analyzed.
- 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. The process for eliminating these alternatives from detailed analysis complies with 40 CFR 1502.14(a) and is described below.

2.3.1 ALTERNATIVE SITES

2.3.1.1 FEDERAL LAND

The Applicant considered federal land outside the Yuha Desert Management Area that might be available for renewable energy development. A significant portion of the federal land outside the Yuha Desert Management Area, within 20 miles of the Imperial Valley Substation, is under development for other renewable projects. Additionally, because the Ocotillo Sol Project criteria include an interconnection to the Imperial Valley Substation at 12.47 kV technical constraints limit potential feasible project site location to those areas within approximately 1.5 miles of the substation. This constraint exists because the line loss and fault current conditions that are associated with the transmission of power at 12.47 kV would cause power losses that would make the project technically and economically infeasible at transmission distance greater than approximately 1.5 miles. A higher voltage line would also be economically infeasible. Since the closest available federal land outside the Yuha Desert Management Area lies approximately 5.5 miles from the Imperial Valley Substation, these alternative sites were considered technically infeasible. The Applicant did not include consideration of an above ground generation tie. Only an underground generation tie was considered in design to avoid and minimize the potential effects to visual and biological resources, and as discussed above, a longer overhead line is not feasible.

2.3.1.2 NON-FEDERAL LAND

Based on the transmission limitation discussed above, the Applicant considered seven alternative sites on private lands within a 2-mile radius of the Imperial Valley Substation (Appendix E). The Applicant's research and contacts with landowners indicated that private parcels within a 2-mile radius of the Imperial Valley Substation were unavailable. The reasons for the unavailability of suitable private lands include the following: 1) the lands were owned in fee or

under option by other renewable energy developers; 2) the lands were owned in fee by landowners who were not interested in renewable energy development or were unwilling to sell; and 3) landowners' option and land price expectations (based on those contacted) greatly exceeded feasible renewable energy development economics as calculated by the Applicant and permitted by Sempra Utilities, of which the Applicant is a subsidiary.

The Applicant is regulated by the California Public Utilities Commission, which reviews all utility-owned generation projects for cost reasonableness. Because of the effort to identify suitable private lands, the Applicant determined that siting the Ocotillo Sol Project on non-federal lands would be technologically and economically infeasible.

2.3.2 ALTERNATIVE ENERGY GENERATION TECHNOLOGIES

Alternative technologies, including both renewable and non-renewable technologies, were considered as potential alternatives to the Applicant's proposed Ocotillo Sol Project. This includes other types of solar power generation such as parabolic trough technology, solar power tower technology, linear frensel technology, and distributed solar generation. Non-solar generation, such as wind energy, geothermal energy, biomass energy, tidal energy, natural gas, coal, and nuclear energy, were also considered.

These technologies were eliminated from detailed consideration because they would not respond to the BLM's purpose and need for the Ocotillo Sol Project, which is to respond to the Applicant's ROW grant application to construct, operate, and decommission a solar PV facility on public lands. Additionally, non-renewable energy technologies do not respond to the purpose and need to meet the goal for the Secretary of the Interior of approving 10,000 MW of non-hydropower renewable energy on public lands by 2015, as established by the Energy Policy Act of 2005. Finally, no alternative technologies were identified that would address the unresolved resource conflicts raised by the Ocotillo Sol Project. Therefore, alternative technologies are not a reasonable alternative to the Applicant's proposed Ocotillo Sol Project.

2.3.3 CONSERVATION AND DEMAND-SIDE MANAGEMENT AND DISTRIBUTED GENERATION

A distributed solar alternative would consist of PV panels that would absorb solar radiation and convert it directly to electricity. The PV panels could be installed on private or publicly owned residential, commercial, or industrial building rooftops or in other disturbed areas such as parking lots or disturbed areas adjacent to existing structures, such as substations.

Distributed generation does not respond to the purpose and need to consider an application for a ROW grant to construct, operate, and decommission a solar PV facility on public lands. Additionally, the Energy Policy Act of 2005 established a goal for the Secretary of the Interior to approve 10,000 MW of electricity from non-hydropower renewable energy projects located on public lands by 2015. Given the current state of the technology, only utility-scale renewable energy generation projects are reasonable alternatives to achieve this level of renewable energy generation on public lands. Furthermore, the BLM has no authority or influence over the installation of distributed generation systems, other than on its own lands. The BLM is

evaluating the use of distributed generation at individual sites through other initiatives (EO 13514 and DOI implementing actions).

Conservation and demand-side management alone are not sufficient to address all of California's energy needs, and would not provide the renewable energy required to meet the California RPS requirements. Additionally, it does not respond to the BLM's purpose and need or the goals established by the Energy Policy Act.

2.4 COMPARISON OF ALTERNATIVES

Table 2-5 shows a comparison of the features of each alternative.

TABLE 2-5
COMPARISON OF PROJECT COMPONENTS AND FEATURES

Project Component	Alternative 1	Alternative 2	Alternative 3	Alternative 4	Alternative 5
Renewable Energy Generation	n/a	15–20 MW	15–20 MW	n/a	n/a
Previously Undisturbed Areas to be Grubbed / Graded / Developed (acres)					
Project site (permanent disturbance)	n/a	100	100	n/a	n/a
Construction laydown area (temporary disturbance)	n/a	15	2	n/a	n/a
Subtotal	n/a	115	102	n/a	n/a
Total Area Developed (acres)	**n/a**	**115**	**102**	**n/a**	**n/a**
Total Right-of-way	**n/a**	**115**	**102**	**n/a**	**n/a**
Construction Length (approximate number of days)	n/a	240–340	240–340	n/a	n/a
Maximum Number of Workers (c)	n/a	270	270	n/a	n/a
Estimated Water Use					
Construction (acre-feet)	n/a	150	150	n/a	n/a
Potable Water (gallons per day)	n/a	1,350	1,350	n/a	n/a
Panel Washing (acre-feet per year)	n/a	1–2	1–2	n/a	n/a
Project Features					
CDCA Plan Amendment	No	Yes	Yes	Yes – Suitable for solar development	Yes – Unsuitable for solar development
Solar Panels	No	Yes	Yes	No	No
Access Roads	No	Yes	Yes	No	No
Transmission and Interconnect	No	Yes	Yes	No	No
Operations and Maintenance Building	No	Yes	Yes	No	No
Site Communications	No	Yes	Yes	No	No
Site Security and Fencing	No	Yes	Yes	No	No
Erosion Control and Stormwater Drainage	No	Yes	Yes	No	No
Vegetation Treatment and Weed Management	No	Yes	Yes	No	No
Fire Protection	No	Yes	Yes	No	No
Hazardous Materials	No	Yes	Yes	No	No
Waste Disposal					
Dust Control	No	Yes	Yes	No	No

2.4.1 PREFERRED ALTERNATIVE

The BLM has identified Alternative 3 as the Preferred Alternative. As described above, Alternative 3 would require the Applicant to manage laydown and staging primarily within the 100-acre Ocotillo Sol Project area. Two acres would temporarily be made available for construction workforce parking. The footprint of the Applicant's proposed project would be reduced by 13 acres under the BLM's Preferred Alternative. The Preferred Alternative would include all of the BMPs listed under Alternative 2. Because of the reduced footprint, the impacts to resources under Alternative 3 would be less than under Alternative 2. The Preferred Alternative is therefore also the environmentally preferred alternative.

As part of the Preferred Alternative, the CDCA Plan would be amended to identify all 102 acres of the ROW as suitable for solar development. The remaining 13 acres excluded from the ROW grant would be amended to be unsuitable for solar development.

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CHAPTER 3.0
AFFECTED ENVIRONMENT

3.1 INTRODUCTION AND OVERVIEW

This chapter provides a baseline description of the affected environment for purposes of the general impact assessment found in Chapter 4, Environmental Consequences. The baseline affected environment is defined as those conditions that exist at the time the BLM decides to approve, reject, or modify the Applicant's proposed Ocotillo Sol Project. The description of key resources found within the existing environment of the project area will be used to evaluate and assess the impact of the alternatives presented in Chapter 2. Chapter 1 includes a description of the major federal (BLM and non-BLM) policies, plans, programs, and laws that would apply to the resources and resource uses described in Chapter 3. These policies and laws include FLPMA, NEPA, and the CDCA Plan (Chapter 1, Section 1.6).

Some resource values not impacted by the proposed action area are not discussed in this chapter unless the resource value would address the context for the effects analysis in Chapter 4. The following resource topics have been omitted from analysis based on the assessment of the presence of the resource in the proposed action area:

- Minerals—No mineral resources near the Ocotillo Sol Project area would be affected by the proposed project or alternatives.
- Livestock Grazing—Livestock grazing is not an allowed use within the Ocotillo Sol Project area.
- Wild Horse and Burro—No wild horse or burro herds are found within or near the Ocotillo Sol Project area.

3.2 AIR QUALITY

This section describes the existing condition of air quality related to criteria pollutants and air toxics in the Ocotillo Sol Project area. Motor vehicles are one of the leading sources of air pollution. In addition to these sources, other mobile sources include construction equipment, trains, and airplanes. Emission standards for mobile sources are established by federal and state agencies such as the EPA and the California Air Resources Board (CARB). In addition to mobile sources, stationary sources also contribute to air pollution. Stationary sources include gasoline stations, conventional power plants, dry cleaners, and other commercial and industrial sites. Local air pollution control or air quality management districts regulate stationary sources of air pollution.

The state of California is divided geographically into 15 air basins for regional management of air resources. Areas within each air basin are considered to share the same air masses and, therefore, are expected to have similar ambient air quality. The Ocotillo Sol Project area is within the Salton Sea Air Basin (SSAB; Figure 3.2-1 in Appendix A).

The following sections provide key details of the regulatory framework of the federal, state, and local agencies in charge of monitoring and controlling air pollutants. In addition, the discussion includes the measures being taken to achieve and maintain healthful air quality in the Ocotillo Sol Project area.

3.2.1 APPLICABLE REGULATIONS, PLANS, AND POLICIES/ MANAGEMENT GOALS

3.2.1.1 FEDERAL REGULATIONS

Ambient Air Quality Standards represent the maximum levels of background pollution considered safe, with an adequate margin of safety, to protect the public health and welfare. The federal Clean Air Act was enacted in 1970 and amended in 1977 and 1990 (42 USC 7401) to protect and enhance the quality of the nation's air resources to benefit public health, welfare, and productivity. In 1971, the EPA developed primary and secondary NAAQS to achieve the purposes of Section 109 of the Clean Air Act (42 USC 7409).

Seven pollutants of primary concern (criteria pollutants) have been designated: ozone (O_3), carbon monoxide (CO), sulfur dioxide (SO_2), nitrogen dioxide (NO_2), lead, and respirable particulate matter with aerodynamic diameters of less than 10 and 2.5 microns (PM_{10} and $PM_{2.5}$, respectively). The primary NAAQS "in the judgment of the Administrator, based on such criteria and allowing an adequate margin of safety, are requisite to protect the public health," and the secondary standards "protect the public welfare from any known or anticipated adverse effects associated with the presence of such air pollutant in the ambient air" (42 USC 7409[b][2]). The primary standards were established considering long-term exposure for the most sensitive groups in the general population (i.e., children, senior citizens, and people with breathing difficulties). The current NAAQS are presented in Table 3.2-1 below.

TABLE 3.2-1
AMBIENT AIR QUALITY STANDARDS

Pollutant	Averaging Time	California Standards[1] Concentration[3]	California Standards[1] Method[4]	Federal Standards[2] Primary[3,5]	Federal Standards[2] Secondary[3,6]	Federal Standards[2] Method[7]
Ozone (O_3)	1 Hour	0.09 ppm (180 µg/m^3)	Ultraviolet Photometry	–	Same as Primary Standard	Ultraviolet Photometry
Ozone (O_3)	8 Hour	0.07 ppm (137 µg/m^3)	Ultraviolet Photometry	0.075 ppm (147 µg/m^3)	Same as Primary Standard	Ultraviolet Photometry
Respirable Particulate Matter (PM_{10})	24 Hour	50 µg/m^3	Gravimetric or Beta Attenuation	150 µg/m^3	Same as Primary Standard	Inertial Separation and Gravimetric Analysis
Respirable Particulate Matter (PM_{10})	Annual Arithmetic Mean	20 µg/m^3	Gravimetric or Beta Attenuation	–	Same as Primary Standard	Inertial Separation and Gravimetric Analysis
Fine Particulate Matter ($PM_{2.5}$)	24 Hour	No Separate State Standard	No Separate State Standard	35 µg/m^3	Same as Primary Standard	Inertial Separation and Gravimetric Analysis
Fine Particulate Matter ($PM_{2.5}$)	Annual Arithmetic Mean	12 µg/m^3	Gravimetric or Beta Attenuation	15 µg/m^3	Same as Primary Standard	Inertial Separation and Gravimetric Analysis
Carbon Monoxide (CO)	1 Hour	20 ppm (23 mg/m^3)	Non-dispersive Infrared Photometry	35 ppm (40 mg/m^3)	–	Non-dispersive Infrared Photometry
Carbon Monoxide (CO)	8 Hour	9.0 ppm (10 mg/m^3)	Non-dispersive Infrared Photometry	9 ppm (10 mg/m^3)	–	Non-dispersive Infrared Photometry

TABLE 3.2-1
AMBIENT AIR QUALITY STANDARDS

Pollutant	Averaging Time	California Standards[1] Concentration[3]	California Standards[1] Method[4]	Federal Standards[2] Primary[3,5]	Federal Standards[2] Secondary[3,6]	Federal Standards[2] Method[7]
Carbon Monoxide (CO)	8 Hour (Lake Tahoe)	6 ppm (7 mg/m^3)	Non-dispersive Infrared Photometry	–	–	Non-dispersive Infrared Photometry
Nitrogen Dioxide (NO_2)[8]	1 Hour	0.18 ppm (339 µg/m^3)	Gas Phase Chemi-luminescence	100 ppb (188 µg/m^3)	–	Gas Phase Chemiluminescence
Nitrogen Dioxide (NO_2)[8]	Annual Arithmetic Mean	0.030 ppm (57 µg/m^3)	Gas Phase Chemi-luminescence	53 ppb (100 µg/m^3)	Same as Primary Standard	Gas Phase Chemiluminescence
Sulfur Dioxide (SO_2)[9]	1 Hour	0.25 ppm (655 µg/m^3)	Ultraviolet Fluorescence	75 ppb (196 µg/m^3)	–	Ultraviolet Fluorescence; Spectrophotometry (Pararosaniline Method)
Sulfur Dioxide (SO_2)[9]	3 Hour	–	Ultraviolet Fluorescence	–	0.5 ppm (1300 µg/m^3)	Ultraviolet Fluorescence; Spectrophotometry (Pararosaniline Method)
Sulfur Dioxide (SO_2)[9]	24 Hour	0.04 ppm (105 µg/m^3)	Ultraviolet Fluorescence	0.14 ppm (for certain areas)[9]	–	Ultraviolet Fluorescence; Spectrophotometry (Pararosaniline Method)
Sulfur Dioxide (SO_2)[9]	Annual Arithmetic Mean	–	Ultraviolet Fluorescence	0.030 ppm (for certain areas)[9]	–	Ultraviolet Fluorescence; Spectrophotometry (Pararosaniline Method)
Lead[10,11]	30 Day Average	1.5 µg/m^3	Atomic Absorption	–	–	High Volume Sampler and Atomic Absorption
Lead[10,11]	Calendar Quarter	–	Atomic Absorption	1.5 µg/m^3 (for certain areas)[11]	Same as Primary Standard	High Volume Sampler and Atomic Absorption

TABLE 3.2-1
AMBIENT AIR QUALITY STANDARDS

Pollutant	Averaging Time	California Standards[1] Concentration[3]	California Standards[1] Method[4]	Federal Standards[2] Primary[3,5]	Federal Standards[2] Secondary[3,6]	Federal Standards[2] Method[7]
Lead[10,11]	Rolling 3-Month Average	–	Atomic Absorption	0.15 µg/m^3	Same as Primary Standard	High Volume Sampler and Atomic Absorption
Visibility Reducing Particles[12]	8 Hour	See footnote 12	Beta Attenuation and Transmittance through Filter Tape	No Federal Standards	No Federal Standards	No Federal Standards
Sulfates	24 Hour	25 µg/m^3	Ion Chromatography	No Federal Standards	No Federal Standards	No Federal Standards
Hydrogen Sulfide	1 Hour	0.03 ppm (42 µg/m^3)	Ultraviolet Fluorescence	No Federal Standards	No Federal Standards	No Federal Standards
Vinyl Chloride[10]	24 Hour	0.01 ppm (26 µg/m^3)	Gas Chromatography	No Federal Standards	No Federal Standards	No Federal Standards

SOURCE: CARB 2012a.

ppm = parts per million; ppb = parts per billion; µg/m^3 = micrograms per cubic meter; – = not applicable.

[1]California standards for ozone, carbon monoxide (except 8-hour Lake Tahoe), sulfur dioxide (1 and 24 hour), nitrogen dioxide, particulate matter (PM_{10}, $PM_{2.5}$, and visibility reducing particles), are values that are not to be exceeded. All others are not to be equaled or exceeded. California ambient air quality standards are listed in the Table of Standards in Section 70200 of Title 17 of the California Code of Regulations.

[2]National standards (other than ozone, particulate matter, and those based on annual arithmetic mean) are not to be exceeded more than once a year. The ozone standard is attained when the fourth highest 8-hour concentration measured at each site in a year, averaged over three years, is equal to or less than the standard. For PM_{10}, the 24-hour standard is attained when the expected number of days per calendar year with a 24-hour average concentration above 150 µg/m^3 is equal to or less than one. For $PM_{2.5}$, the 24-hour standard is attained when 98 percent of the daily concentrations, averaged over three years, are equal to or less than the standard. Contact the U.S. EPA for further clarification and current national policies.

[3]Concentration expressed first in units in which it was promulgated. Equivalent units given in parentheses are based upon a reference temperature of 25°C and a reference pressure of 760 torr. Most measurements of air quality are to be corrected to a reference temperature of 25°C and a reference pressure of 760 torr; ppm in this table refers to ppm by volume, or micromoles of pollutant per mole of gas.

[4]Any equivalent measurement method which can be shown to the satisfaction of the Air Resources Board to give equivalent results at or near the level of the air quality standard may be used.

[5]National Primary Standards: The levels of air quality necessary, with an adequate margin of safety to protect the public health.

[6]National Secondary Standards: The levels of air quality necessary to protect the public welfare from any known or anticipated adverse effects of a pollutant.

[7]Reference method as described by the EPA. An "equivalent method" of measurement may be used but must have a "consistent relationship to the reference method" and must be approved by the EPA.

[8]To attain the 1-hour national standard, the 3-year average of the annual 98th percentile of the 1-hour daily maximum concentrations at each site must not exceed 100 ppb. Note that the national standards are in units of parts per billion (ppb). California standards are in units of parts per million (ppm). To directly compare the national standards to the California standards the units can be converted from ppb to ppm. In this case, the national standards of 53 ppb and 100 ppb are identical to 0.053 ppm and 0.100 ppm, respectively.

[9]On June 2, 2010, a new 1-hour SO_2 standard was established and the existing 24-hour and annual primary standards were revoked. To attain the 1-hour national standard, the 3-year average of the annual 99th percentile of the 1-hour daily maximum concentrations at each site must not exceed 75 ppb. The 1971 SO_2 national standards (24-hour and annual) remain in effect until one year after an area is designated for the 2010 standard, except that in areas designated nonattainment for the 1971 standards, the 1971 standards remain in effect until implementation plans to attain or maintain the 2010 standards are approved.

Note that the 1-hour national standard is in units of parts per billion (ppb). California standards are in units of parts per million (ppm). To directly compare the 1-hour national standard to the California standard the units can be converted to ppm. In this case, the national standard of 75 ppb is identical to 0.075 ppm.

[10]The ARB has identified lead and vinyl chloride as 'toxic air contaminants' with no threshold level of exposure for adverse health effects determined. These actions allow for the implementation of control measures at levels below the ambient concentrations specified for these pollutants.

[11]The national standard for lead was revised on October 15, 2008 to a rolling 3-month average. The 1978 lead standard (1.5 $\mu g/m^3$ as a quarterly average) remains in effect until one year after an area is designated for the 2008 standard, except that in areas designated nonattainment for the 1978 standard, the 1978 standard remains in effect until implementation plans to attain or maintain the 2008 standard are approved.

[12]In 1989, the ARB converted both the general statewide 10-mile visibility standard and the Lake Tahoe 30-mile visibility standard to instrumental equivalents, which are "extinction of 0.23 per kilometer" and "extinction of 0.07 per kilometer" for the statewide and Lake Tahoe Air Basin standards, respectively.

3.2.1.2 FEDERAL CLEAN AIR ACT CONFORMITY

The Clean Air Act Amendments of 1977 (42 USC 7401, et seq.) state that the federal government is prohibited from engaging in, supporting, providing financial assistance for, licensing, permitting, or approving any activity that does not conform to an applicable SIP. General conformity applies to all federal actions that do not include Federal Highway Administration or Federal Transit Administration projects as defined in 40 CFR 93.101. Separate regulations for transportation conformity cover federal actions related to transportation plans, programs, and projects developed, funded, or approved under Title 23 of the USC or the Federal Transit Act (49 USC 1601, et seq.). The Applicant's proposed Ocotillo Sol Project would fall under the general conformity requirements.

The 1990 federal Clean Air Act Amendments contain provisions requiring federal agencies to ensure that actions undertaken in nonattainment or attainment-maintenance areas are consistent with applicable SIPs. Locally, the ICAPCD has adopted Rule 925, General Conformity. Rule 925 establishes the conformity criteria and procedures necessary to ensure that federal actions conform to the SIP and meet the provisions of the Clean Air Act. In general, this rule ensures that all criteria air pollutant and reactive organic gas emissions are specifically identified and accounted for in the SIP's attainment or maintenance demonstration, conform to a SIP's purpose of eliminating or reducing the severity and number of violations of the NAAQS, and achieving expeditious attainment of such standards.

The process of determining whether or not a federal action is consistent with the applicable SIP is called a conformity determination. On November 30, 1993, the EPA promulgated its rules for determining general conformity of federal actions as required by Clean Air Act Section 176(c). To demonstrate conformity with a local SIP, a project must clearly demonstrate that it does not:

- cause or contribute to any new violation of any standard in force for the area;
- interfere with provisions in the applicable SIP for maintenance or attainment of air quality standards;
- increase the frequency or severity of any existing violation of any federal standard; or
- delay timely attainment of any standard, any interim emission reduction, or other milestones included in the SIP for air quality.

The EPA has developed specific procedures for conformity determinations for federal actions, which include preparing an assessment of emissions associated with the project based on the latest and most accurate emissions estimating techniques. A determination of conformity with the applicable SIP is required for each criteria pollutant and is based on the total direct and indirect emissions in a nonattainment or attainment-maintenance area caused by the action exceeding specified *de minimis* levels. The *de minimis* threshold levels for requiring a full conformity analysis and the amount of emissions that could result in significant impacts are based on the attainment status of each criteria pollutant in the applicable nonattainment areas. These threshold levels are used to determine the potential significance of activities on BLM-administered lands. The general conformity *de minimis* thresholds are defined in 40 CFR 93.153(b) and ICAPCD Rule 925, and are shown in Table 3.2-2.

TABLE 3.2-2
FEDERAL *DE MINIMIS* THRESHOLDS—IMPERIAL VALLEY NONATTAINMENT AREAS

Pollutant	Federal Designation	Threshold (tons/year)
O_3* (VOCs)	Nonattainment, Moderate	100
O_3* (NO_x)	Nonattainment, Moderate	100
PM_{10}	Nonattainment, Serious	70
$PM_{2.5}$	Nonattainment	
Direct Emissions		100
NO_x†		100
VOC or ammonia‡		100
CO	Attainment	N/A

Source of Thresholds: 40 CFR 93
VOCs=volatile organic compounds; NO_x=oxides of nitrogen; N/A: not applicable
*Emission thresholds are given for O_3 precursor elements, VOCs and NO_x, based on the attainment status of O_3.
† unless determined not to be significant precursors
‡ if determined to be significant precursors

If an action would result in criteria pollutant emissions that are less than the *de minimis* levels, the action is presumed to conform and a conformity determination is not required.

In addition to comparison with the *de minimis* levels, the project proponent must demonstrate that the total direct and indirect emission increases associated with the action would not be regionally significant; that is, they will not represent 10 percent or more of an emission inventory or emissions budget of an area (in this case the SSAB). In determining regional significance, emissions from both stationary and mobile source emissions should be calculated. Construction actions that generally require a conformity review include the following:

- Construction or modification of any air emission source not covered under a New Source Review or Prevention of Significant Deterioration permit or a hazardous waste remediation action
- Construction, renovation, or demolition of buildings or facilities

The general conformity rules do not apply to federal actions in areas designated as nonattainment of the California Ambient Air Quality Standards (CAAQS) only. Because the SSAB, in which the project is located, is nonattainment for the federal O_3, PM_{10}, and $PM_{2.5}$ standards, the general conformity rules apply.

3.2.1.3 BLM CALIFORNIA DESERT CONSERVATION AREA PLAN: AIR QUALITY ELEMENT

The Ocotillo Sol Project area is within the CDCA. The CDCA Plan contains provisions and guidance for public land use management in the California Desert District under the BLM's jurisdiction. Since its publication in 1980, the CDCA Plan has been amended to incorporate public concerns and congressional mandates about uses of desert resources. The CDCA Plan also specifies that FLPMA and the Clean Air Act of 1977, along with EO 12088 of 1978,

"Federal Compliance with Pollution Control Standards," require the BLM and other federal land-management agencies to preserve and protect air quality values on federal lands.

The CDCA Multiple Use Class Guidelines require that all land uses within the CDCA be managed to protect air quality and visibility in accordance with the Class II objectives of Subchapter I, Part C of the Clean Air Act Amendments, unless the state of California designates land uses in another class as a result of BLM air quality management plan. Additionally, the CDCA Plan considers air quality monitoring in the CDCA Plan elements related to wildlife and energy production and utility corridors as one of the requirements for implementation.

3.2.1.4 STATE REGULATIONS

The EPA allows states the option to develop stricter air quality standards. California generally has set more stringent limits on the seven criteria pollutants (see Table 3.2-1). In addition to the federal criteria pollutants, the CAAQS also specify standards for visibility reducing particles, sulfates, hydrogen sulfide, and vinyl chloride (see Table 3.2-1).

The California Clean Air Act, also known as the Sher Bill, or Assembly Bill (AB) 2595, became effective on January 1, 1989. The California Clean Air Act requires that air districts implement regulations to reduce emissions from mobile sources through the adoption and enforcement of transportation control measures. The California Clean Air Act requires that a district must (South Coast Air Quality Management District [SCAQMD] 2007):

- demonstrate the overall effectiveness of the air quality program;
- reduce nonattainment pollutants at a rate of 5 percent per year, or include all feasible measures and an expeditious adoption schedule;
- reduce population exposure to severe nonattainment pollutants according to a prescribed schedule; and
- rank control measures by cost-effectiveness.

3.2.1.5 STATE IMPLEMENTATION PLAN

The 1997 Amendments to the Clean Air Act require states with air quality that did not meet the NAAQS to develop and maintain an SIP. The SIP is a collection of documents that set forth the state's strategies for achieving the federal air quality standards. In California, the individual air districts are responsible for preparing and implementing the portion of the SIP applicable to their area of jurisdiction. Air district plans constitute a federally enforceable definition of the approach (or plan) of the state and schedule for the attainment of the NAAQS. Air quality management areas are designated as attainment, nonattainment, or unclassified depending on whether or not they achieve the NAAQS and CAAQS. In addition, California can also designate areas as transitional, which is an area that is close to attaining the standard for a pollutant. Because the NAAQS and CAAQS are different in many cases, it is possible for an area to be designated as attainment by EPA (meets the NAAQS) and nonattainment by the CARB (does not meet the CAAQS) for the same pollutant. An area can also be designated as attainment for one pollutant (e.g., NO_2) and nonattainment for others (e.g., O_3 and PM_{10}).

There are numerous classifications of the nonattainment designation, depending on the severity of nonattainment. For example, the O_3 nonattainment designation has seven subclasses: transitional, marginal, moderate, serious, severe-15, severe-17, and extreme. Areas that were designated as nonattainment in the past, but have since achieved the NAAQS, are classified as attainment-maintenance. The maintenance classification remains in effect for 20 years from the date that the area is determined by EPA to meet the NAAQS. Areas that lack monitoring data are designated as unclassified areas and treated as attainment areas for regulatory purposes.

In Imperial County, the ICAPCD is the agency responsible for protecting public health and welfare through the administration of federal and state air quality laws, regulations, and policies. The ICAPCD adopts rules, regulations, and programs to attain federal and state air quality standards. The ICAPCD also appropriates funds (including permit fees) to achieve these objectives. Included in the tasks for ICAPCD are the monitoring of air pollution, preparation of the SIP for Imperial County, and promulgation of Rules and Regulations. The Imperial County SIP includes strategies and tactics to be used to attain the federal O_3 and particulate standards in the county. The Rules and Regulations include procedures and requirements to control the emission of pollutants and to prevent adverse impacts (ICAPCD 2012a).

3.2.1.6 TOXIC AIR CONTAMINANTS

The federal and state laws and regulations also define a group of pollutants called “hazardous air pollutants,” “toxic air contaminants,” or “air toxics.” These pollutants are regulated by the National Emissions Standards for Hazardous Air Pollutants section of the Clean Air Act, various state laws and regulations, state air toxics acts (e.g., the AB 1807, AB 2588, and SB 1731 programs), and ICAPCD Regulation X. In urban areas, toxic air contaminants are a concern because of the high concentration of people living close to large sources of emissions. The combination of toxic emissions from vehicles, industry, and multiple area sources could create an unhealthy mix of pollutants that varies based on factors such as geography, industry, and population. Exposure to toxic air pollutants may cause or contribute to cancer, birth defects, genetic damage, and other adverse health effects.

3.2.2 COMPLIANCE WITH AIR QUALITY STANDARDS

The CARB monitors ambient air quality at approximately 250 air quality monitoring stations across the state. Air quality monitoring stations usually measure pollutant concentrations 10 feet above ground level; therefore, air quality is often referred to in terms of ground-level concentrations. Factors affecting ground-level pollutant concentrations include the rate at which pollutants are emitted to the atmosphere, height from which they are released, physical combination of emissions from various sources, formation of secondary pollutants, interaction of pollutants with topographic features, and meteorological conditions. Meteorological parameters that affect pollutant dispersion the most are wind speed and direction, atmospheric stability, mixing height, and temperature.

Ambient criteria air pollutant concentrations in the SSAB are measured at nine air quality monitoring stations operated by the CARB, the ICAPCD, the National Park Service, or the SCAQMD (see Figure 3.2-1 in Appendix A for approximate locations). Not all pollutants are monitored at all stations. The ICAPCD currently maintains five air quality monitoring stations.

These stations are in El Centro, Brawley, Calexico–Ethel Street, Westmorland, and Niland. The ICAPCD conducts yearly and quarterly inspections of the monitoring stations (ICAPCD 2008b). The air quality monitoring stations operating near the Ocotillo Sol Project area are the El Centro–9th Street station, approximately 10 miles to the northeast, and the Calexico–Ethel Street station approximately 14 miles to the southeast. These two stations monitor O_3, CO, NO_2, PM_{10}, and $PM_{2.5}$. The Calexico–Ethel Street station also monitors SO_2 and lead.

3.2.3 CLIMATE AND METEOROLOGY

The Ocotillo Sol Project area is in the Imperial County portion of the SSAB within the Lower Colorado River Valley subdivision of the Sonoran Desert. The climate is sub-tropical and characterized by low annual precipitation, very hot summers, mild winters, high evaporation rates, low humidity, and strong temperature inversions. One of the main determinants of the regional climatology is a semi-permanent high-pressure area (the Pacific High) in the eastern Pacific Ocean. In the summer, this pressure center is well to the north, causing storm tracks to be directed generally north of California. This high-pressure cell maintains clear skies for much of the year. When the Pacific High moves southward during the winter, weakened low-pressure storms and the orographic barrier bring little rainfall. The combination of subsiding air, protective mountains, and distance from the ocean markedly limits precipitation (ICAPCD 2008a).

Rainfall occasionally occurs in the summer in the form of thunderstorms resulting from monsoonal air flows bringing together upper level moisture from the Gulf of Mexico and lower level moisture from the Gulf of California. In Imperial County, annual precipitation fluctuates widely from about 1 to 6 inches, averaging 2.97 inches annually (Imperial County 2012). Temperature ranges from lows around 30 degrees Fahrenheit (°F) in January to highs around 110°F in July and August. Mean low temperature is 55°F, and mean high temperature is 90°F (Imperial County 2012). Winter daytime highs are in the 60°F–70°F range from December through March.

The flat terrain of Imperial Valley and the strong temperature differentials created by intense solar heating produce moderate winds and deep thermal convection. The Imperial Valley region occasionally experiences periods of high winds. Winter winds approach from the northwest. Summer winds are more variable, but often blow from the southeast. Wind events can cause the suspension of large amounts of dust and other particulate matter in the air.

A common atmospheric condition known as a temperature inversion affects air quality in the Ocotillo Sol Project area. An inversion acts like a lid, keeping normal atmospheric convection from penetrating through the inversion. Several weather-related effects result, including the trapping and buildup of pollutants below the inversion. Highest or worst-case O_3 levels are often associated with the presence of this type of inversion. Although Imperial County experiences temperature inversions almost daily, these inversions are usually broken during the day, allowing pollutants to more easily disperse. Subsidence inversions are common from November through June, but appear to be relatively rare from July through October (ICAPCD 2008a).

3.2.4 AIR QUALITY IN THE OCOTILLO SOL PROJECT AREA

3.2.4.1 HEALTH EFFECTS OF CRITERIA AIR POLLUTANTS

Air pollutants are recognized to have a variety of health effects on humans. Research by the CARB shows that exposure to high concentrations of air pollutants can trigger respiratory diseases such as asthma, bronchitis, and other respiratory ailments and cardiovascular diseases. A healthy person exposed to high concentrations of air pollutants may become nauseated or dizzy, may develop a headache or cough, and may experience eye irritation or a burning sensation in the chest. O_3 is a powerful irritant that attacks the respiratory system, leading to the damage of lung tissue. Inhaled particulate matter, NO_2, and SO_2 can directly irritate the respiratory tract, constrict airways, and interfere with the mucous lining of the airways. When it is absorbed into the bloodstream, CO can endanger hemoglobin, the oxygen-carrying protein in blood, by reducing the amount of oxygen that reaches the heart, brain, and other body tissues. When air pollutant levels are high (a common occurrence in southern California), children, elderly people, and people with respiratory problems are advised to remain indoors. Outdoor exercise also is discouraged when levels are high because strenuous activity may cause shortness of breath and chest pains (CARB 2001).

There is a considerable body of medical research about the effects of criteria air pollutants on the health of Imperial County residents, particularly the effects of chronic bronchitis and childhood asthma. Short-term particulate matter spikes at concentrations up to 10 times higher than minimum threshold levels for adverse health effects are frequent during winter months in Calexico/Mexicali area as the result of agricultural burning and motor vehicle emissions (Kelly et al. 2010). For the 12-year period studied (1983–1994), Imperial County had the highest childhood asthma hospitalization for non-Hispanic whites and African-Americans and the second highest rate in California for Hispanics (English et al. 1998). Between 1998 and 2000, Imperial County had the highest age-adjusted asthma hospitalizations in California for children 0–14 years of age (52 per 10,000), which is more than twice the California average (Stockman et al. 2003). The EPA (2010) reported that Imperial Valley has one of the highest weighted annual mean concentrations of PM_{10} in the U.S. at 89 micrograms per cubic meter ($\mu g/m^3$; 24-hour average). The NAAQS for annual mean PM_{10} concentration is 50 $\mu g/m^3$.

Between 1990 and 2010 (Figure 3.2-2), PM_{10} 24-hour average values declined nationally by 38 percent. Imperial County showed no decline for the same period. The national standard for PM_{10} is 150 $\mu g/m^3$; by contrast, the California standard is 50 $\mu g/ m^3$.

3.2.4.1.1 Sensitive Receptors

Some people are more sensitive than others to air pollutants. Heightened sensitivity may be caused by health problems, proximity to the emissions source, and duration of exposure to air pollutants. Sensitive receptors are facilities that house or attract children, the elderly, and people with illnesses, or others who are especially sensitive to the effects of air pollution. Hospitals, schools, convalescent facilities, and residential areas are examples of sensitive receptors. Residential areas are considered sensitive to poor air quality as people in residential areas are often at home for extended periods.

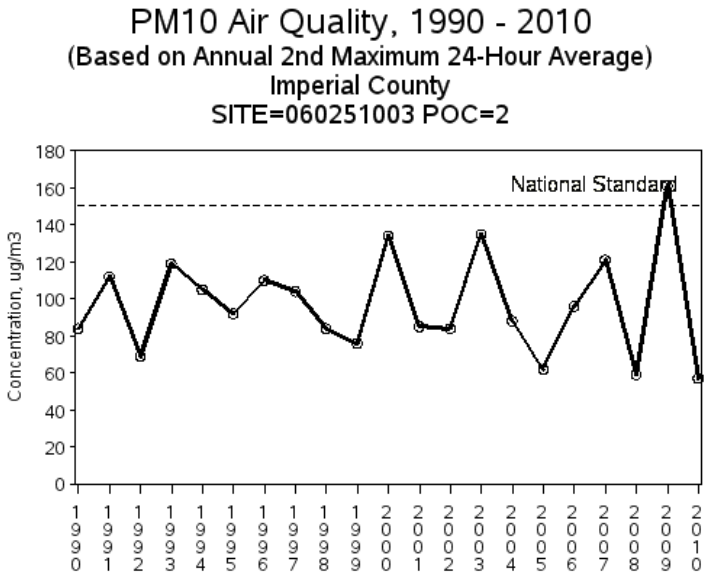

Figure 3.2-2. Imperial County PM_{10} Emissions for 1990 to 2010

No sensitive receptors are in the immediate vicinity of the Ocotillo Sol Project area. The nearest residences to the project site occur approximately 1 mile to the north, 1.75 miles to the east, and over 2 miles to the southeast.

3.2.4.2 EXISTING AIR QUALITY

Air quality is defined by ambient air concentrations of the criteria pollutants specified by the NAAQS and CAAQS. Pollutant emissions typically refer to the amount of pollutants or pollutant precursors introduced into the atmosphere by a source or group of sources. Pollutant emissions contribute to the ambient air concentrations of criteria pollutants, either by directly affecting the pollutant concentrations measured in the ambient air or by interacting in the atmosphere to form criteria pollutants. Primary pollutants, such as CO, SO_2, lead, and some particulates, are emitted directly into the atmosphere from emission sources. Secondary pollutants, such as O_3, NO_2, and some particulates, are formed through atmospheric chemical reactions that are influenced by meteorology, ultraviolet light, and other atmospheric processes. In general, emissions such as reactive organic gases and oxides of nitrogen (NO_x) are "precursors" to secondary pollutants in the atmosphere such as O_3. These precursor gases are evaluated to control the level of criteria pollutant in the ambient air.

Table 3.2-3 summarizes the air quality data in the SSAB overall during the years 2006 to 2010.

Air pollutants of primary concern in the Imperial Valley are O_3, PM_{10}, and $PM_{2.5}$.

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TABLE 3.2-3
AMBIENT AIR QUALITY SUMMARY – SALTON SEA AIR BASIN

Pollutant	Avg. Time	CAAQS[a]	Attainment Status	NAAQS[b]	Attainment Status	Max. Concentra-tion 2006	Max. Concentra-tion 2007	Max. Concentra-tion 2008	Max. Concentra-tion 2009	Max. Concentra-tion 2010	# of Days Exceeding CAAQS 2006	# of Days Exceeding CAAQS 2007	# of Days Exceeding CAAQS 2008	# of Days Exceeding CAAQS 2009	# of Days Exceeding CAAQS 2010	# of Days Exceeding NAAQS 2006	# of Days Exceeding NAAQS 2007	# of Days Exceeding NAAQS 2008	# of Days Exceeding NAAQS 2009	# of Days Exceeding NAAQS 2010
O_3	1 hour	0.09 ppm	N	N/A	N/A	0.129	0.126	0.135	0.150	0.122	51	39	36	40	24	3	1	1	2	0
O_3	8 hours	0.07ppm	N	0.075 ppm	N	0.109	0.102	0.101	0.098	0.099	94	99	85	82	94	72	68	57	59	63
CO	1 hour	20 ppm	A	35 ppm	A	Na	Na	Na	Na	Na	Na	Na	Na	Na	Na	Na	Na	Na	Na	Na
CO	8 hours	9 ppm	A	9 ppm	A	9.76	7.53	6.34	7.46	5.61	1	0	0	0	0	1	0	0	0	0
NO_2	1 hour	0.18 ppm	A	0.100 ppm[d]	A	0.101	0.112	0.146	0.122	0.141	0	0	0	0	0	N/A	N/A	N/A	N/A	N/A
NO_2	Annual	0.030 ppm	A	0.053 ppm	A	0.012	0.012	0.012	0.010	0.011	NX	NX	NX	NX	NX	NX	NX	NX	NX	NX
SO_2	1 hour	0.25 ppm	A	0.075 ppm	A	Na	Na	Na	Na	Na	Na	Na	Na	Na	Na	Na	Na	Na	Na	Na
SO_2	3 hours	N/A	N/A	N/A	N/A	Na	Na	Na	Na	Na	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
SO_2	24 hours	0.04 ppm	A	N/A	N/A	Na	Na	Na	Na	Na	Na	Na	Na	Na	Na	N/A	N/A	N/A	N/A	N/A
PM_{10}	24 hours	50 $\mu g/m^3$	N	150 $\mu g/m^3$	N	261	296	336.7	275.9	144.8	39/240.6*	53/219.1*	31/186.8	34/207.4	43/55.0*	3/16.3*	2/13.0*	3/3.0*	3/18.3*	0/0*
PM_{10}	Annual	20 $\mu g/m^3$	N	N/A	N/A	71.6	65.5	53.9	65.4	37.7	EX	EX	EX	EX	EX	N/A	N/A	N/A	N/A	N/A
$PM_{2.5}$	24 hours	N/A	N/A	35 $\mu g/m^3$	A, N	80.8	95.0	93.6	100.9	54.0	N/A	N/A	N/A	N/A	N/A	5/17.1*	3/9.2*	1/0*	4/3.1*	2/6.8*
$PM_{2.5}$	Annual	12 $\mu g/m^3$	U, N	15 $\mu g/m^3$	A, N	17.3	23.2	17.2	18.7	12.7	EX	EX	EX	EX	EX	NX	NX	NX	NX	NX

SOURCE: CARB 2012b.
*Measured Days/Calculated Days - Calculated days are the estimated number of days that a measurement would have been greater than the level of the standard had measurements been collected every day. The number of days above the standard is not necessarily the number of violations of the standard for the year. Data to determine federal calculated days were not available.
[a]California standards for O_3, CO (except at Lake Tahoe), SO_2 (1-hour and 24-hour), NO_2, and PM_{10} are values that are not to be exceeded. Some measurements gathered for pollutants with air quality standards that are based upon 1-hour, 8-hour, or 24-hour averages, may be excluded if the CARB determines they would occur less than once per year on average.
[b]National standards other than for ozone and particulates, and those based on annual averages or annual arithmetic means are not to be exceeded more than once a year. The 1-hour O_3 standard is attained if, during the most recent 3-year period, the average number of days per year with maximum hourly concentrations above the standard is equal to or less than one.
[c]A = attainment; N = nonattainment; U = Unclassifiable; N/A = not applicable; Na = data not available; NX = annual average not exceeded; EX = annual average exceeded.
[d]Effective January 22, 2010. Not applicable to monitoring from 2005 through 2009.
ppm = parts per million, $\mu g/m^3$ = micrograms per cubic meter.

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3.2.4.2.1 Federal Standards

Table 3.2-4 shows the number of days above the national standards at the Imperial Valley monitoring stations for the period 2006 through 2010 for the three criteria pollutants of concern. The 2009 Imperial County PM_{10} SIP notes that the particulate exceedances for the period 2006 through 2008 were due either to high wind events or cross-border pollutant transport from Mexico (ENVIRON 2009).

TABLE 3.2-4
NUMBER OF DAYS ABOVE NATIONAL STANDARDS IN IMPERIAL VALLEY, CALIFORNIA

Monitoring Station	2006	2007	2008	2009	2010
O_3 (2008 8-hour standard)					
Brawley–220 Main Street	0	0	0	*	*
Calexico–Ethel Street	2	9	7	4	2
El Centro–9th Street	26	8	2	11	10
Niland–English Road	3	7	3	5	0
Westmorland–West 1st Street	21	17	6	7	2
PM_{10} (24-hour standard)**					
Brawley–220 Main Street	0	13.0	0	18.8	0
Calexico–Ethel Street	6.6	6.1	0	18.3	0
El Centro–9th Street	0	7	0	13.1	0
Niland–English Road	0	3.5	0	6.1	0
Westmorland–West 1st Street	7.1	14	0	6.1	0
$PM_{2.5}$ (24-hour standard)**					
Brawley–220 Main Street	*	*	0	*	*
Calexico–Ethel Street	17.1	9.2	*	*	6.8
El Centro–9th Street	0	0	*	3.1	0

* There were insufficient (or no) data available to determine the value.
**Measurements are usually collected every six days. Estimated days mathematically estimate how many days concentrations would have been greater than the level of the standard had each day been monitored.
Source: CARB 2012b.

The SSAB is in attainment of all federal pollutant standards except for O_3, PM_{10}, and $PM_{2.5}$. The Imperial Valley Planning Area in Imperial County, which includes the Ocotillo Sol Project area, is a Serious PM_{10} Nonattainment area (Figure 3.2-3 in Appendix A).

A portion of south-central Imperial County, including the Ocotillo Sol Project area, is Nonattainment for the $PM_{2.5}$ 24-hour standard (Figure 3.2-4 in Appendix A).

The Imperial County portion of the SSAB, including the Ocotillo Sol Project area, is a Moderate 8-hour O_3 Nonattainment area under Subpart 2 (Figure 3.2-5 in Appendix A).

Under Subpart 2, consistent with Section 182 of the Clean Air Act, the maximum period of attainment from the effective date of designation for areas designated as nonattainment is as shown in Table 3.2-5 (69 Federal Register [FR] 23951).

TABLE 3.2-5
ATTAINMENT PERIODS

Nonattainment Designation	Period (years)
Marginal	3
Moderate	6
Serious	9
Severe	15 or 17
Extreme	20

In December of 2009, the EPA issued a final ruling determining that the Imperial County moderate 8-hour O_3 nonattainment area attained the 1997 8-hour standard. This determination effectively suspended the requirement for the state to submit an attainment demonstration, a reasonable further progress plan, contingency measures, and other planning requirements for as long as Imperial County continues to attain the 1997 8-hour standard. This determination does not constitute a re-designation to attainment under the Clean Air Act (Section 107(d)(3)); therefore, the designation status will remain as moderate nonattainment for the 1997 8-hour standard. Imperial County is required to submit for EPA approval of a modified 2009 8-hour O_3 Air Quality Management Plan (ICAPCD 2012b) for EPA approval.

On March 12, 2008, the EPA revised the 8-hour O_3 standard to 7.5 parts per hundred million (pphm). On March 12, 2009, CARB submitted its recommendations for area designations for the revised federal 8-hour O_3 standard. The recommendations are based on O_3 measurements collected from 2006 through 2008. CARB recommended that the SSAB be classified as nonattainment for the revised standard. The EPA was required to issue final area designations no later than March 2010. Insufficient information to make these designations, however, led the EPA to extend the deadline to March 2011. EPA issued recommended designations for the 2008 standard in December 2011. It was proposed that Imperial County be designated as nonattainment for the federal 2008 O_3 standards. Final designations are anticipated in Spring 2012.

Criticism of the national standards proposed in March 2008 resulted in the reconsideration of those standards by the EPA. On January 16, 2010, the EPA again proposed revision of the 8-hour O_3 standards. The EPA proposed to set the primary standard at a level ranging between 6 and 7 pphm. The EPA also proposed establishing a distinct cumulative, seasonal "secondary" standard, designed to protect sensitive vegetation and ecosystems, including forests, parks, wildlife refuges and wilderness areas. The EPA proposed to set the secondary standard at a level within the range of 7–15 parts per million-hours.

The EPA was to issue final standards by August 31, 2010, but to date this has not occurred. Rather, on December 8, 2010 the EPA Administrator asked the Clean Air Scientific Advisory Committee for further interpretation of the epidemiological and clinical studies used to make their recommendation. On January 26, 2011, the EPA provided "charge questions" to the Clean Air Scientific Advisory Committee regarding the reconsideration of the 2008 O_3 standards. The EPA reviewed the additional input, and in July 2011 proposed to set the final 8-hour O_3 standard to 0.070 parts per million. On September 2, 2011, President Obama directed the EPA to

withdraw this draft O_3 NAAQS. Therefore, the EPA continues to implement the 2008 standards set during the previous administration while the ongoing five-year review of the updated science continues, which is scheduled for completion in 2013.

3.2.4.2.2 State Standards

Table 3.2-6 shows the number of days above the state standards, or the annual average in the case of $PM_{2.5}$, at the Imperial Valley monitoring stations for the period 2006 through 2010 for the three criteria pollutants of greatest concern.

TABLE 3.2-6
NUMBER OF DAYS ABOVE STATE STANDARDS OR ANNUAL AVERAGE IN IMPERIAL VALLEY, CALIFORNIA

Monitoring Station	2006	2007	2008	2009	2010
O_3 (2008 8-hour standard)					
Brawley–220 Main Street	0	0	0	*	*
Calexico–Ethel Street	3	20	17	9	6
El Centro–9th Street	39	23	9	30	29
Niland–English Road	6	15	11	16	5
Westmorland–West 1st Street	46	36	17	23	5
PM_{10} (24-hour standard)**					
Brawley–220 Main Street	100.1	158.6	61.1	90.0	47.9
Calexico–Ethel Street	*	219.1	186.8	207.4	55.0
El Centro–9th Street	120.1	*	25.5	104.6	*
Niland–English Road	30.5	82.8	61.5	74.2	43.8
Westmorland–West 1st Street	*	126.6	60.7	90.5	40.8
$PM_{2.5}$ (annual average [$\mu g/m^3$])					
Brawley–220 Main Street	*	*	8.2	*	*
Calexico–Ethel Street	17.3	23.2	*	18.7	12.7
El Centro–9th Street	*	*	*	8.0	6.6

* There were insufficient (or no) data available to determine the value.
**Measurements are usually collected every six days. Estimated days mathematically estimate how many days concentrations would have been greater than the level of the standard had each day been monitored.
Source: CARB 2012b.

The SSAB is a state Nonattainment area for O_3 and PM_{10}. The SSAB is Unclassified/ Attainment for all other state standards.

3.2.4.3 SOURCES OF REGIONAL AND LOCAL POLLUTION

The area surrounding the Ocotillo Sol Project area consists largely of agricultural fields or undeveloped desert. Stationary sources of air pollutants are not currently on-site. The primary air pollution concerns in the Ocotillo Sol Project area are O_3 and particulate emissions. The atmosphere is often stable enough to allow PM_{10} pollution to accumulate and frequently reach elevated concentrations across the southern portion of Imperial County. Under stagnant and light wind conditions, elevated dust concentrations in Mexicali, Mexico, can cause PM_{10} to drift across the border into the U.S. city of Calexico, east of the Ocotillo Sol Project area (ICAPCD 2008c). Metropolitan Mexicali comprises approximately 937,000 people and has PM_{10}

emissions estimated at 257 tons/day, compared with emissions of about 13 tons/day for the considerably smaller town of Calexico (population approximately 32,000).

High concentrations of PM_{10} in many areas of Imperial County result from wind action. The wind picks up particles from disturbed and undisturbed surfaces, recreational travel on paved and unpaved roadways, construction and demolition activities, and farming operations. In addition to wind events, the primary contributors of PM_{10} within lands administered by the BLM in Imperial County are off-highway vehicle (OHV) recreation, mining operations, agricultural operations, and short-term construction projects such as installation of utility lines. The principal human health effect of airborne particulate matter is on the respiratory system (ICAPCD 2008 as cited in BLM 2010).

Because the Imperial Valley area is designated as nonattainment for PM_{10}, the Imperial County government agencies and industry groups, private and public stakeholders, and ICAPCD have worked to reduce PM_{10} emissions and bring the area into compliance with the NAAQS. These efforts culminated in the 2005 amendments of the ICAPCD Regulation VIII Best Available Control Methods, adopted in advance of the 2009 Imperial County SIP for the purposes of accelerating Best Available Control Method implementation and meeting the requirements and schedule of Imperial County's Natural Event Action Plan (ENVIRON 2009). The BLM has developed a Dust Control Plan to identify sources of PM_{10} within lands administered by BLM and provide implementation measures to help minimize or eliminate emissions (BLM 2011).

$PM_{2.5}$ emissions can originate from surface disturbance, such as off-road activity and agricultural operations. $PM_{2.5}$ emissions, however, are principally the result of fuel combustion. Typical sources include vehicles, construction equipment, agricultural equipment, and industrial sources including conventional electricity production. Combustion is also the primary source of these precursor emissions. The primary sources of these emissions in the immediate vicinity of the Ocotillo Sol Project area are vehicles and agricultural operations.

3.2.4.3.1 Salton Sea Air Basin and Imperial County Emissions Inventories

Table 3.2-7 summarizes the estimated 2008 emissions inventory (the most recent data provided to CARB) for Imperial County. Detailed breakdowns of the emissions sources and categories are available at CARB's Web site (CARB 2012c).

TABLE 3.2-7
IMPERIAL COUNTY 2008 ESTIMATED ANNUAL EMISSIONS (TONS/DAY)

Emission Category	Reactive Organic Gas	CO	NO_X	SO_X	PM_{10}	$PM_{2.5}$
Stationary Sources						
Fuel Combustion	0.17	1.02	7.19	0.13	0.47	0.41
Waste Disposal	0.02	-	-	-	-	-
Cleaning and Surface Coatings	0.41	-	-	-	-	-
Petroleum Production and Marketing	0.69	-	0.00	-	-	-
Industrial Processes	0.08	0.06	0.03	0.03	2.95	0.95
Area-wide Sources						
Solvent Evaporation	6.89	-	-	-	-	-
Miscellaneous Processes	9.95	15.61	0.69	0.08	226.97	36.38
Mobile Sources						
On-Road Motor Vehicles	5.71	49.23	20.46	0.04	0.88	0.72
Other Mobile Sources	6.52	25.32	9.70	0.14	0.95	0.90
Natural Sources						
Biogenic Sources	3.05	-	-	-	-	-
Total	**33.49**	**91.24**	**38.06**	**0.41**	**232.21**	**39.35**
Grand Total (tons/year)	**12,224**	**33,303**	**13,892**	**150**	**84,757**	**14,363**

Note: The sum of values may not equal total shown due to rounding.
Source: CARB 2012c.

3.3 GREENHOUSE GASES AND CLIMATE CHANGE

Global climate change is a change in the average weather of the earth, as measured by wind patterns, storms, precipitation, and temperature. The earth's climate is in a state of constant flux with periodic warming and cooling cycles. Extreme periods of cooling are termed "ice ages," which may then be followed by extended periods of warmth. For most of the earth's geologic history, periods of warming and cooling have resulted from many complicated interacting natural factors. Those factor include the following: volcanic eruptions that spew gases and particles (dust) into the atmosphere; the amount of water, vegetation, and ice covering the earth's surface; subtle changes in the earth's orbit; and the amount of energy released by the sun (sun cycles). Since the beginning of the Industrial Revolution around 1750, the average temperature of the earth's atmosphere has been increasing at a rate faster than can be explained by natural climate cycles alone.

The Industrial Revolution initiated an increase in the combustion of carbon-based fuels such as wood, coal, oil, natural gas, and biomass. Industrial processes have also created emissions of substances not found in nature. This in turn has led to a marked increase in the emissions of gases, which has influenced the world's climate. These gases, termed greenhouse gases (GHGs), affect the amount of heat trapped in the earth's atmosphere.

Ongoing scientific research has identified the potential impacts of anthropogenic (human-made) GHG emissions and changes in biological carbon sequestration stemming from land management activities on global climate. On a regional and global scale, GHG emissions to the atmosphere and net losses of stored biological carbon sinks through deforestation and agriculture cause a net warming of the atmosphere, primarily by decreasing the amount of heat energy radiated by the earth back into space. Although GHG levels have varied for millennia, recent industrialization and attendant burning of fossil fuels have caused concentrations of GHGs such as carbon dioxide (CO_2) and methane (CH_4) to increase dramatically. Concentrations are likely to contribute to overall global climatic changes. The Intergovernmental Panel on Climate Change concluded that "warming of the climate system is unequivocal" and "[m]ost of the observed increase in global average temperatures since the mid-20th century is very likely due to the observed increase in anthropogenic [GHG] concentrations" (IPCC 2007). Because the collective of human actions taking place throughout the world contribute to climate change, climate change is quintessentially a global or cumulative issue. It is important to note that GHGs will have a sustained climactic impact over different temporal scales.

Rainfall patterns are also affected by global climate change. Total annual precipitation and statewide rainfall patterns are anticipated to change little over the next century. The intensity and frequency of extreme storm events could increase (State of California 2006). Demand for water resources due to a growing economy and population is likely to continue to increase, potentially overstretching water supply. Agricultural areas such as the Imperial Valley would likely be the hardest hit, potentially losing 25 percent or more of needed water supply (State of California 2006). Land use changes may occur as agricultural productivity declines due to climate change and potential loss of water rights occur for Colorado River water (pers. comm., J.

Weigand 2012). Statewide average temperatures are anticipated to increase between 3°F and 10.5°F by 2100. There is a potential for a greater number of days with temperatures in the 90°F to 100°F range, if temperatures rise to the modeled higher warming ranges. Higher temperatures increase the risks to people of dehydration, heat stroke/exhaustion, heart attack, stroke, and respiratory distress caused by extreme heat. Higher temperature would also drive increased energy consumption needed for cooling.

Water would be needed for future maintenance of the solar facility. Use of water in this project may have to compete with use in other alternative energy projects nearby, other human needs for potable water, and use in food production, wildlife habitat and sustenance, and other basic ecosystem services.

3.3.1 APPLICABLE REGULATIONS, PLANS, AND POLICIES/MANAGEMENT GOALS

3.3.1.1 EPA REGULATORY INITIATIVES

The U.S. Supreme Court found on April 2, 2007, based on a petition for rulemaking under Section 202(a) filed by more than a dozen environmental and renewable energy organizations and other entities, that GHGs are air pollutants under the Clean Air Act. The Supreme Court held that the EPA must determine whether emissions of GHGs from new motor vehicles cause or contribute to air pollution that may reasonably be anticipated to endanger public health or welfare, or whether the science is too uncertain to make a reasoned decision. The EPA was required to follow the language of Section 202(a) of the Clean Air Act.

The EPA's thorough examination of the scientific evidence concluded that the science compellingly supports a positive endangerment finding for both public health and welfare. The EPA relied heavily upon the major findings and conclusions from recent assessments of the U.S. Climate Change Science Program and the Intergovernmental Panel on Climate Change. The EPA made this endangerment finding after considering both observed and projected future effects of climate change, key uncertainties, and the full range of risks and effects to public health and welfare occurring within the United States. The EPA issued a final rule on May 13, 2010 to apply Prevention of Significant Deterioration requirements to new facilities whose carbon dioxide-equivalent emissions exceed 100,000 tons per year (EPA 2012a).

3.3.1.2 OTHER FEDERAL GUIDANCE ON GREENHOUSE GASES AND CLIMATE CHANGE

Presidential EO 13514 expands energy reduction and environmental performance requirements for federal agencies identified in EO 13423. The goal of the EO is to establish an integrated strategy towards sustainability in the federal government and to make reduction of GHG emissions a priority for federal agencies. SOs 3226 and 3285 direct bureaus and offices within the DOI to provide leadership by responding in a timely manner to climate change issues and make development of renewable energy a priority. On September 14, 2009, Secretary of the Interior Ken Salazar issued SO 3289, addressing the impacts of climate change on domestic water, land, and other natural and cultural resources. The SO establishes an approach for

increasing understanding of climate change and responding to potential climate change-related impacts as relevant to the resources that the DOI manages. The document specifically identifies areas such as 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 SO 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 the DOI's purview.

3.3.1.3 SULFUR HEXAFLUORIDE EMISSION REDUCTION PARTNERSHIP FOR ELECTRIC POWER SYSTEMS

The Sulfur Hexafluoride (SF_6) Emission Reduction Partnership is an EPA voluntary industry program aimed at reducing greenhouse gas emissions associated with electric generation and transmission. The Partnership's primary objective is to reduce SF_6 emissions via cost-effective technologies and practices. Through improvements in the leak rate of new equipment, refurbishing of older equipment, and the use of more efficient operation and maintenance techniques, utilities often find economical solutions to reduce SF_6 emissions.

Industry partners agree to (EPA 2012b):

- estimate current annual SF_6 emissions;
- annually inventory emissions of SF_6 using an emissions inventory protocol;
- establish a strategy for replacing older, leakier pieces of equipment;
- implement SF_6 recycling;
- ensure that only knowledgeable personnel handle SF_6; and
- submit annual progress reports.

The EPA assists partners by:

- acting as a clearinghouse for technical information on successful strategies to reduce SF_6 emissions;
- providing partners with recognition for their achievements in reducing SF_6 emissions;
- serving as a credible repository for data on the emissions reduction achievements of the partners; and
- working to obtain commitments from all electric power system operators to join the partnership.

The partnership also produces annual reports. The Applicant is a member partner.

3.3.1.4 EO S-3-05—STATEWIDE GHG EMISSION TARGETS

EO S-3-05 signed by Governor Schwarzenegger on June 1, 2005, established the following GHG emission reduction targets for the state of California:

1. by 2010, reduce GHG emissions to 2000 levels
2. by 2020, reduce GHG emissions to 1990 levels
3. by 2050, reduce GHG emissions to 80 percent below 1990 levels

This EO also directs the secretary of the California EPA to oversee the efforts made to reach these targets and to prepare biannual reports on the progress made toward meeting the targets and on the impacts to California related to global warming, including impacts to water supply and public health. With regard to impacts, the report shall also prepare and report on mitigation and adaptation plans to combat the impacts. The first Climate Action Team Assessment Report was produced in March 2006 and has been updated every two years, most recently in December 2010.

3.3.1.5 CALIFORNIA GLOBAL WARMING SOLUTIONS ACT: ASSEMBLY BILL 32

California AB 32 mandates that the state report and verify its GHG emissions in order to reduce GHG emissions statewide to 1990 levels by the year 2020. To facilitate this, CARB is required to adopt a statewide emissions limit, adopt regulations to reduce the amount of GHG emissions, and monitor compliance. CARB is the lead agency for implementing AB 32, which set the major milestones for establishing the program.

Although CO_2 is the largest contributor to climate change, AB 32 references five additional GHGs: CH_4, nitrous oxide (N_2O), SF_6, hydrofluorocarbons (HFCs), and perfluorocarbons (PFCs). Key elements of California's recommendations for reducing its GHG emissions to 1990 levels by 2020 include the following:

- Setting targets for transportation-related GHG emissions for regions throughout California and pursuing policies and incentives to achieve those targets
- Adopting and implementing measures pursuant to existing state laws and policies, including California's clean car standards, goods movement measures, and the Low Carbon Fuel Standard
- Imposing targeted fees on high global warming potential (GWP) gases
- Implementing additional measures to address emissions from industrial sources. These proposed measures would regulate fugitive emissions from oil and gas recovery and transmission activities
- Imposing a high GWP mitigation fee, which is anticipated to promote the development of alternatives to GWP chemicals and improve recycling and removal of these substances when older units containing them are dismantled

CARB recommended a GHG reduction goal for local governments of 15 percent below current levels by 2020 to ensure that their municipal and community-wide emissions match the state's reduction target. AB 32 makes CARB responsible for monitoring and reducing GHG emissions and continues the existing Climate Action Team to coordinate statewide efforts. Additional requirements for CARB include the following:

- Establishing a statewide GHG emissions cap for 2020 based on 1990 emissions
  - In December 2007, CARB approved a 2020 emission limit of 427 million metric tons of CO_2 equivalent ($MMTCO_2E$).
- Adopting mandatory reporting rules for significant sources of GHGs
  - In December 2007, CARB adopted regulations requiring the largest industrial sources to report and verify their GHG emissions. Facilities began tracking emissions in 2008 with reporting based on best available data. Beginning in 2010, emissions reports became more rigorous and subject to third-party verification. This action builds on the earlier SB 177 (Sher) enacted in 2000, which established a nonprofit California Climate Action Registry for the purpose of administering a voluntary GHG emissions registry.
- Adopting a plan that indicates how emission reductions would be achieved from significant GHG sources via regulations, market mechanisms, and other actions
  - A Climate Change Scoping Plan was approved on December 12, 2008. The Scoping Plan contains the main strategies California will implement to achieve a reduction of 174 $MMTCO_2E$ GHG emissions, or approximately 29 percent from the state's projected 2020 emission level of 596 $MMTCO_2E$ under a "Business as Usual" scenario.
- Adopting regulations to achieve the maximum technologically feasible and cost-effective reductions in GHGs, including provisions for using both market mechanisms and alternative compliance mechanisms
- Convening an Environmental Justice Advisory Committee and an Economic and Technology Advancement Advisory Committee to advise CARB
  - In January 2007, the CARB appointed a 10-member Environmental Justice Advisory Committee and appointed members to the Economic and Technology Advancement Advisory Committee.
- Evaluating several factors prior to imposing any mandates or authorizing market mechanisms, including, but not limited to, impacts on California's economy, the environment, and public health; equity between regulated entities; electricity reliability and conformance with other environmental laws, as well as ensuring that the rules do not disproportionately impact low-income communities
- Adopting a list of discrete, early action measures to be implemented before January 1, 2010
- Ensuring public notice and opportunity for comment on all CARB actions
  - A number of CARB documents— including the 2020 Emissions Forecast, the Scoping Plan, and the Draft Recommended Approaches for Setting Interim Significance Thresholds—have been circulated for public review and comment.

3.3.1.5.1 Climate Change Scoping Plan

As directed by AB 32, the Climate Change Scoping Plan prepared by CARB in December 2008 and adopted by the Board's Executive Officer on May 11, 2009 includes measures to reduce statewide GHG emissions to 1990 levels by 2020. These reductions are what CARB identified as necessary to reduce forecasted Business as Usual 2020 emissions. CARB will update the Scoping Plan at least once every five years to allow evaluation of progress made and to correct the Scoping Plan's course where necessary.

As indicated in Table 3.3-1, the majority of reductions are directed at the sectors with the largest GHG emissions contributions—transportation and electricity generation—and involve statutory mandates affecting vehicle or fuel manufacture, public transit, and public utilities. As discussed later in Section 3.3.1.6, the measure most applicable to energy generation is the implementation of an RPS. Implementing this measure accounts for a reduction of 21.3 $MMTCO_2E$ emissions, or 14 percent, of the total 146.7 $MMTCO_2E$ in reductions needed for capped sectors.

TABLE 3.3-1
CARB SCOPING PLAN—RECOMMENDED GHG REDUCTION MEASURES

Recommended Reduction Measures	Reductions Counted Towards 2020 Target In $MMTCO_2E$	(% total[2])
Estimated Reductions Resulting from the Combination of Capped Sectors and Complementary Measures	**146.7**	
California Light-duty Vehicle Greenhouse Gas Standards	31.7	(22%)
• Implement Pavley Standards		
• Develop Pavley II light-duty vehicle standards		
Energy Efficiency	26.3	(18%)
• Building/appliance efficiency, new programs, etc.		
• Increase CHP generation by 30,000 gigawatts		
• Solar Water Heating (AB 1470 goal)		
RPS (33% by 2020)	21.3	(14%)
Low Carbon Fuel Standard	15.0	(10%)
Regional Transportation-related GHG Targets[1]	5.0	(4%)
Vehicle Efficiency Measures	4.5	(3%)
Goods Movement	3.7	(3%)
• Ship Electrification at Ports		
• System-wide Efficiency Improvements		
Million Solar Roofs	2.1	(2%)
Medium/Heavy Duty Trucks	1.4	(<1%)
• Heavy-duty Vehicle Greenhouse Gas Emissions Reduction (Aerodynamic Efficiency)		
• Medium- and Heavy-duty Vehicle Hybridization		
High Speed Rail	1.0	(<1%)
Industrial Measures (for sources covered under cap & trade program)	0.3	(<.5%)
• Refinery Measures		
• Energy Efficiency and Co-benefits Audits		
Additional Reductions Necessary to Achieve the Cap	34.4	(23%)

TABLE 3.3-1
CARB SCOPING PLAN—RECOMMENDED GHG REDUCTION MEASURES

Recommended Reduction Measures	Reductions Counted Towards 2020 Target In $MMTCO_2E$ (% total[2])
Estimated Reductions Resulting from Uncapped Sectors	**27.3**
Industrial Measures (for sources not covered under cap & trade program)	1.1
• Oil and Gas Extraction and Transmission	
High GWP Gas Measures	20.2
Sustainable Forests	5.0
Recycling and Waste (landfill methane capture)	1.0
Total Reductions Counted Toward 2020 Target[3]	**174.0**

Source: Table 2 of CARB 2008.

[1]This number represents an estimate of what may be achieved from local land use changes. It is not the SB 375 regional target. CARB will establish regional targets for each Metropolitan Planning Organization following input of the Regional Targets Advisory Committee and a public stakeholders' consultation process per SB 375.

[2]Percentages are relative to the capped sector subtotal of 146.7 $MMTCO_2E$, and may not total 100 due to rounding.

[3]The total reduction for the recommended measures slightly exceeds the 169 $MMTCO_2E$ of reductions estimated in the Business as Usual 2020 Emissions Forecast. This is the net effect of adding several measures and adjusting the emissions reduction estimates for some other measures.

CARB also lists several other recommended measures which will contribute toward achieving the 2020 statewide reduction goal, but whose reductions are not (for various reasons, including the potential for double counting) additive with the measures listed in Table 3.3-1 above. These include state and local government operations measures, green building, mandatory commercial recycling and other additional waste and recycling measures, water sector measures, and methane capture at large dairies.

In addition, the Climate Change Scoping Plan considers the following key strategies, among others:

Cap-and-Trade Program: Broad-based to provide a firm limit on emissions; covers 85 percent of California's emissions: electricity generation, large industrial sources, transportation fuels, and residential and commercial use of natural gas, and provides regional linkage with the Western Climate Initiative, allowing greater environmental and economic benefits

Transportation: GHG emission standards for cars, low-carbon fuel standard (10 percent by 2020), better land-use planning (SB 375), and more efficient delivery trucks, heavy duty trucks, and goods movement

Electricity and Energy (imported included): Improved appliance efficiency standards and other aggressive energy efficiency measures, 33 percent renewables by 2020, increased use of efficient "combined heat and power," million solar roofs, solar hot water heating, green buildings, and water efficiency

Industry (including cement): Audit of the 800 largest emission sources in California to identify GHG reduction opportunities; regulations on refinery flaring and fugitive emissions; considerations for cement to address "leakage"

High GWP Gases: Capture refrigerants and other high GWP gases already in use; reduce future impact through leak-resistant equipment, restrictions on use, and fees

Waste and Recycling: Reduce CH_4 emissions from landfills and move toward high recycling and zero waste

3.3.1.6 RENEWABLES PORTFOLIO STANDARD

The RPS promotes diversification of the state's electricity supply. Originally adopted in 2002 with a goal to achieve a 20-percent renewable energy mix by 2020, the goal has been accelerated and increased, most recently so by EOs S-14-08 and S-21-09 to a goal of 33 percent by 2020. Its purpose is to achieve a 33-percent renewable energy mix statewide; providing 33 percent of the state's electricity needs met by renewable resources by 2020 (CARB 2008). As mentioned, the RPS is included in CARB's Scoping Plan list of reduction measures (see Table 3.3-1). Increasing the RPS to 33 percent is designed to accelerate the transformation of the electricity sector, including investment in the transmission infrastructure and systems changes to allow integration of large quantities of intermittent wind and solar generation. Renewable energy includes (but is not limited to) wind, solar, geothermal, small hydroelectric, biomass, anaerobic digestion, and landfill gas. Increased use of renewables would decrease California's reliance on fossil fuels, thus reducing emissions of GHGs from the electricity sector. CARB estimates that full achievement of the RPS would decrease statewide GHG emissions by 21.3 $MMTCO_2E$ (CARB 2008).

3.3.2 GREENHOUSE GASES OF PRIMARY CONCERN

There are numerous GHGs, both naturally occurring and human-made. Table 3.3-2 summarizes some of the most common GHGs. Each GHG has variable atmospheric lifetime and GWP.

TABLE 3.3-2
GLOBAL WARMING POTENTIALS AND ATMOSPHERIC LIFETIMES (YEARS)

Gas	Atmospheric Lifetime	100-year GWP	20-year GWP	500-year GWP
CO_2	50–200	1	1	1
CH_4*	12±3	21	56	6.5
N_2O	120	310	280	170
SF_6	3,200	23,900	16,300	34,900

Source: EPA 2011, Annex 6.
*The methane GWP includes the direct effects and those indirect effects due to the production of tropospheric O_3 and stratospheric water vapor. The indirect effect due to the production of CO_2 is not included.

The atmospheric lifetime of a GHG is the average time that a molecule of gas stays stable in the atmosphere. Most GHGs have long atmospheric lifetimes, staying in the atmosphere hundreds or thousands of years. The potential of a gas to trap heat and warm the atmosphere is measured by its GWP. Specifically, GWP is defined as "the cumulative radiative forcing—both direct and

indirect effects—integrated over a period of time from the emission of a unit mass of gas relative to some reference gas" (EPA 2011). In other words, the GWP indicates the relative amount of heat that a particular gas can trap and store.

The reference gas for establishing GWP is CO_2, which—as shown in Table 3.3-2—consequently has a GWP of 1. As an example, CH_4, while having a shorter atmospheric lifetime than carbon dioxide, has a 100-year GWP of 21, which means that it has a greater global warming effect than CO_2 on a molecule-by-molecule basis.

Of the gases listed in Table 3.3-2, CO_2, CH_4, and N_2O are produced by both biogenic (natural) and anthropogenic (human) sources. The remaining gases occur solely as the result of human processes. HFCs are synthetic, human-made chemicals used as substitutes for O_3-depleting chlorofluorocarbons used in air conditioners and as refrigerants. PFCs such as CF_4 are used primarily in aluminum production and semiconductor manufacture. SF_6 is used for insulation in electric power transmission and distribution equipment. HFCs and PFCs are not of primary concern to the proposed project.

CO_2, CH_4, N_2O, and SF_6 are the GHGs of primary concern in this analysis. Carbon dioxide would be emitted by the proposed project due to the combustion of fossil fuels in vehicles during project construction and maintenance, from electricity generation and natural gas consumption, water use, and from solid waste disposal. Smaller amounts of methane and nitrous oxide would be emitted from these same project operations. SF_6 is not intentionally emitted to the atmosphere, but emissions could occur primarily as the result of equipment leaks or mishandling.

3.3.3 GREENHOUSE GASES EXISTING CONDITIONS

3.3.3.1 STATE GHG INVENTORIES

The CARB performs statewide GHG inventories. The inventory is divided into nine broad sectors of economic activity: agriculture, commercial, electricity generation, forestry, high GWP emitters, industrial, recycling and waste, residential, and transportation. Emissions are quantified in $MMTCO_2E$. Table 3.3-3 shows the estimated statewide GHG emissions for the years 1990, 2000, 2004, and 2008.

As shown in Table 3.3-3, statewide GHG emissions totaled 433 $MMTCO_2E$ in 1990, 458 $MMTCO_2E$ in 2000, 484 $MMTCO_2E$ in 2004, and 478 $MMTCO_2E$ in 2008. According to data from the CARB, it appears that statewide GHG emissions peaked in 2004 and are now beginning to decrease (CARB 2010). Transportation-related emissions consistently contribute the most GHG emissions, followed by electricity generation and industrial emissions.

TABLE 3.3-3
CALIFORNIA GHG EMISSIONS BY SECTOR IN 1990, 2000, 2004, AND 2008

Sector	1990 Emissions in $MMTCO_2E$ (% total)[1]	2000 Emissions in $MMTCO_2E$ (% total)[1]	2004 Emissions in $MMTCO_2E$ (% total)[1]	2008 Emissions in $MMTCO_2E$ (% total)[1]
Sources				
Agriculture	23.4 (5%)	25.44 (6%)	28.82 (6%)	28.06 (6%)
Commercial	14.4 (3%)	12.80 (3%)	13.20 (3%)	14.68 (3%)
Electricity Generation	110.6 (26%)	103.92 (23%)	119.96 (25%)	116.35 (24%)
Forestry (excluding sinks)	0.2 (<1%)	0.19 (<1%)	0.19 (<1%)	0.19 (<1%)
High GWP	--	10.95 (2%)	13.57 (3%)	15.65 (3%)
Industrial	103.0 (24%)	97.27 (21%)	90.87 (19%)	92.66 (19%)
Recycling and Waste	--	6.20 (1%)	6.23 (1%)	6.71 (1%)
Residential	29.7 (7%)	30.13 (7%)	29.34 (6%)	28.45 (6%)
Transportation	150.7 (35%)	171.13 (37%)	181.71 (38%)	174.99 (37%)
Unspecified Remaining[2]	1.3 (<1%)	--	--	--
Subtotal	*433.3*	*458.03*	*483.89*	*477.74*
Sinks				
Forestry Sinks	-6.7 (--)	-4.72 (--)	-4.32 (--)	-3.98 (--)
Total	**426.6**	**453.31**	**479.57**	**473.76**

Source: CARB 2007, 2010
[1] Percentages may not total 100 due to rounding.
[2] Unspecified fuel combustion and O_3-depleting substance substitute use, which could not be attributed to an individual sector.

3.4 GEOLOGY AND SOILS

This section describes the existing conditions associated with the soil composition, geology, and seismicity of the Ocotillo Sol Project area. Documents reviewed include maps from the United States Geological Survey (USGS), California Geological Survey (CGS), and the Southern California Earthquake Center. The soils within the Ocotillo Sol Project area are generally reflective of the underlying geologic unit(s). The geologic formation depends on the extent of weathering of the unit(s), which is governed by the ground surface slope, the long-term climate, vegetation cover, the degree of human modification, and time.

3.4.1 APPLICABLE REGULATIONS, PLANS, AND POLICIES/ MANAGEMENT GOALS

3.4.1.1 FEDERAL LAND POLICY AND MANAGEMENT ACT OF 1976 AS AMENDED

FLPMA establishes policy and goals for BLM's administration of public lands. The intent of FLPMA is to protect and administer public lands within the framework of a program of multiple use and sustained yield, and the maintenance of environmental quality. Particular emphasis is placed on the protection of the quality of scientific, scenic, historical, ecological, environmental, air and atmospheric, water resources and archaeological values. Under FLPMA, BLM is also charged with the protection of life and safety from natural hazards.

3.4.1.2 CALIFORNIA DESERT CONSERVATION AREA PLAN

The CDCA Plan defines Multiple Use Classes for BLM-managed lands in the CDCA, which includes the land area encompassing the Applicant's proposed Ocotillo Sol Project and alternatives. With respect to geological resources, the CDCA Plan aims to maintain the availability of mineral resources on public lands for exploration and development.

3.4.1.3 THE CALIFORNIA LAND CONSERVATION ACT OF 1965

The California Land Conservation Act of 1965, commonly referred to as the Williamson Act, was enacted to preserve California's prime agricultural lands from urbanization. The act has been amended several times to allow its use for purposes other than protection of prime agricultural lands, including enabling local governments to enter into contracts with private landowners for the purpose of restricting specific parcels of land to open space use.

3.4.1.4 ALQUIST–PRIOLO EARTHQUAKE FAULT ZONING ACT, PUBLIC RESOURCES CODE SECTION 2621–2630

The Alquist–Priolo Earthquake Fault Zoning Act of 1972 (formerly the Special Studies Zoning Act) regulates development and construction of buildings intended for human occupancy to avoid the hazard of surface fault rupture. This act mitigates the hazard of surface fault rupture of known active faults beneath occupied structures and requires disclosure to potential buyers of

existing real estate and a 50-foot setback for new occupied buildings. This act groups faults into categories of active, potentially active, and inactive. The proposed project area is not within a designated Alquist–Priolo Fault Zone.

3.4.1.6 SEISMIC HAZARDS MAPPING ACT, PRC SECTION 2690–2699

The Seismic Hazards Mapping Act of 1990 (Public Resources Code [PRC] Chapter 7.8, Division 2) directs the California Department of Conservation, Division of Mines and Geology (now CGS) to delineate Seismic Hazard Zones. The purpose of the Act is to reduce the threat to public health and safety and to minimize the loss of life and property by identifying and mitigating seismic hazards. These include areas identified as subject to the effects of strong ground shaking, such as liquefaction and landslides. Cities, counties, and state agencies are directed to use seismic hazard zone maps developed by CGS in their land-use planning and permitting processes. The Act requires that site-specific geotechnical investigations be performed prior to permitting most urban development projects within seismic hazard zones.

3.4.1.7 CALIFORNIA BUILDING CODE (2007)

The California Building Code (2007) includes a series of standards to be used in project investigation, design, and construction (including grading and erosion control). The California Building Code 2007 Edition is based on the 2006 International Building Code (excluding Appendix Chapter 1) as published by the International Code Council, with the addition of more extensive structural seismic provisions. Chapter 16 of the California Building Code contains definitions of seismic sources and the procedure used to calculate seismic forces on structures.

3.4.1.8 COUNTY OF IMPERIAL GENERAL PLAN—SEISMIC AND PUBLIC SAFETY ELEMENT

The Seismic and Public Safety Element of the County of Imperial General Plan contains goals and policies to minimize the risks associated with natural and human-made hazards including seismic/geological hazards and flood hazards.

3.4.2 EXISTING CONDITIONS

3.4.2.1 GEOLOGIC SETTING

3.4.2.1.1 Regional Geology

The Ocotillo Sol Project area lies within the Colorado Desert Geomorphic Province (CGS 2002). This province is dominated by the Salton Sea and the Salton Trough, a low-lying desert basin that ranges in elevation from 245 feet below mean sea level (msl) to 2,200 feet above msl. This province is essentially a depressed block between the alluvium-covered San Andreas Fault and the related San Jacinto and Elsinore Faults. The province contains the Imperial and Coachella valleys. Beach lines of Ancient Lake Cahuilla, alluvial fans, and alluvial valleys ring the Salton Sea (CGS 2002). The Salton Trough is a landward extension of the Gulf of California and ranges from a width of several miles at its northern end to almost 70 miles at the U.S.–Mexico

Border. The Salton Trough is bordered by mountains to the west, north, and east and by the Colorado River Delta in the south. The Colorado River Delta separates the Salton Trough from the Gulf of California. In the past, the Colorado River frequently changed its course. Rather than flowing southward and into the Gulf of California, it would flow northward and fill the Salton Trough up to 40 to 48 feet above msl before the water would breach the delta on the southern end and again flow into the Gulf of California (URS 2011).

3.4.2.1.2 Project Site Geology

The Ocotillo Sol Project area lies within the Yuha Desert of the lower Imperial Valley. The Westside Main Canal runs generally north–south and is east of the Ocotillo Sol Project area. Drainage within the general area typically flows in a northeasterly to easterly direction. The elevation of the Ocotillo Sol Project area varies from 6 feet to 24 feet above msl. This area is close to the maximum extent of the shoreline of Ancient Lake Cahuilla. Ancient Lake Cahuilla was an inland freshwater lake that underwent several drying and filling sequences as far back as 10,000 years before the present. The present-day Salton Sea was filled accidentally after a levee breach between 1905 and 1907. Based on mapping by Strand in 1962 (San Diego Gas & Electric 2010), the Ocotillo Sol Project area lies within Quaternary lake deposits (Ql) from Ancient Lake Cahuilla (URS 2008). These lake deposits are a variable mix of clay, sand, and beach gravel, depending on location, and contain locally abundant non-marine fossils. The Quaternary lake deposits have very low permeability (Ninyo and Moore 2010). Pinto Wash, located near the southeastern corner of the Ocotillo Sol Project area, contains alluvial deposits (URS 2011).

3.4.2.1.3 Faulting and Seismicity

The Imperial Valley has experienced historically high seismic activity along several known faults. No known faults exist on or in the immediate vicinity of the Ocotillo Sol Project area (URS 2011).

Imperial County can expect injuries, casualties, and property damage from earthquakes at some time in the future because of the past frequency of moderately high magnitude and intensity earthquakes, the distribution of active faults and epicenters, and the projected increase in human population. Imperial County's two largest recent quakes occurred in 1979 and 2010. The magnitude of the 1979 earthquake was 6.6 on the Richter Scale (Imperial County 1997). The magnitude of the 2010 earthquake was 7.2. Both quakes caused widespread damage in all municipalities of Imperial County.

Table 3.4-1 lists known earthquake faults within the vicinity of the Ocotillo Sol Project area according to the Southern California Earthquake Center and the Imperial Valley Substation Geotechnical Report (California Division of Mines and Geology 1990).

TABLE 3.4-1
KNOWN EARTHQUAKE FAULTS NEAR THE OCOTILLO SOL PROJECT AREA

Fault Name	Approximate Distance from the Ocotillo Sol Project Area and Direction	Moment Magnitude Scale
Laguna Salada–Elsinore	14 kilometers to the west	6.5 to 7.5
Yuha Wells	14 kilometers to the west	-
San Jacinto Fault Zone–Coyote Wells	20 kilometers to the north	6.5 to 7.5
Imperial	25 kilometers to the east	6.0 to 6.7

Data from Southern California Earthquake Center

Based on the Uniform Building Code Seismic Zone Maps of the U.S. and because of the number of active faults in the southern California area, the Ocotillo Sol Project area is in the highest seismic risk zone defined by the Uniform Building Code standard as Zone 4.

The Cerro Prieto geothermal field is at the head of the Gulf of California, 35 km south of the city of Mexicali. Cerro Prieto lies in an active continental rift that is transitional between the transform San Andreas fault system to the north and a spreading ridge of the East Pacific Rise in the Gulf of California to the south. The only surficial volcanic feature at Cerro Prieto (near sea level on the Colorado River delta) is a small, 223-meter-high compound dacitic lava dome. A 200-meter-wide crater is at the summit of the northeastern-most dome (Smithsonian Natural Museum of Natural History n.d.). Apparent ancient volcanism resulted in Mount Signal—an impressive landmark in the region.

3.4.2.1.4 Soils

Exposed soils associated with the Ocotillo Sol Project area were identified using the Natural Resources Conservation Service database available through the web soil survey (2011). The majority of the Ocotillo Sol Project area is occupied by Rositas fine sand. Rositas fine sand is found on basin floors and forms from alluvium or eolian deposits derived from mixed sources. Rositas sand and Rositas–Superstition loamy fine sands are the other two deposits occupying the proposed project site. Rositas sand is found on basin floors from alluvium derived from mixed sources. Soils exposed at the existing Imperial Valley Substation include Rositas sand and to a much lesser extent the Glenbar complex and the Indio–Vint complex. The Glenbar complex is exposed in the middle of the Ocotillo Sol Project area and a small part of the area not surveyed. This complex is formed of intricately mixed, very deep and well drained soils that formed in alluvial sediment of a mixed origin. They occur on tilted, folded, faulted unconsolidated stratified sediment along the edges of Imperial Valley. The Indio–Vint complex comprises nearly level soils found on flood plains and alluvial basin floors. This unit is actually composed of several soil groups that are so intricately mixed that they cannot be separated into their respective soil units.

Geotechnical borings near the Ocotillo Sol Project area encountered alluvial and lacustrine deposits. These deposits are layered and interlaced, consisting of alternating layers of clean sand, silty and clayey sand, silt, lean clay, and fat clay. The blow counts in these materials indicate medium dense sands in the alluvial layer and stiff silts and clays in the lacustrine deposits. Cross sections of the Ocotillo Sol Project area suggest significant inter-layering of soils and that subsurface conditions will vary significantly. It is recommended that additional

borings be taken throughout the Ocotillo Sol Project area to accurately evaluate soil characteristics necessary for engineering design (URS 2008).

3.4.2.2 GEOLOGIC HAZARDS

3.4.2.2.1 Fault Rupture

A factor considered in the seismic (earthquake) design of the proposed Ocotillo Sol Project is the location of active faults that may cross project structures. No active faults have been identified near the Applicant's proposed Ocotillo Sol Project area.

3.4.2.2.2 Ground Shaking

Earthquakes are the principal geologic activity affecting public safety in Imperial County. The ground shaking involved with earthquakes creates various secondary hazards. Secondary hazards include differential ground settlement; soil liquefaction, rock and mudslides, ground lurching, and avalanches; ground displacement along the fault; floods from dam and levee failure; fires; and disruption of water, sewer, gas, electricity, transportation, and communication systems. The irrigation and drainage system of Imperial Valley is particularly susceptible to earthquake damage (Imperial County 1997).

The intensity of the seismic shaking, or strong ground motion, during an earthquake is dependent on the distance between a project area and the epicenter (point at the earth's surface directly above the initial movement of the fault at depth) of the earthquake, the magnitude (seismic energy released) of the earthquake, and the geologic conditions underlying and surrounding the area. Earthquakes occurring on faults closest to the Ocotillo Sol Project area would most likely generate the largest ground motion.

The estimate of the intensity (local shaking strength; not to be confused with magnitude) of earthquake-induced ground motion based on an up-to-date assessment of potential earthquake faults or other sources is available. A commonly used benchmark is peak horizontal ground acceleration that is provided for probability of occurrence and represented as a fraction of the acceleration of gravity (g). The approximate estimated range of peak ground acceleration for a 10 percent probability of being exceeded in 50 years in the Applicant's proposed Ocotillo Sol Project area is between 0.50 and 0.60 g (CGS 2007). Seismic ground shaking can also induce settlement without liquefaction, such as within dry sands above the water table.

3.4.2.2.3 Liquefaction

Liquefaction occurs primarily in saturated, loose, fine to medium grained soils in areas where the groundwater table is within approximately 50 feet of the ground surface. Depth to groundwater beneath the vicinity of the proposed Ocotillo Sol Project area is reported to be at depths of approximately 45 to 50 feet (URS 2008). Shaking causes the soils to lose strength (that is, lose their ability to stick together) and behave as a liquid. Liquefaction, which can include loss of bearing strength (the ability to support a load such as a building foundation), lateral spreading, subsidence, and buoyancy effects, occurs when these sediments temporarily lose their shear strength during strong ground shaking. Susceptibility to liquefaction is a function of the sediment density, water content, depth, and the peak ground acceleration.

Imperial County is an area that is generally susceptible to liquefaction. The 1940 and 1979 earthquakes on the Imperial fault caused widespread liquefaction in areas underlain by alluvium, areas adjacent to canals and drains, and in areas underlain by lake deposits. These liquefiable sites contained predominantly loose sandy soils, or sequences of thick sandy layers within finer-grained soils (URS 2008). In addition, the geotechnical report identified a compactable layer, two to four feet thick at a depth of approximately 36 feet. During a seismic event, this layer may compact approximately one inch.

3.4.2.2.4 Land Subsidence

Land subsidence is normally the result of fluid withdrawal (such as groundwater or oil extraction or other mining activities), which creates subsurface voids, resulting in the sinking of the ground surface and loss of permeability in the soil. The Ocotillo Sol Project area is within a region of active subsidence because of regional faulting that could produce roughly 1.6 inches of settlement per year across the entire Salton Trough (URS 2008). Subsidence resulting from tectonic processes generally occurs over large areas and any localized differential settlement resulting from regional subsidence is considered low.

In addition, the Imperial Valley is also subject to subsidence from fluid withdrawal (generally associated with geothermal wells). Subsidence associated with the extraction of fluids generally occurs near geothermal areas. The Ocotillo Sol Project area is not near any active geothermal areas and the potential for subsidence is considered low.

3.4.2.2.5 Expansive Soils

Expansive soils are primarily comprised of clays, which increase in volume when water is absorbed and shrink when dry. Expansive soils are of concern because building foundations, concrete flatwork, and asphalt/concrete pavements may be prone to the potential swelling forces and reduction in soil strength. Towards the southern section of the Ocotillo Sol Project area, the soils are predominantly large deposits of granular material. An assumption of the soil cannot be made at this time as soil deposits vary from even adjacent sites. Expansive soils are not anticipated at this time for the Ocotillo Sol Project area (URS 2008).

3.4.2.2.6 Oil, Gas, and Geothermal Fields

The online California Department of Conservation, Department of Oil, Gas and Geothermal Resources database for the Ocotillo Sol Project area and vicinity was reviewed. The California Department of Conservation “Reference Map K” dated 1986 was also reviewed. No oil or gas wells or geothermal fields were depicted on the site or adjacent properties on the Regional Wildcat Map for the site vicinity (California Department of Conservation 2010).

3.5 WATER RESOURCES

3.5.1 APPLICABLE REGULATIONS, PLANS, AND POLICIES/MANAGEMENT GOALS

3.5.1.1 CLEAN WATER ACT

The Federal Water Pollution Control Act was passed in 1972 and was amended in 1977 as the Clean Water Act (CWA; 33 USC 1251-1376). The CWA was reauthorized in 1981, 1987, and 2000. The CWA provides guidance for the restoration and maintenance of the chemical, physical, and biological integrity of the nation's waters. Many pollutants are regulated under the CWA, including various toxic pollutants, total suspended solids, biological oxygen demand and pH (acidity/alkalinity measure scale).

3.5.1.1.1 Sections 301 and 402

Sections 301 and 402 of the CWA prohibit the discharge of pollutants (except for fill and dredged material, which are regulated under Section 401 and 404 of the CWA) from point sources to Waters of the U.S., unless authorized under a NPDES permit, issued by the EPA or by agencies in delegated states. The NPDES permit program has been delegated in California to the State Water Resources Control Board (WRCB). 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 U.S. must obtain a state certification that the discharge complies with other provisions of the CWA. The California Regional Water Quality Control Board (RWQCB)–Colorado River Region administers the NPDES permits under the CWA in the proposed Ocotillo Sol Project area.

3.5.1.1.2 Section 303 (d)

Section 303(d) of the CWA requires states, territories, and authorized tribes to develop a list of surface water bodies that are impaired for water quality. The waters on the list are designated as not meeting water quality standards, even after point sources of pollution have installed the minimum required levels of pollution-control technology. The law requires that priority rankings be established for waters on the list for the development of action plans, called Total Maximum Daily Loads, to improve water quality. Total Maximum Daily Loads are a calculation of the maximum amount of pollutant that a surface water body can receive and still safely meet water quality standards.

3.5.1.2 NATIONAL FLOOD INSURANCE PROGRAM

The Federal Emergency Management Agency (FEMA) administers the National Flood Insurance Program, a federal program enabling property owners in participating communities to purchase insurance protection against losses from flooding. In support of this program, FEMA identifies flood hazard areas throughout the U.S. and its territories by producing flood hazard boundary maps, flood insurance rate maps, and flood boundary and floodway maps. Participation in the National Flood Insurance Program is based on an agreement between communities and the federal government. The agreement states that if a community adopts and enforces a floodplain

management ordinance to reduce future flood risks to new construction in Special Flood Hazard Areas, the federal government will make flood insurance available to the community.

3.5.1.3 EXECUTIVE ORDER 11988 FLOODPLAIN MANAGEMENT

EO 11988 directs all federal agencies to avoid the long-term and short-term adverse impacts associated with the occupancy and modification of floodplains, and to avoid direct or indirect support of floodplain development wherever there is a practicable alternative.

3.5.1.4 CALIFORNIA PORTER–COLOGNE WATER QUALITY CONTROL ACT

The Porter–Cologne Water Quality Control Act of 1967, Water Code Section 13000 et seq. regulates surface water and groundwater within California and assigns responsibility for implementing CWA §401 through 402 and 303(d). It established the state WRCB and divided the state into nine regions, each overseen by a RWQCB, and requires the state WRCB and the nine RWQCBs to adopt water quality criteria to protect state waters. Those criteria include the identification of beneficial uses, narrative and numerical water quality standards, and implementation procedures. The state WRCB is the primary state agency responsible for protecting the quality of the state's surface and groundwater supplies, but much of its daily implementation authority is delegated to the nine RWQCBs. Water quality criteria for the Applicant's proposed Ocotillo Sol Project area are contained in the Water Quality Control Plan for the Colorado River Basin–Region 7. This plan sets numerical and/or narrative water quality standards controlling the discharge of wastes to the state's waters and land.

3.5.1.5 REGIONAL WATER QUALITY CONTROL BOARD

The California RWQCB is responsible for the administration of Section 401 of the CWA, and areas subject to RWQCB jurisdiction pursuant to the CWA coincide with those of the U.S. Army Corps of Engineers (USACE; i.e., Waters of the U.S., including any adjacent wetlands). In cases where potential Waters of the U.S. lack connectivity to a traditionally navigable water, RWQCB asserts authority over Waters of the State under waste discharge requirements pursuant to the Porter-Cologne Act. Waters of the State are defined under the Porter–Cologne Act as "any surface water or groundwater, including saline waters, within the boundaries of the state."

3.5.1.6 CALIFORNIA CONSTRUCTION GENERAL STORMWATER PERMIT

CWA §402 regulates construction-related stormwater discharges to surface waters through the NPDES program. In California, the EPA has delegated to the California WRCB the authority to administer the NPDES program through the RWQCBs and has developed a general permit for Stormwater Discharges Associated with Construction Activities, the Construction General Permit established July 1, 2010 (Water Quality Order 2009-0009 DWQ). Construction activities that disturb more than one acre are required to obtain an NPDES Construction General Permit from the California WRCB. Construction activity on the Ocotillo Sol Project area is subject to this permit, which includes clearing, grading, and disturbances to the ground, such as stockpiling

or excavation, but does not include regular maintenance activities performed to restore the original line, grade, or capacity of the facility. The General Permit requires the preparation and implementation of a SWPPP.

3.5.1.7 CALIFORNIA INDUSTRIAL STORMWATER PROGRAM

Industrial activities, including electrical power generating facilities, in California with the potential to impact stormwater discharges are required to obtain an Industrial Stormwater General Permit, Order 97-03-DWQ (General Industrial Permit CAS 000001). The Industrial Stormwater General Permit requires the implementation of management measures that will protect water quality. In addition, the discharger must develop and implement a SWPPP and a monitoring plan. The monitoring plan requires sampling of stormwater discharges during the wet season and visual inspections during the dry season. A report must be submitted to the RWQCB each year by July 1 documenting the status of the program and monitoring results.

3.5.1.8 IMPERIAL COUNTY GENERAL PLAN

The County of Imperial General Plan Water Element contains policies for the protection of county groundwater and surface water from toxic or hazardous materials and wastes. The Water Element also has policies for the effective and efficient management of water resources through interagency and inter-jurisdictional coordination and cooperation. The Conservation and Open Space Element of the General Plan has water-related policies that prohibit structural development within designated floodways.

3.5.2 EXISTING CONDITIONS

The Ocotillo Sol Project area is in a relatively flat desert area within the larger Yuha Desert region, and is surrounded by large agricultural fields (north and east) and desert habitat (west and south). The area is very sparsely populated. The Westside Main Canal runs generally north–south and lies east of the Ocotillo Sol Project area. Drainage within the general area typically flows in a northeasterly to easterly direction.

3.5.2.1 SURFACE WATER RESOURCES

The Ocotillo Sol Project area lies within the western portion of the Imperial Valley. Surface waters within the Imperial Valley mostly drain toward the Salton Sea. The New and Alamo rivers convey agricultural irrigation drainage water from farmlands in the Imperial Valley, surface runoff, and lesser amounts of treated municipal and industrial wastewaters from the Imperial Valley. Average annual precipitation is approximately less than three inches in the project vicinity (Imperial County 2006). Colorado River water via the All American Canal is the predominant water supply for the Imperial Valley and is used for irrigation, industrial, and domestic purposes. The nearest permanent surface water body is the Westside Main Canal, which is approximately 0.5 mile northeast of the Ocotillo Sol Project area.

Water enters the Ocotillo Sol Project area in the form of direct precipitation (rainfall). Although no surface water was present on the Ocotillo Sol Project area during the site surveys, evidence of surface water flows from previous rainfall events was observed in the southeast corner. Pinto

Wash, located off-site and south of the Ocotillo Sol Project area, is a well-defined ephemeral desert wash conveying seasonal runoff. A survey conducted by LSA Associates, Inc. determined that no Waters of the U.S. are present within the Ocotillo Sol Project area (2010).

Limited water use would be required for the proposed Ocotillo Sol Project during construction and operation (San Diego Gas & Electric 2010). Possible water sources for construction include the following:

Surface water sourced from the Imperial Irrigation District and trucked to the Ocotillo Sol Project area

Surface water from municipal water systems in the Ocotillo Sol Project area and trucked to the site

A determination and assessment of the expected water source will be included in the Final EIS.

3.5.2.2 GROUNDWATER RESOURCES

The Ocotillo Sol Project area is within the Imperial Valley Groundwater Basin, which comprises approximately 1,870 square miles within Imperial County. The Ocotillo Sol Project area is within the Imperial Hydrologic Unit. Within this unit, groundwater is stored in the Pleistocene sediments of the valley floor, the mesas on the west (West Mesa groundwater recharge area), and the East Mesa and Imperial Sand Dunes on the east. The fine-grained lake sediments in the central portion of Imperial Valley inhibit groundwater movement, and tile-drain systems are used to dewater sediments to a depth below the root zone of crops and to prevent the accumulation of saline water on the surface (Imperial County 2006).

Few wells have been drilled in these lake sediments because the yield is poor and the water is generally saline. These wells in the Imperial Valley are for domestic use only. Factors that diminish groundwater reserves are consumptive use, evapotranspiration, evaporation from soils where groundwater is near the surface, and losses through outflow and export.

The Imperial Valley Groundwater Basin has two major aquifers, separated at depth by a semi-permeable aquitard that averages 60 feet thick and reaches a maximum thickness of 280 feet (California Department of Water Resources 2004). The aquifers consist mostly of alluvial deposits of late Tertiary and Quaternary age. Average thickness of the upper aquifer is 200 feet with a maximum thickness of 450 feet. The lower aquifer averages 380 feet thick with a maximum thickness of 1,500 feet. As much as 80 feet of fine-grained, low-permeability prehistoric lake deposits have accumulated on the nearly flat valley floor and cause locally confined aquifer conditions (California Department of Water Resources 2004).

3.5.2.3 FLOOD CONTROL

Flood zone information for the Ocotillo Sol Project area is delineated on the FEMA Flood Insurance Rate Maps. The FEMA community-level floodplain maps were created during the late 1970s through the early 1980s to identify 100-year floodplains, 500-year floodplains, and estimated flood depths. Flood zones are geographic areas that FEMA has defined according to varying levels of flood risk. There are two flood zones in the vicinity, Flood Zone X and Flood

Zone A. Areas designated as Flood Zone X are those with minimal flood hazard. These areas have a 0.2 percent annual chance of flooding (also known as the 500-year flood event). Areas designated as Flood Zone A are those with a high risk of flooding. These areas have a 1 percent annual chance of flooding (also known as the 100-year flood event).

The Ocotillo Sol Project area is within Flood Zone X and outside of the 100-year floodplain (Flood Zone A; FEMA 2011). The southern limits of the Ocotillo Sol Project area are approximately 2,000 feet from the nearest Flood Zone A designation. Portions of the area south of the Ocotillo Sol Project area would be subject to Flood A conditions (i.e., within the 100-year flood event). These portions include existing agricultural fields to the southeast. Based on historical aerial photos of the area, these agricultural fields have been present since at least 2005. Recent aerial photographs of the area seem to indicate that flows from Pinto Wash do not flow across the existing agricultural fields, but rather flow through the area in a northeastern and southeastern path around the agricultural fields. FEMA has updated the floodplain data for this area, which became effective August 2008. Because the floodplain data has been updated to incorporate previously approved map amendments and data from flooding that has occurred, it is anticipated that this area southeast of the Ocotillo Sol Project site would still be subject to 100-year flood despite the presence of the agricultural fields and berms.

3.5.2.4 WATER QUALITY

The Ocotillo Sol Project area is within the unincorporated area of Imperial County and under the jurisdiction of the RWQCB–Colorado River Region (Region 7; RWQCB 2005). In general, groundwater within the Imperial Valley groundwater basin is unusable for domestic and irrigation uses without treatment.

Groundwater in the area is not used for municipal or domestic supply and there are no nearby wells. In the western section of the valley, water quality varies widely. Almost all of the wells in Coyote Valley have total dissolved solids concentrations below 500 milligrams per liter. West Mesa wells have levels between 1,800 and 5,200 milligrams per liter (Imperial County 2006; California Department of Water Resources 2004).

3.6 BIOLOGICAL RESOURCES

3.6.1 APPLICABLE REGULATIONS, PLANS, AND POLICIES/ MANAGEMENT GOALS

3.6.1.1 FEDERAL ENDANGERED SPECIES ACT

The federal Endangered Species Act (ESA) of 1973 (16 USC 1531-1543) and subsequent amendments establish legal requirements for the conservation of endangered and threatened species and the ecosystems upon which they depend. Under the ESA, as amended, an endangered species is defined as any species in danger of extinction throughout all or a significant portion of its range. A threatened species is defined as any species likely to become an endangered species in the foreseeable future throughout all or a significant portion of its range.

The U.S. Fish and Wildlife Service (USFWS) and National Marine Fisheries Service share responsibilities for administering the ESA. Section 7 of the ESA directs all federal agencies to use their existing authorities to conserve threatened and endangered species and, in consultation with the USFWS, to ensure that their actions do not jeopardize listed species or destroy or adversely modify critical habitat. Regulations governing interagency cooperation under Section 7 are found at 50 CFR, Part 402.

Section 9 of the ESA lists those actions that are prohibited under the ESA, including take (i.e., to harass, harm, pursue, hunt, wound, or kill) of listed species of fish and wildlife without special exemption. Harm is defined to include significant habitat modification or degradation that results in death or injury to listed species by significantly impairing behavioral patterns such as breeding, feeding, or shelter. Harass is defined as actions that create the likelihood of injury to listed species to an extent as significantly disrupt normal behavior patterns, which include breeding, feeding, and shelter.

3.6.1.2 MIGRATORY BIRD TREATY ACT

The MBTA (USC Title 16, Chapter 7, Subchapter II, Sections 703–712), as amended, governs take, possession, import, export, transport, selling, purchasing, or bartering of migratory birds, their eggs, parts, and nests, except as authorized under a valid permit (50 CFR 21.11). The take of all migratory birds is governed by the MBTA's regulation of taking migratory birds for educational, scientific, and recreational purposes, and requiring harvests to be limited to levels that prevent over-utilization. Section 704 of the MBTA states that the Secretary of the Interior is authorized and directed to determine if, and by what means, the take of migratory birds should be allowed and to adopt suitable regulations permitting and governing take but ensuring that take is compatible with the protection of the species.

Most native bird species are protected under the MBTA and under the California Fish and Game Code. It is unlawful to take, possess, or needlessly destroy any bird, nest, or egg of any bird species protected under the MBTA except as otherwise provided in California Fish and Game

Codes and regulations. Disturbances at the active nesting territories should be avoided during the nesting season, typically February through August.

BLM's responsibility under the MBTA was clarified in a Memorandum of Understanding with the USFWS pursuant to EO 13186 (BLM 2010).

3.6.1.3 BALD AND GOLDEN EAGLE PROTECTION ACT

Under the authority of the Bald and Golden Eagle Protection Act (16 USC 668-668d), bald eagles and golden eagles are afforded additional legal protection. Take under this statute is defined as "pursue, shoot, shoot at, poison, wound, kill, capture, trap, collect, or molest or disturb." Disturb is defined as "to agitate or bother a bald or golden eagle to a degree that causes, or is likely to cause, based on the best scientific information available, 1) injury to an eagle, 2) a decrease in its productivity, by substantially interfering with normal breeding, feeding, or sheltering behavior" (50 CFR § 22.3). If a proposed project or action would occur in areas where nesting, feeding, or roosting eagles occur, then project proponents may need to incorporate additional conservation measures into projects to achieve compliance with the Bald and Golden Eagle Protection Act and applicable regulations, guidance, and policies.

3.6.1.4 PLANT PROTECTION ACT

The Plant Protection Act (Public Law 106-224 [June 20, 2000]) replaced the Federal Noxious Weed Act and many other U.S. Department of Agriculture Animal and Plant Health Inspection Service Plant Protection Authorities. This Act consolidates and modernizes all major statutes pertaining to plant protection and quarantine (Federal Noxious Weed Act, Plant Quarantine Act). The noxious weed list for California is available from the Natural Resource Conservation Service.

3.6.1.5 EXECUTIVE ORDER 13112 INVASIVE SPECIES

EO 13112 defines invasive species and provides the authority for federal agencies to prevent the introduction of invasive species and provide for their control and to minimize the economic, ecological, and human health impacts that invasive species cause.

3.6.1.6 CLEAN WATER ACT

The CWA (33 USC 1251-1376) establishes legal requirements for the restoration and maintenance of the chemical, physical, and biological integrity of the nation's waters. Section 401 of the CWA requires that an applicant for a federal license or permit that allows activities resulting in a discharge to waters of the U.S. must obtain a state certification that the discharge complies with other provisions of the CWA. The RWQCBs administer the certification program in California.

Section 404 of the CWA establishes a permit program administered by USACE regulating the discharge of dredged or fill material into waters of the U.S., including wetlands. Implementing regulations by USACE are found at 33 CFR Parts 320-330. Guidelines for implementation are referred to as the Section 404(b)(1) Guidelines and were developed by the EPA in conjunction

with USACE (40 CFR Parts 230). The guidelines allow the discharge of dredged or fill material into the aquatic system only if there is no practicable alternative that would have less adverse impacts.

3.6.1.7 EXECUTIVE ORDER 11988 FLOODPLAIN MANAGEMENT

EO 11988 directs all federal agencies to avoid the long-term and short-term adverse impacts associated with the occupancy and modification of floodplains, and to avoid direct or indirect support of floodplain development wherever there is a practicable alternative.

3.6.1.8 EXECUTIVE ORDER 11990 PROTECTION OF WETLANDS

EO 11990 directs all federal agencies to avoid to the extent possible the long- and short-term adverse impacts associated with the destruction or modification of wetlands and to avoid direct or indirect support of new construction in wetlands wherever there is a practicable alternative.

3.6.1.9 CALIFORNIA DESERT CONSERVATION AREA PLAN

The Wildlife Element of the CDCA Plan contains objectives and goals designed to:

Manage federally and state-listed species and their habitats

Comply with existing legislation and BLM policies

Provide certain species designated as sensitive by the BLM special consideration and attention in the planning process

Consider the habitat of all fish and wildlife in implementing the CDCA Plan

Manage representative habitats using a holistic approach

Give habitats unique to the CDCA special management consideration and manage them so as to maintain their unique biological characteristics

Manage sensitive habitat using a holistic, systems-type approach

Some examples of sensitive habitats include riparian areas, wetlands, sand dunes, relict and island habitats, washes, and important ecological zones between different major ecosystems and deserts. The primary active wildlife management tools used in the CDCA Plan are ACECs and Habitat Management Plans. The CDCA Plan also affords protection to fish and wildlife resources through the designation of Multiple Use Class L, which limits the number and location of routes that are approved. The proposed Ocotillo Sol Project area falls within the Yuha Basin ACEC of the CDCA, and is within the Utility Corridor N, as designated by the CDCA.

3.6.1.10 FLAT-TAILED HORNED LIZARD RANGEWIDE MANAGEMENT STRATEGY

The Flat-tailed Horned Lizard Interagency Coordinating Committee's 2003 *Flat-tailed Horned Lizard Rangewide Management Strategy* designated five Management Areas to help focus conservation and management of flat-tailed horned lizard key populations. For disturbances over

10 acres, the Interagency Coordinating Committee and Management Oversight Group must be contacted for concurrence.

The CDCA Plan was amended in 2004 for the adoption of the *Flat-tailed Horned Lizard Rangewide Management Strategy, 2003 Revision, An Arizona-California Conservation Strategy*. The purpose of this strategy is to provide a framework for conserving sufficient habitat to maintain four viable populations of the flat-tailed horned lizard throughout the species' range. Planning actions and prescriptions that guide the management of lands within the designated management areas are designed primarily to reduce new surface disturbance and to promote reclamation of disturbed sites. The strategy provides mitigation measures (Appendix 3 of the strategy) and a compensation formula (Appendix 4 of the strategy), to be incorporated into all authorized surface-disturbing projects where applicable.

3.6.1.11 CALIFORNIA ENDANGERED SPECIES ACT

The California ESA (California Fish and Game Code, Division 3, Chapter 1.5, Sections 2050–2115) is administered by the California Department of Fish and Game (CDFG) and prohibits the take of plant and animal species identified as either threatened or endangered in California by the Fish and Game Commission. Take is defined as hunt, pursue, catch, capture, or kill. Sections 2091 and 2081 of the California ESA allow CDFG to authorize exceptions to the prohibition of take of the state-listed threatened or endangered plant or animal species for purposes such as public and private development. The CDFG requires formal consultation to ensure that a proposed project's actions would not jeopardize the continued existence of any listed species or destroy or adversely affect listed species' habitats.

3.6.1.12 NATIVE PLANT PROTECTION ACT

California's Native Plant Protection Act (Fish and Game Code 1900-1913) requires all state agencies to use their authority to carry out programs to conserve endangered and rare native plants. Provisions of the Native Plant Protection Act prohibit the taking of listed plants from the wild and require notification of the CDFG at least 10 days in advance of any change in land use. This allows CDFG to salvage listed plant species that would otherwise be destroyed.

3.6.1.13 CALIFORNIA FISH AND GAME CODE, SECTIONS 1600–1616

Under these sections of the Fish and Game Code, CDFG jurisdiction is determined to occur within the water body of any natural river, stream, or lake. The term stream, which includes creeks and rivers, is defined in Title 14, California Code of Regulations, Section 1.72. An applicant is required to notify CDFG prior to constructing any project that would divert, obstruct, or change the natural flow, bed, channel, or bank of any river, stream, or lake. Preliminary notification and project review generally occur during the environmental process. When an existing fish or wildlife resource may be substantially adversely affected, CDFG is required to propose reasonable project changes to protect the resource. These modifications are formalized in a Streambed Alteration Agreement that becomes part of the plans, specifications, and bid documents for a project.

3.6.1.14 PORTER-COLOGNE WATER QUALITY CONTROL ACT

The Porter–Cologne Water Quality Control Act (California Water Code, Division 7, Sections 13000–14958) provides for statewide coordination of water quality regulations. The Act established the California State Water Resources Control Board as the statewide authority and nine separate RWQCBs to oversee water quality on a day-to-day basis at the regional/local level.

3.6.1.15 CALIFORNIA FISH AND GAME CODE 3503.5

Raptors (birds of prey) and active raptor nests are protected by the California Fish and Game Code 3503.5, which states that it is "unlawful to take, possess, or destroy any birds of prey or to take, possess, or destroy the nest or eggs of any such bird" unless authorized.

3.6.1.16 CALIFORNIA FISH AND GAME CODE 3503

Bird nests and eggs are protected by the California Fish and Game Code 3503, which states "it is unlawful to take, possess, or needlessly destroy the nest or eggs of any bird, except as otherwise provided by this code or any regulation made pursuant thereto."

3.6.1.17 CALIFORNIA FISH AND GAME CODE 3513

Protects California's migratory birds by making it unlawful to take or possess any migratory nongame bird as designated in the MBTA or any part of such migratory nongame birds.

3.6.1.18 STATE OF CALIFORNIA FULLY PROTECTED SPECIES

The classification of Fully Protected was the state's initial effort in the 1960s to identify and provide additional protection to those animals that were rare or faced possible extinction. Lists were created for fish, mammals, amphibians and reptiles, birds and mammals. Most fully protected species have also been listed as threatened or endangered species under ESA and/or California ESA. Fully protected species may not be taken or possessed at any time, and no licenses or permits may be issued for their take except for collecting these species for necessary scientific research and relocation of the bird species for the protection of livestock.

3.6.1.19 IMPERIAL COUNTY GENERAL PLAN

The Imperial County General Plan Conservation and Open Space Element provides detailed plans and measures for the preservation and management of biological and cultural resources, soils, minerals, energy, regional aesthetics, air quality, and open space. The purpose of the Conservation and Open Space Element is to promote the protection, maintenance, and use of natural resources within the county with particular emphasis on scarce resources and to prevent wasteful exploitation, destruction, and neglect of the state's natural resources. The primary purpose of Conservation and Open Space Element is to recognize that natural resources must be maintained for their ecological value for the direct benefit to the public, protect open space for the preservation of natural resources, the managed production of resources, outdoor recreation, and for public health and safety (Imperial County 2011).

3.6.2 METHODOLOGY

LSA biologists conducted on-site assessments to identify and document botanical and wildlife species, map jurisdictional areas and natural communities, and evaluate suitability of habitat for various special status species (see Appendix C; Appendixes F–H). From October 2009 through the spring of 2010, the study area consisted of approximately 350 acres (hereafter referred to as the spring survey area or original study area) east, south, and west of the existing substation. After the project was refined to avoid and minimize impacts to biological and cultural resources, the survey area was reduced to approximately 142 acres (herein referred to as the fall survey area) primarily located south of the substation. The fall survey area included the Ocotillo Sol Project area (115 acres) surrounded by a 150-foot buffer in undeveloped areas (Figure 3.6-1 in Appendix A). Surveys conducted by LSA are described below.

General Biological Survey and Vegetation Mapping. Reconnaissance-level field surveys of the spring survey area were conducted on October 26 and 27, and November 30, 2009, to evaluate habitat for special status species and to map natural communities. Natural communities were classified according to the *CDFG Biogeographic Data Branch Vegetation Classification and Mapping Program, List of California Vegetation Alliances* (see Appendix C), and mapped using global positioning system (GPS) units and geographic information systems (GIS) software.

Protocol Rare Plant Surveys. The rare plant surveys were conducted in accordance with BLM guidance by biologists qualified to conduct botanical surveys. All plant taxa observed were documented and identified at least to the taxonomic level required to determine rarity status. The survey consisted of three survey periods in 2010 (see Appendix F).

Protocol Flat-tailed Horned Lizard Survey. Protocol surveys for flat-tailed horned lizard were conducted on September 23, 2009, by Natural Resources Assessment, Inc. (NRA) and LSA.

Protocol Burrowing Owl Survey. In October 2009 and May 2010, LSA conducted six field visits to the 350-acre spring survey area. Protocol-level burrowing owl surveys were conducted in accordance with the California Burrowing Owl Consortium's 1993 *Burrowing Owl Survey Protocol and Mitigation Guidelines*, which included a preliminary burrow survey in 2009 followed by subsequent focused breeding season surveys in 2010 (see Appendix C).

Avian Point-count Survey. LSA conducted focused avian point-count surveys in accordance with the BLM Solar Facility Point Count Protocol (2009). Winter surveys were conducted on November 11, 18, and 30 and December 7, 2010. Spring surveys were conducted on March 2, 11, 18, and 25, 2011. The area under consideration is the Ocotillo Sol Project area (115 acres) plus a 150-foot buffer (27 acres), which totals approximately 142 acres (see Appendixes G and H). Data from avian surveys conducted in nearby areas were also considered (BLM and County of Imperial 2011).

Jurisdictional Delineation and Mapping. On October 26, 2009, LSA conducted a field survey of areas considered potentially jurisdictional by USACE pursuant to Section 404 of the CWA, the RWQCB pursuant to Section 401 of the CWA, or the Porter–Cologne Act and the CDFG pursuant to Section 1600 et seq. of the California Fish and Game Code within the approximately 350-acre original study area. Areas of potential jurisdiction were evaluated according to current

USACE and CDFG criteria. USACE wetland delineation procedures, including excavation of sample pits and wetland data sheets, were not completed because no federally regulated Waters of the U.S. were identified within the 142-acre fall survey area (see Appendix C).

3.6.3 VEGETATION RESOURCES

3.6.3.1 NATURAL COMMUNITIES AND FLORA

The only natural community on the 115-acre Ocotillo Sol Project area is the *Larrea tridentata–Ambrosia dumosa* Alliance (see Figure 3.6-1 in Appendix A; see also Appendix C). This community is dominated by creosote bush (*Larrea tridentata*), burrobush (*Ambrosia dumosa*), Panamint cryptantha (*Cryptantha angustifolia*), desert Indianwheat (*Plantago ovata*), and common Mediterranean grass (*Schismus barbatus*). Creosote bush, as well as a few other native perennial shrubs such as burrobush, is common throughout most of the Ocotillo Sol Project area, but sparse in areas of greater disturbance. The shrub layer, which contains most of the plant biomass and vegetative cover suitable for wildlife use, is dominated by native shrubs, principally creosote bush. The herbaceous layer is generally sparse and dominated by annual species; primarily desert Indianwheat, Panamint cryptantha, and common Mediterranean grass.

Pinto Wash is south of the Ocotillo Sol Project area, but within the 142-acre survey area. The predominant natural community in Pinto Wash is the *Larrea tridentata* Alliance, which is dominated by creosote bush, Panamint cryptantha, and common Mediterranean grass. The *Psorothamnus spinosus* Alliance occupies a smaller portion of Pinto Wash, and is dominated by smoketree (*Psorothamnus spinosus*), cryptantha (*Cryptantha* sp.), common Mediterranean grass, and desert sand verbena (*Abronia villosa* var. *villosa*). The *Psorothamnus spinosus* Alliance in Pinto Wash (see Figure 3.6-1 in Appendix A) is a "rare or unusual plant community" as defined in the BLM plant survey protocol. This natural community is within the LSA spring survey area, but is not within the fall survey area or within the 115-acre Ocotillo Sol Project area.

A *Tamarix aphylla* semi-natural non-native stand occurs in the northern portion of the 350-acre spring survey area just east of the existing substation. This vegetation type is dominated by athel (*Tamarix aphylla*), cryptantha, creosote bush, and common Mediterranean grass.

A list of all plant species identified within the survey area is found in the Biological Resources Technical Report (see Appendix C).

3.6.3.2 SPECIAL STATUS PLANTS

Based on analysis of species ranges and habitat requirements, it was determined that the Ocotillo Sol Project area may provide potentially suitable habitat for the following species, which became the target species of the focused plant survey:

Chaparral sand-verbena (*Abronia villosa* var. *aurita*)

Harwood's milk-vetch (*Astragalus insularis* var. *harwoodii*)

Emory's crucifixion-thorn (*Castela emoryi*)

Abrams' spurge (*Chamaesyce abramsiana*)

Baja California ipomopsis (*Ipomopsis effusa*)

Brown turbans (*Malperia tenuis*)

Hairy stickleaf (*Mentzelia hirsutissima*)

Slender woolly-heads (*Nemacaulis denudata* var. *gracilis*)

Thurber's pilostyles (*Pilostyles thurberi*)

3.6.3.2.1 Thurber's pilostyles

One target species, Thurber's pilostyles (*Pilostyles thurberi*), was found within the 350-acre spring survey area, but outside of the 142-acre fall survey area (see Figure 3.6-1 in Appendix A) and Ocotillo Sol Project area. Thurber's pilostyles is not a special status species (as defined in the BLM plant survey protocol) and is not considered sensitive, but is monitored by the California Native Plant Society as a List 4.3 species. The other target species were not detected, and are determined to be absent at this time as summarized in Appendix A of the Biological Resources Technical Report (see Appendix C). The plant survey report is attached as Appendix F.

No special status plant species were observed within the spring survey area. Based on the level of disturbance within the survey area and the results of the focused rare plant surveys, no special status plant species are expected to occur within the survey area, and none are expected to occur within the Ocotillo Sol Project impact area.

3.6.3.3 RIPARIAN HABITAT OR SENSITIVE NATURAL COMMUNITIES

Sensitive vegetation communities are those that are considered rare or sensitive based on the level of disturbance or habitat conversion within their range. Vegetation communities associated with wetland or riparian habitats such as the smoketree vegetation in Pinto Wash are considered sensitive by CDFG (see Appendix C), but fall outside of the 115-acre Ocotillo Sol Project area.

BLM policy under Manual 6840 (Section .22C) states that conservation of plants and animals and their habitats will be conducted to reduce, mitigate, and possibly eliminate the need for their identification as a special status species. The *Larrea tridentata–Ambrosia dumosa* vegetation within the Ocotillo Sol Project area is considered occupied by the flat-tailed horned lizard and conservation measures under BLM guidelines would apply (BLM 2001).

3.6.3.4 NOXIOUS, INVASIVE, AND NON-NATIVE WEEDS

Invasive weeds are generally considered plants that are capable of rapid, unchecked growth and spread into areas where the plants are not desirable and are capable of causing harm to the environment. For the purpose of this document, weeds are defined as any plant included on the federal noxious weed list (U.S. Department of Agriculture 2010), the California Department of Feed and Agriculture (CDFA) Noxious weed list (CDFA 2010) and/or is included in the California Invasive Plant Council's Invasive Plant Inventory (Cal-IPC 2012). The spread of weeds results in impacts to agricultural resources and wildland natural resources by displacing crops and native species, increasing the risk and intensity of wildfires, and altering habitat structure and functions.

No federally listed noxious weeds were observed during the botanical surveys. Four non-native plants were identified that are included on the CDFA noxious weed list and/or the Cal-IPC Invasive Plant Inventory (Table 3.6-1).

TABLE 3.6-1
NON-NATIVE PLANT SPECIES OBSERVED WITHIN THE 115-ACRE OCOTILLO SOL PROJECT AREA

Scientific Name	Common Name	Cal-IPC Ranking	CDFA Ranking
Asteraceae	Sunflower family		
Lactuca serriola	Prickly lettuce	No ranking	No ranking
Sonchus oleraceus	Common sow thistle	No ranking	No ranking
Brassicaceae	Mustard family		
Brassica tournefortii	Sahara mustard	High	No ranking
Chenopodiaceae	Saltbush family		
Chenopodium murale	Nettleleaf goosefoot	No ranking	No ranking
Tamaricaceae	Tamarisk family		
Tamarix aphylla	Athel	Limited	No ranking
Tamarix ramosissima	Mediterranean tamarisk	High	B; state-listed noxious
Poaceae	Grass family		
Schismus barbatus	Common Mediterranean grass	Limited	No ranking

3.6.4 WILDLIFE

3.6.4.1 GENERAL WILDLIFE

The primary natural community within the Ocotillo Sol Project area is the *Larrea tridentata–Ambrosia dumosa* Alliance, which provides suitable habitat for a variety of native wildlife species. In the vicinity of the Ocotillo Sol Project area, a variety of disturbances to this community have occurred, including grading and vegetation removal for roadways, transmission lines, and the Imperial Valley Substation. Eleven reptile species, 66 bird species (including three non-native species), and five mammal species were observed or otherwise detected during LSA's field surveys. A complete list of all animal species identified within the survey area is included in Appendix C.

Reptile species observed are typical of open desert habitat and include side-blotched lizard (*Uta stansburiana*), sidewinder (*Crotalus cerastes*), desert iguana (*Dipsosaurus dorsalis*), western whiptail (*Cnemidophorus tigris*), and zebra-tailed lizard (*Callisaurus draconoides*).

Bird species frequently observed include turkey vulture (*Cathartes aura*), mourning dove (*Zenaida macroura*), rock pigeon (*Columba livia*), greater roadrunner (*Geococcyx californianus*), black-tailed gnatcatcher (*Polioptila melanura*), and European starling (*Sturnus vulgaris*).

The Ocotillo Sol Project area also provides habitat for several common mammals, including black-tailed jackrabbit (*Lepus californicus*), kangaroo rat (*Dipodomys* sp.), desert kit fox (*Vulpes macrotis*), coyote (*Canis latrans*), and round-tailed ground squirrel (*Spermophilus tereticaudus*). Other small and medium-sized mammals may also occur within the Ocotillo Sol Project area.

3.6.4.2 SPECIAL STATUS ANIMALS

Seven special status animal species have a moderate or greater probability of occurring within the 350-acre original study area, and are discussed below, including:

Flat-tailed horned lizard

Burrowing owl

Colorado Desert fringe-toed lizard (*Uma notata*)

Loggerhead shrike (*Lanius ludovicianus*)

Palm Springs pocket mouse (*Perognathus longimembris bangsi*)

Pallid San Diego pocket mouse (*Chaetodipus fallax pallidus*)

Western mastiff bat (*Eumops perotis californicus*)

Other sensitive wildlife species that may occur near the Ocotillo Sol Project area, based on range or habitat preferences, are evaluated in the Biological Resources Technical Report (see Appendix C). The golden eagle is also discussed below due to its sensitivity and survey requirements.

3.6.4.2.1 Flat-Tailed Horned Lizard

Flat-tailed horned lizard is a California Species of Special Concern and a BLM Sensitive species. It has been recorded in high numbers in Sonoran desert scrub habitat. It also inhabits mixed desert scrub and saltbush scrub communities. Once thought to be restricted to windblown sand, it has been found in soil covers ranging from sandy flats or areas with a veneer of fine, windblown sand, to areas with little or no windblown sand. California populations occupy sandy flats and hills, badlands, salt flats and gravelly soils (Grant 2005).

The Ocotillo Sol Project area lies within the range of flat-tailed horned lizard. The Ocotillo Sol Project area is also in the Yuha Desert flat-tailed horned lizard management area, where the BLM has conducted annual monitoring and assisted with studies of this species since 2002. Flat-tailed horned lizard demographic plot density estimates from mark-recapture studies for the Yuha Desert Management Area for 2007 through 2010, as well as population estimates, were comparable with the other management areas in Imperial Valley.

Loose sands suitable to support this species are present within the 350-acre original study area. During protocol flat-tailed horned lizard surveys conducted in September of 2009, scat and tracks were recorded, but no flat-tailed horned lizards were observed within the survey area. Low detectability would be expected for adults this late in the season (Grant 2005). Incidentally, during the rare plant surveys in late March 2010, a juvenile flat-tailed horned lizard was observed in Pinto Wash (see Figure 3.6-1 in Appendix A) and remnants of a flat-tailed horned lizard carcass were observed near the center of the spring survey area at the mouth of a burrow with burrowing owl sign.

The entire survey area, including the 115-acre Ocotillo Sol Project area, is considered to be occupied with flat-tailed horned lizard in accordance the protocol provided in the *Flat-tailed Horned Lizard Rangewide Management Strategy* (Flat-tailed Horned Lizard Interagency Coordinating Committee 2003) for determination of flat-tailed horned lizard presence. A review of available data shows that the criteria have been met to assume the presence of the species. Specifically, the Ocotillo Sol Project area is within the historical range of the flat-tailed horned lizard, is within two miles of a recorded flat-tailed horned lizard population, habitat on site is contiguous throughout the Ocotillo Sol Project area and the surrounding area extending into areas known to support flat-tailed horned lizard, no major habitat alteration or conversion has taken place in the project area since the species was detected, and there are no barriers between the Ocotillo Sol Project area and areas of known occupation by the flat-tailed horned lizard. The flat-tailed horned lizard survey report is attached as Appendix I.

3.6.4.2.2 Burrowing Owl

The burrowing owl is a California Species of Special Concern and a BLM Sensitive species. It frequents a wide range of open habitats, especially those with healthy populations of ground squirrels.

During the burrow survey in October 2009, many potentially suitable burrows were mapped and at least three adult burrowing owls were found occupying four burrows within the 350-acre LSA spring survey area. Two of the occupied burrows were within the 115-acre Ocotillo Sol Project area (see Figure 3.6-1 in Appendix A). In addition, during the rare plant survey in March 2010, a burrowing owl was incidentally observed in flight in the southeast portion of the spring survey area (see Figure 3.6-1 in Appendix A).

Burrowing owls were not found during the four protocol breeding season field visits in May 2010. The four burrows that were occupied at the time of the burrow survey were found to be inactive, and, although over 20 suitable burrows were investigated for sign, no additional active burrows were found. Most suitably sized burrows in the spring survey area were found to be clear of debris and cobwebs and were in marginally suitable foraging habitat. Most burrows were being used by reptiles (i.e., lizards and snakes), rodents, or kit fox.

The results of the burrow survey and protocol breeding season survey indicated that breeding owls were not present on site at the time of the survey, but that the site was used by wintering individuals. During the rare plant survey in late March 2010, a burrowing owl individual was observed near a burrow with owl sign near the center of the spring survey area. The protocol burrowing owl survey report is attached as Appendix J.

3.6.4.2.3 Colorado Desert Fringe-toed Lizard

Colorado Desert fringe-toed lizard is a California Species of Special Concern and a BLM Sensitive species. It is found in sandy dunes, flats, and washes in some of the most arid parts of the desert; the same areas favored by flat-tailed horned lizard. The fringe-toed lizard's habitat requirements appear to be more restrictive than those of the flat-tailed horned lizard. This species was not observed in the Ocotillo Sol Project area during any of the surveys, although habitat appears to be suitable.

3.6.4.2.4 Loggerhead Shrike

Loggerhead shrike is a California Species of Special Concern. It occupies many open habitats, but has undergone population declines across much of its range. California desert populations appear to have been among the least affected to date. Loggerhead shrikes were observed within the 115-acre Ocotillo Sol Project area during site visits, including the winter avian point-count survey (see Appendix G). The species was most numerous during winter surveys, but might also nest in the Ocotillo Sol Project area.

3.6.4.2.5 Palm Springs Pocket Mouse

Palm Springs pocket mouse is a California Species of Special Concern and a BLM Sensitive species. It is found in desert scrub on fine sandy soils. Habitat in the Ocotillo Sol Project area appears to be suitable for the species, there is a moderate potential for it to occur. No small mammal trapping was conducted.

3.6.4.2.6 Pallid San Diego Pocket Mouse

Pallid San Diego pocket mouse is a California Species of Special Concern. It is found in a variety of arid scrub habitats. Habitat in the Ocotillo Sol Project area appears to be suitable for the species, there is a moderate potential for it to occur. No small mammal trapping was conducted.

3.6.4.2.7 Bats

Western mastiff bat is a California Species of Special Concern and a BLM Sensitive species. It occurs in many open, semi-arid to arid habitats, but roosts in crevices in vertical cliff faces, high buildings, trees, and tunnels. Western mastiff bats range widely while foraging, and are likely to forage high over the Ocotillo Sol Project area. No trees or other potential roosting habitat were observed on or adjacent to the Ocotillo Sol Project area.

Pallid bat is a California Species of Concern and a BLM Sensitive species. These bats are found in a wide variety of habitats in all but the highest elevations. They are most common in open, dry habitats with rocky areas for roosting. This species has not been detected in the vicinity and no potential roosting habitat is found within the Ocotillo Sol Project area.

California leaf-nosed bat is a California Species of Concern and a BLM Sensitive species. These bats are found in all but subalpine habitats and roost in caves or abandoned mines, occasionally in buildings. This species has not been detected in the vicinity and no potential roosting habitat is found within the Ocotillo Sol Project area.

3.6.4.2.8 Golden Eagle Nest Survey

The golden eagle (*Aquila chrysaetos*) is a California Fully Protected Species, and is protected under the federal Bald and Gold Eagle Protection Act. It is on the list of BLM Sensitive species for California (BLM 2010). Golden eagles usually require cliffs or large trees for nesting, but forage over a wide range of open habitats. Golden eagles generally forage within 3.7 miles of their nests (see Appendix C), but in desert areas with poor habitat, their foraging territories typically encompass 100 to 120 square miles (see Appendix C), which corresponds to a foraging range of 5.6 to 6.2 miles from the nest.

From January to May 2010, on behalf of the Applicant, WRI conducted Phase 1 and Phase 2 surveys for golden eagles within 4 miles of the Final Environmentally Superior Southern Route of the Sunrise Powerlink Project alignment (see Appendix C). The Sunrise Powerlink is an approximately 118-mile, 230 kV/500 kV transmission line that is under construction from the Imperial Valley Substation (adjacent to the Ocotillo Sol Project area) to Sycamore Canyon Substation on Marine Corps Air Station Miramar in San Diego County.

These surveys complied with USFWS recommendations, and were conducted both by ground and helicopter to confirm activity, occupancy, breeding status of the pairs, and fledging success of the golden eagles. Nineteen territories between Sycamore Canyon Substation and Imperial Valley Substation were checked, and nine were confirmed to be active during 2010; two additional territories were considered possibly active based on nest site evidence, and eight appeared to be inactive. Five of the active territories were seen with incubating females on the nests during the surveys. In total, 24 golden eagle adults and nestlings were observed.

The golden eagle nest nearest to the Ocotillo Sol Project area was approximately 20 miles to the west and was inactive at the time of the surveys, with the nearest known active nest located approximately 40 miles to the west. This distance is well beyond the expected foraging range of even desert-nesting golden eagles.

A golden eagle was incidentally observed foraging over the Mount Signal Drain and adjacent agricultural fields, approximately 4.5 miles southeast of the Ocotillo Sol Project area, during the winter avian use surveys conducted for the nearby Centinela Solar Energy Project (BLM and Imperial County 2011). No previous records of this species were identified within the Ocotillo Sol Project vicinity.

No suitable nesting habitat is present within the survey area or immediate vicinity. Therefore, golden eagles are not expected to nest within the survey area. Similarly, due to the distance from known eagle territories, golden eagles from the Coyote Mountains identified during the Sunrise Powerlink Surveys are not expected to forage within or adjacent to the survey area. Mount Signal (El Centinela), approximately 7 miles south of the Ocotillo Sol Project area and across the U.S.–Mexico border, may support suitable nesting habitat, although data for this area were not identified during the literature search (BLM and Imperial County 2011). Individuals nesting in or around Mount Signal could potentially use the survey area and surrounding vicinity for foraging activities, though it is likely a rare occurrence (BLM and Imperial County 2011).

3.6.4.3 HABITAT CONNECTIVITY AND WILDLIFE CORRIDORS

The Ocotillo Sol Project area is adjacent to an existing substation near the edge of open desert. It is not within any identified wildlife movement corridor or habitat linkage. Because the Applicant's proposed project is in a relatively undeveloped area, habitat connectivity is not constrained and wildlife movement is expected to continue relatively unhindered with implementation of the Ocotillo Sol Project.

3.6.5 JURISDICTIONAL RESOURCES

The Ocotillo Sol Project area is relatively flat with a 20-foot difference in elevation from the southwest corner of the LSA spring survey area to the northeast corner, located nearly 3,500 feet away (Figure 3.6-2 in Appendix A), producing an average slope of less than 1 percent. Pinto Wash, which is subject to CDFG jurisdiction, is to the southeast approximately 540 feet outside of the proposed 115-acre Ocotillo Sol Project area limits but within the spring survey area.

No drainages, wetlands, or any other topographical or hydrological features with potential to be subject to USACE, RWQCB, or CDFG jurisdiction were observed within the 115-acre Ocotillo Sol Project area. No evidence of streambed and banks as defined by CDFG were observed within the Ocotillo Sol Project area, nor were any defined channels that would be subject to agency jurisdiction. Evidence of hydrology on site is limited to some bare spots and soil sorting due to sheet flow, which was observed throughout the Ocotillo Sol Project area, generally following the gentle slope of the terrain.

3.7 CULTURAL RESOURCES

Cultural resources, for the purposes of complying with NEPA and NHPA Section 106 requirements, are locations of human activity, occupation, or use identifiable through field inventory, historical documentation, or oral evidence. Cultural resources include both archaeological, historic, or architectural sites, structures, or places with important public and scientific uses, and may include definite locations (sites or places) of traditional cultural or religious importance to specified social and/or cultural groups (e.g., traditional cultural property). Three kinds of cultural resources are considered in this assessment: prehistoric, ethnographic, and historic-period archaeological and built environment resources. Prehistoric archaeological resources are associated with human occupation prior to European contact. These resources may include isolated features, artifact scatters, ceramics, lithics, fish traps, rock art, trails, and other traces of Native American human behavior. In California, the prehistoric period began over 12,000 years ago and extended until 1769, when the Europeans permanently settled in San Diego. 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. Cultural resources are categorized as buildings, sites, structures, objects, and districts for the purposes of complying with these requirements.

As explained below, cultural resources may be, but are not necessarily, eligible for the NRHP. Because the 1-mile radius around the Ocotillo Sol Project contains evidence of human activity since prehistoric times and because cultural resources could be affected by the proposed Ocotillo Sol Project, the project is subject to federal environmental regulations and laws. This section describes the laws, regulations, and plans relevant to the regulatory setting for the project. This is followed by past cultural resources investigations and existing cultural resources within the project area.

3.7.1 APPLICABLE REGULATIONS, PLANS, AND POLICIES/MANAGEMENT GOALS

There are numerous federal regulations, executive orders, and policies that direct management of cultural resources on federal lands and by federal agencies. These include the NHPA, the Native American Graves Protection and Repatriation Act, the American Indian Religious Freedom Act, EO 13007, and the Antiquities Act. The following is a discussion of the most pertinent laws affecting the proposed Ocotillo Sol Project.

3.7.1.1 NATIONAL HISTORIC PRESERVATION ACT

The principal federal law addressing historic properties is Section 106 of the NHPA (16 USC § 470f) and its implementing regulations at 36 CFR 800. Section 106 requires a federal agency with jurisdiction over a project (referred to as an "undertaking" under NHPA) to take into account the effect of the project on historic properties and to seek to resolve any adverse effects. A federal agency must also afford the Advisory Council on Historic Preservation a reasonable opportunity to comment. Federal regulations (36 CFR Part 800.16) define historic properties as "any prehistoric or historic district, site, building, structure, or object included in, or eligible for inclusion" in the NRHP. The Ocotillo Sol Project is an undertaking with the potential to affect historic properties, 36 CFR § 800.3(a), and therefore is subject to the requirements of Section 106.

The term "historic properties" refers to "any prehistoric or historic district, site, building, structure, or object included in, or eligible for inclusion in the NRHP" (36 CFR § 800.16(*l*)(1). Criteria for eligibility are discussed in Section 4.7.1. Historic properties are not required to be formally listed on the NRHP—i.e., they can be determined to be eligible by the agency as part of the Section 106 process. Under Section 106 of the NHPA and its implementing regulations at 36 CFR 800, federal agencies are obliged to identify and evaluate historic properties located within a proposed project's Area of Potential Effect (APE) to assess effects to resources associated with the proposed project, and to develop and evaluate alternatives or modifications to the proposed project that could avoid, minimize, or to mitigate adverse effects to historic properties. The Section 106 process does not require the preservation of historic properties, but instead, it is a procedural requirement mandating that federal agencies take into account effects to historic properties from an undertaking prior to the approval of that undertaking.

The steps of the Section 106 process must be accomplished through consultation with the State Historic Preservation Officer (SHPO), Native American tribes, local governments, and other consulting parties. The agency also must provide an opportunity for public involvement. Consultation with Native American tribes regarding issues related to Section 106 of the NHPA, as well as other authorities like NEPA, must recognize the government-to-government relationship between the federal government and Native American tribes.

3.7.1.2 NATIVE AMERICAN GRAVES PROTECTION AND REPATRIATION ACT (1990); TITLE 25, USC SECTION 3001, ET SEQ.

Requirements for responding to discoveries of Native American human remains and associated funerary objects on federal land are addressed under the Native American Graves Protection and Repatriation Act (PL 101-601) and its implementing regulations found at 43 CFR Part 10. If human remains or associated funerary objects are discovered on public lands within the Ocotillo Sol Project area, the BLM will comply with the law and regulations by determining lineal descendants and culturally affiliated Indian tribes and by carrying out appropriate treatment and disposition of the discovered remains, including transfer of custody.

3.7.1.3 CDCA PLAN–YUHA BASIN ACEC MANAGEMENT PLAN

The Yuha Basin ACEC Management Plan was prepared in order to give additional protection to unique cultural resource and wildlife values within portions of the Yuha Basin. This ACEC contains a high density and diversity of cultural resource values, including intaglios (e.g., geoglyphs, or ground figures made from moved rocks), temporary camps, lithic scatters, cremation loci, pottery loci, trails, and shrines.

3.7.1.4 CALIFORNIA STATE PROTOCOL AGREEMENT BETWEEN BLM AND SHPO

The *State Protocol Agreement between the California State Director of the Bureau of Land Management and the California State Historic Preservation Officer* (2007) streamlines the Section 106 process by not requiring case-by-case consultation with the SHPO on many routine undertakings. Under the Section 106 process, the BLM is obliged to identify cultural resources within the proposed project's APE, to assess effects to properties found eligible for listing on the NRHP, and to mitigate adverse effects to historic properties. In the case of complex undertakings or undertakings for which adverse effects are anticipated, the BLM consults directly with SHPO and the Protocol does not apply (BLM 2007). The Ocotillo Sol Project is not a complex project; SHPO consultation is ongoing.

3.7.2 EXISTING CONDITIONS

Information for this section is summarized from the Class III Inventory Ocotillo Sol Project, Imperial County, California, prepared by LSA (2011).

The proposed project would construct a 100-acre solar PV facility and use 15 acres as a laydown area during construction. The APE consists of 115 acres. The Class III inventory for cultural resources encompassed an area larger than the APE. The survey area was 351.25 acres and included the APE.

3.7.2.1 CULTURAL SETTING

During prehistoric times, the Ancient Lake Cahuilla basin was the focal point of the landscape. Lake Cahuilla was formed by floodwaters from the Colorado River that flowed through the desert toward the Gulf of California on an occasional basis. Evidence from archaeological investigations at prehistoric sites along the Lake Cahuilla shoreline suggests at least three episodes of flooding and evaporation. The project area is near the western shoreline of the former Lake Cahuilla within the Yuha Desert basin (LSA 2011). A generally accepted cultural history outline has been developed for the Colorado Desert. This cultural history is based on the work of Malcolm Rogers (1939, 1945, 1966). The framework is divided into six cultural patterns that extend to at least 12,000 years ago. The cultural patterns are Malpai (Early Man), San Dieguito, Pinto and Amargosa, Patayan (Prehistoric Yuman), Historic Yuman, and Historic Euro-American (LSA 2011).

3.7.2.1.1 Ethnohistory/Historic Yuman

The Kamia and Kumeyaay exploited the project area. Ethnographically, the Quechan and the Cocopah lived along the Colorado River. The Quechan lived in settlements called Rancherias. These Rancherias were moved seasonally as the Colorado River flooded during the spring and receded in the winter. The Quechan grew maize, squash, and beans and added melons, wheat, and black-eyed peas after the arrival of the Europeans. They also gathered wild plants and fished with nets, traps, cactus spine hooks, and bows and arrows in the Colorado and Gila rivers. The Quechan were organized militarily and the Cocopah and Maricopa were their enemies.

The Cocopah lived along the Colorado River and its delta south of the Quechan into northwestern Mexico. They were semi-nomadic, hunter-gatherers who used the delta to plant beans, squash, and beans. They collected wild plants and hunted deer, wild boar, rabbits, wood rats, and beavers.

3.7.2.1.2 Historic Euro–American Pattern

The Spanish Period (1540 to 1821) began with Juan Rodriguez Cabrillo's expedition in 1542 and ended with the Treaty of Cordoba, which established Mexican independence. This period is dominated by the Spanish attempts to link their territories in Mexico with their outposts in California and prevent Russia or Britain encroachment. In an attempt to make that link, Captain Juan Bautista de Anza crossed the project area in 1774–1775 looking for an overland route to the mission in San Diego and then to Monterey. His party encountered Yuma Indians at the confluence of the Gila and Colorado rivers and camped at several locations across the Colorado Desert.

During the Mexican Period (1821 to 1848), the Colorado Desert was nearly forgotten. Romualdo Pacheco, who would become the first California-born governor of California, made several exploratory expeditions in 1826 and 1827 into the area. He and his men built Fort Romualdo Pacheho approximately 6 miles west of present-day Imperial (California State Historical Landmark 944). The post was abandoned after the Kumeyaay attacked it. The Army of the West led by Stephen Kearney also crossed the desert in 1846–1847. Border tension escalated and the U.S. invaded Mexico in 1846.

The American Period (1848 to present) began with signing of the Treaty of Guadalupe Hidalgo in which the U.S. acquired Texas, New Mexico, and Alta California. That same year gold was discovered in the mountains of California. The gold rush brought a large influx of Anglo-Americans. California became a state in 1850.

The settlement of the Imperial Valley can be attributed to Dr. Oliver M. Wozencraft. Wozencraft identified the valley's potential for agriculture because of fertile soil and the feasibility to irrigate using a gravity canal and the higher elevation of the Colorado River. The building of the canals and irrigation system was one of the most important 19th century developments for the Imperial Valley.

In 1905, water levels were lower than usual and silt deposits had impeded the flow of water through the gravity-fed system. A temporary wooden gate was built in the river upstream from the silted portions to allow a fuller flow with the idea that the gate would be removed before the spring runoff. Before this occurred, however, several floods destroyed gates and dams along the

canal network and changed the course of the water, flooding the Alamo River to the Salton Trough and eventually forming the Salton Sea. The breach in the river was closed in 1907 due to the efforts of the Southern Pacific Railroad.

The Westside Main Canal was built between 1906 and 1907 to provide irrigation to crops on the west side of the valley and was later incorporated into the All-American Canal system during its construction between 1934 and 1940 (Hupp 1999). The Westside Main Canal extends from the All-American Canal at the U.S.–Mexico border to the south end of the Salton Sea.

The Imperial Irrigation District was organized in 1911 and was delivering water to over 500,000 acres of arable land. The Boulder (Hoover) Dam was completed in 1935 and provided hydroelectric power to the valley.

The Imperial Valley could be crossed by railroad lines and a network of roads. The plank road completed in 1915 connected Yuma and Holtville. Construction for State Highway 80 started in 1915. This was renamed U.S. 80 in 1926 and linked the desert floor with San Diego.

3.7.2.2 INVENTORY METHODS

LSA was contracted by the Applicant to conduct a BLM Class III intensive archaeological inventory for the project, which consisted of archival research and a field survey. A cultural resources work plan was prepared for the project, which outlined field methods including transect spacing and recordation devices. The survey area consisted of 351.25 acres and included the 115-acre Ocotillo Sol Project APE. The purpose of the survey was to establish the horizontal extent of archaeological resources, establish the types of archaeological resources in the APE, and develop preliminary recommendations for each site regarding eligibility for listing in the NRHP. Prior to the survey, a record search of an area bounded by a 1-mile radius around the survey area was obtained from the South Coastal Information Center. Previously recorded historic and prehistoric archaeological site records and documentations were reviewed as well as information about past archaeological resources investigations in the project area. Historic aerial photographs and maps were also examined to determine presence of historic buildings or structures.

The archaeological field survey was conducted on April 5–9, 2010. The field crew consisted of four archaeologists and three Native American monitors. All cultural resources were recorded and documented on appropriate Department of Parks and Recreation archaeological site forms (LSA 2011).

LSA conducted a historic built environment survey of the project area on July 7, 2011. The survey for historic built environment resources covered 1,284 acres, which included a one-quarter mile radius around the 351.25-acre survey area. The purpose of this survey was to document all resources over 50 years in age and identify any potential impacts to the historic built environment to comply with Section 106 of the NHPA and BLM requirements.

3.7.2.3 INVENTORY RESULTS

The South Coastal Information Center records search identified 15 previous archaeological resources surveys and 43 previously recorded archaeological resources within the 1-mile study radius.

The 43 previously recorded archaeological sites consist of seven small temporary camps, one identified as being on desert pavement, two historic artifact scatters, and 33 isolated ceramic or lithic artifacts. Three of the previously recorded archaeological sites are located within the 115-acre APE. The three sites (CA-IMP-6680, -6681, and -6682) were recorded as isolated artifacts. No historic built environment resources were identified during the records search. The archaeological field survey for the project APE resulted in one newly identified and recorded archaeological site (CA-IMP-11741) and 12 isolated artifacts (Table 3.7-1). LSA did not relocate any of the previously recorded archaeological sites within the APE. CA-IMP-11741 is a low-density surface scatter consisting of four flakes and with little potential for subsurface deposits.

TABLE 3.7-1
NEWLY RECORDED ISOLATED ARTIFACTS WITHIN THE OCOTILLO SOL PROJECT 115-ACRE APE

Resource Name	Description
P-13-013724	1 flake
P-13-013725	1 point fragment
P-13-013726	1 flake
P-13-013727	2 flakes
P-13-013731	1 flake
P-13-013732	1 flake
P-13-013733	9 ceramic sherds in a 33 × 17 cm area; all from same ceramic vessel (these assemblages are often referred to as a “pot drop” although only a small percentage of the vessel is actually present)
P-13-013734	1 ceramic sherd, 1 flake
P-13-013735	1 flake
P-13-013741	2 ceramic sherds
P-13-013742	1 flake
P-13-013743	1 ceramic sherd

No historic built environment properties were identified within the 1,284 acres of the historic built environment resources survey area. The Westside Main Canal (CA-IMP-7834H) is the nearest documented built environment resource. It is located just over one mile northeast of the historic built environment survey area. The canal was built between 1906 and 1907 to provide irrigation to crops on the west side of the valley and later incorporated into the All-American Canal system during its construction between 1934 and 1940 (Hupp 1999). The Westside Main Canal extends from the All-American Canal at the U.S.–Mexico border to the south end of the Salton Sea. Because the All-American Canal was found eligible for the NRHP in 2001, the update form recommended the Westside Main Canal as an extension of the All-American Canal as eligible for the NRHP and California Register of Historical Resources under criterion A/1 for

its association with the significant initial development of the Imperial Valley, and under criterion C/3 as one of the unique engineering projects associated with the All-American Canal in the 1930s and 1940s (Schaefer and O'Neill 2001).

3.7.2.4 SITE SIGNIFICANCE WITHIN THE OCOTILLO SOL PROJECT AREA

One site (CA-IMP-11741) was found within the 115-acre APE. This site was recommended not eligible for the NRHP. The site is a low density surface scatter consisting of four flakes and with little potential for subsurface deposits. Isolates typically have limited potential for important information and lack qualities that would qualify them for listing on the NRHP. Therefore, the 16 isolates within the 115-acre APE are not eligible for the NRHP.

3.8 PALEONTOLOGICAL RESOURCES

LSA Associates, Inc. conducted a paleontological resources assessment of the Ocotillo Sol Project area in July 2011. The results of the assessment are summarized here and the preliminary report is included as Appendix K.

3.8.1 APPLICABLE REGULATIONS, PLANS, AND POLICIES/MANAGEMENT GOALS

This section summarizes federal regulations pertaining to paleontological resources. The management and preservation of paleontological resources on public lands are governed under various laws, regulations, and standards. For the past several decades, the BLM has used FLPMA as the legislative foundation for its paleontological resource management policies. The BLM has also developed general procedural guidelines (Manual H-8720-1; Instructional IM 2008-009; IM 2009-011) for the management of paleontological resources. Paleontological resource management objectives include the evaluation, management, protection, and location of fossils on BLM managed lands. Management policy also includes measures to ensure that proposed land use projects do not inadvertently damage or destroy scientifically significant paleontological resources.

3.8.1.1 PALEONTOLOGICAL RESOURCES PRESERVATION, OMNIBUS PUBLIC LANDS ACT, PUBLIC LAW 111-011, TITLE VI, SUBTITLE D

The Omnibus Public Lands Act–Paleontological Resource Preservation (OPLA–PRP) legislation directs the Secretaries (Interior and Agriculture) to manage and protect paleontological resources on federal land using scientific principles and expertise. OPLA–PRP incorporates most of the recommendations of the report of the Secretary of the Interior entitled Assessment of Fossil Management on Federal and Indian Lands to formulate a consistent paleontological resources management framework. In passing the OPLA–PRP, Congress officially recognized the scientific importance of paleontological resources on some federal lands by declaring that fossils from these lands are federal property that must be preserved and protected. The OPLA–PRP codifies existing policies of the BLM, National Park Service, U.S. Forest Service, Bureau of Reclamation, and USFWS, and provides the following:

Uniform criminal and civil penalties for illegal sale and transport, and theft and vandalism of fossils from federal lands

Uniform minimum requirements for paleontological resource-use permit issuance (terms, conditions, and qualifications of applicants)

Uniform definitions for “paleontological resources” and “casual collecting”

Uniform requirements for curation of federal fossils in approved repositories

Federal legislative protections for scientifically significant fossils applies to projects that take place on federal lands (with certain exceptions, such as the Department of Defense), involve

federal funding, require a federal permit, or involve crossing state lines. Because the vast majority of the proposed project area occurs on BLM-managed lands, federal protections for paleontological resources apply under NEPA, FLPMA, and OPLA–PRP.

3.8.2 EXISTING CONDITIONS

Paleontological resources are the fossilized evidence of past life found in the geologic record. Despite the tremendous volume of sedimentary rock deposits preserved worldwide and the enormous number of organisms that have lived through time, preservation of plant and animal remains as fossils is an extremely rare occurrence. Because of the infrequency of fossil preservation, fossils—particularly vertebrate fossils—are considered to be nonrenewable resources. Because of their rarity and the scientific information they can provide, fossils are highly significant records of ancient life. They can provide information about the interrelationships of living organisms, their ancestry, development, and change through time, and their former distribution. Progressive morphologic changes observed in fossil lineages may provide critical information on the evolutionary process itself—that is, the ways in which new species arise and adapt to changing environmental circumstances. Fossils can also serve as important guides to the ages of the rocks and sediments in which they are contained and may prove useful in determining the temporal relationships of rock deposits from one area to another and the timing of geologic events. Time scales established by fossils provide chronologic frameworks for geologic studies of all kinds.

Significant fossils include all vertebrate fossil remains (body and trace fossils) and plant and invertebrate fossils determined to be scientifically unique. Paleontological resources (fossils) include the bones, teeth, body remains, traces, or imprints of plants and animals preserved in the earth since a past geologic time. All fossils offer scientific information, but not all fossils offer significant scientific information. Among paleontologists, fossils generally are considered scientifically significant if they are unique, unusual, rare, diagnostically or stratigraphically important, or add to the existing body of knowledge in a specific area of science. Most fossils occur in sedimentary rock formations. Although experienced paleontologists generally can predict which formations will contain fossils and what types of fossils will be found based on the age of the formation and its depositional environment, predicting the exact location where fossils will be found without field surveys is usually not possible.

The Ocotillo Sol Project area lies within the Colorado Desert Geomorphic Province, which is characterized by a low-lying desert basin ranging in elevation from 245 feet below msl to 2,200 feet above msl. It is dominated by the Salton Sea, which fills the Salton Trough to an average elevation of 231 feet below msl (see Appendix K).

The elevation of the Ocotillo Sol Project vicinity varies from 40 feet above msl to 15 feet below msl. The parcel proposed for solar development ranges in elevation from 6 to 24 feet above msl, with the drainage being to the northeast, roughly parallel to that of Pinto Wash, the major drainage through the area. This parcel is very close to the maximum extent of the high shoreline of Lake Cahuilla. Geologic mapping shows that surface sediments in the Ocotillo Sol Project area are Quaternary lake deposits from Lake Cahuilla. These lake deposits are a mix of clay, sand, and beach gravel, and contain locally abundant non-marine invertebrate fossils (see Appendix K).

Within the Ocotillo Sol Project area, recent sediments from Lake Cahuilla contain non-mineralized mollusks that are 200 to 300 years old and contemporaneous with extant modern species. Plio–Pleistocene (more recent than circa 5 million years ago) sediments that crop out on the surface two miles to the southwest of the Ocotillo Sol Project area have potential to contain significant nonrenewable paleontological resources. It is unknown at what depth they may occur under the Ocotillo Sol Project area (see Appendix K).

3.8.2.1 POTENTIAL FOSSIL YIELD CLASSIFICATION

The BLM uses the Potential Fossil Yield Classification (PFYC) System to classify geologic units based on their relative abundance of vertebrate fossils or scientifically significant invertebrate or plant fossils and their sensitivity to adverse impacts, with a higher class number indicating potential. These classes are as follows:

Class 1 (very low). Geologic units likely to contain recognizable fossil remains. Management concern is negligible, and assessment or mitigation requirements are usually not necessary, with the exception of isolated circumstances.

Class 2 (low). Sedimentary geologic units not likely to contain vertebrate fossils or significant non-vertebrate fossils. Management concern is generally low, and assessment of mitigation is usually not necessary, with the exception of isolated circumstances.

Class 3 (moderate or unknown). Fossiliferous sedimentary geologic units where fossil content varies in significance, abundance and predictable occurrence, or units of unknown fossil potential. Management concern is moderate or cannot be determined from existing data. Ground-disturbing activities may require field assessment to determine the appropriate course of action.

> ***Class 3a – Moderate Potential.*** Units are known to contain vertebrate fossils or scientifically significant non-vertebrate fossils, but these occurrences are widely scattered. Common invertebrate or plant fossils may be found in the area, and opportunities may exist for hobby collecting. The potential for a project to be sited on or impact a significant fossil locality is low, but is somewhat higher for common fossils.
>
> ***Class 3b – Unknown Potential.*** Units exhibit geologic features and preservational conditions that suggest significant fossils could be present, but little information about the paleontological resources of the unit or the area is known. This may indicate the unit or area is poorly studied, and field surveys may uncover significant finds. The units in this Class may eventually be placed in another Class when sufficient survey and research is performed. The unknown potential of the units in this Class should be carefully considered when developing any mitigation or management actions.

Class 4 (high). Geologic units containing a high occurrence of significant fossils. The probability for impacting significant paleontological resources is moderate to high, and is dependent on the proposed action. Anticipated impacts to significant fossils would usually require a field survey, followed by on-site paleontological monitoring or spot-checking.

Class 5 (very high). Fossil-rich geologic units that regularly produce vertebrate fossils or significant non-vertebrate fossils that are at risk of natural degradation or human-caused adverse impacts. The probability of impacting significant fossils is high and fossils are known or can reasonably be expected to occur in the impacted area. Anticipated impacts to significant fossils would usually require a field survey, followed by on-site paleontological monitoring or spot-checking.

The Lake Cahuilla sediments within the Ocotillo Sol Project area are classified under PFYC Class 2. The Plio–Pleistocene sediments within the Ocotillo Sol Project area are classified under PFYC Class 3b.

LSA Associates conducted a paleontological locality search through the San Diego Natural History Museum, and geological and paleontological records maintained at LSA Associates. A field survey of the project area was completed in July 2011. The paleontological locality search, conducted between November 2010 and July 2011, included a review of the area geology and any known paleontological resources recovered from the surrounding area, as well as the geologic units that would likely be encountered during excavation activities associated with the project. The paleontological records search did not identify any fossil localities within the Ocotillo Sol Project area. The field survey of the project area located one vertebrate fossil, which appeared to be introduced onto the project by stream action. The field survey also found recent molluscan specimens and mineralized wood and bone. These items are not considered "scientifically significant" fossils (see Appendix K). No scientifically significant fossil localities were located in surficial late Holocene (circa 12,000 years ago to the present) sediments in the Ocotillo Sol Project area.

While the PFYC is based on probabilities, not certainties or known locations, there will be exceptions to each classification based on the criterion used as the basis. Where the presence or absence of vertebrate and significant invertebrate fossils is not known in a geologic unit, existing protocols allow for inventory, assessments, and mitigation of potential paleontological resource impacts on a case-by-case basis.

3.9 FIRE AND FUELS

3.9.1 APPLICABLE REGULATIONS, PLANS, AND POLICIES/MANAGEMENT GOALS

3.9.1.1 2001 FEDERAL FIRE POLICY

The 2001 Federal Fire Policy comprises guiding principles and discreet policies. As a whole the guiding principles and policy statements guide the philosophy, direction, and implementation of fire management planning, activities, and projects on federal lands. Many federal agencies conduct programs or activities that support or otherwise affect federal wildland fire management activities. The guiding principles and policy statements guide the direction and implementation of those programs as well, to ensure consistency, coordination, and integration of wildland fire management programs and related activities throughout the federal government.

3.9.1.2 GUIDANCE FOR IMPLEMENTATION OF FEDERAL WILDLAND FIRE MANAGEMENT POLICY

The Federal Executive Council approved the Guidance for the Implementation of Federal Wildland Fire Management Policy on February 13, 2009. This guidance provides for consistent implementation of the 1995/2001 Federal Fire Policy, as directed by the Wildland Fire Leadership Council.

3.9.2 EXISTING CONDITIONS

Wildland fires result from either natural or human-made causes which occur in brush, grasslands, or fallow agricultural areas are capable of causing widespread damage to neighboring lands, in addition to threatening the lives and personal property of persons residing in wildfire-prone areas.

3.9.2.1 FIRE REGIMES AND RISK CONDITIONS

Fire regime refers to the nature of fires occurring over long periods of time and the prominent immediate effects of fire that generally characterize an ecosystem (Brown 2000 as cited in BLM 2010). Fire regimes can be defined through the attributes of frequency, seasonality, size/spatial extent, rotation (or fire cycle), predictability (or variation in fire frequency), and magnitude (both intensity and severity; Agee 1993; Morgan et al. 2001 as cited in BLM 2010). Fire regimes can be subdivided into components that vary in time, space, and magnitude. Fire regime descriptions are often limited to the frequency and severity of wildfires.

Fire regimes vary considerably by both vegetation types and landscape characteristics. The vegetated lands in the Ocotillo Sol Project area are classified as Fire Regime IV (fire frequency of 35–100+ years with high severity; N. Ludwig, pers. comm. 2012).

Current condition classes are a function of the degree of departure from historical fire regimes resulting in alterations of key ecosystem components such as species composition, structural stage, stand age, and canopy closure. One or more of the following activities may have caused this departure: fire exclusion or suppression, vegetation management, introduction and establishment of exotic plant species, insects or disease (introduced or native), or other past management activities (Hann and Bunnell 2001 as cited in BLM 2010).

Table 3.9-1 displays the current fire regime condition classes, based on degree of departures from historical/natural fire regimes, for the vegetated lands in the Ocotillo Sol Project area.

TABLE 3.9-1
CONDITION CLASSES BASED ON DEPARTURES FROM HISTORICAL FIRE REGIMES

Condition Class (CC)	Description
CC1	Fire regimes are within an historical range, and the risk of losing key ecosystem components is low. Vegetation attributes (species composition and structure) are intact and functioning within an historical range.
CC2	Fire regimes have been moderately altered from their historical range. The risk of losing key ecosystem components is moderate. Fire frequencies have departed from historical frequencies by one or more return intervals (either increased or decreased). This results in moderate changes to one or more of the following: fire size, intensity and severity, and landscape patterns. Vegetation attributes have been moderately altered from their historical range.
CC3	Fire regimes have been significantly altered from their historical range. The risk of losing key ecosystem components is high. Fire frequencies have departed from historical frequencies by multiple return intervals. This results in dramatic changes to one or more of the following: fire size, intensity and severity, and landscape patterns. Vegetation attributes have been significantly altered from their historical range.

Source: Hann and Bunnell 2001 as cited in BLM 2010.

The fire condition class for all BLM lands within 12 miles of the Ocotillo Sol Project area is Class 1 (N. Ludwig, pers. comm. 2012).

3.9.2.2 FIRE MANAGEMENT UNITS AND WILDFIRE HISTORY

The Ocotillo Sol Project area falls within the San Diego Fire Management Unit. Wildfire history is closely related to vegetation and climatic patterns in terrestrial ecosystems. Patterns of fire frequency, season, size, severity, and uniformity are functions of existing vegetation conditions, weather, elevation, physiographic features, ignition sources, and fire suppression activities.

There have been no recorded fires in the Yuha Basin ACEC. The closest recorded fires on BLM lands were the June 2007 Inkopah Fire and the June 2008 Mountain Fire, both of which were in the Jacumba Mountains Wilderness over 20 miles away (N. Ludwig, pers. comm. 2012).

California Department of Forestry and Fire Protection (CAL FIRE) and BLM operate under a Cooperative Fire Protection Plan, which states that CAL FIRE is to consider BLM's resource protection standards to select the least cost/least damaging suppression strategy. On any vegetation fires within the Ocotillo Sol Project area, BLM is required to send a resource advisor to work directly with the CAL FIRE incident commander to fully protect or at least mitigate resource values.

3.10 LANDS AND REALTY

The following discussion describes the applicable regulatory framework, land use plans, and existing land uses for the Ocotillo Sol Project area.

3.10.1 APPLICABLE REGULATIONS, PLANS, AND POLICIES/MANAGEMENT GOALS

The governing laws and applicable management plans for BLM-administered lands in and around the Ocotillo Sol Project area are detailed in Chapter 1, Section 1.6.7. These include FLPMA of 1976, as amended; the California Desert Protection Act of 1994; CDCA Plan of 1980, as amended; and CDCA Plan Amendment—Western Colorado (WECO) OHV Routes of Travel Designation Plan

The principal land use plans affecting the Ocotillo Sol Project area are the BLM's CDCA Plan and the WECO Plan. The WECO Plan is described in Section 3.13, Recreation.

3.10.1.1 YUHA BASIN AREA OF CRITICAL ENVIRONMENTAL CONCERN MANAGEMENT PLAN

The Yuha Basin ACEC is in southwestern Imperial County (see Figure 1-1 in Appendix A). The ACEC is traversed by Interstate 8 and Highway 98 and is immediately adjacent to the Mexican International Border on the south. The eastern border abuts privately owned agricultural lands and the western border parallels the Jacumba Mountains Wilderness. The Yuha Basin ACEC includes the Yuha Desert Management Area designated for the flat-tailed horned lizard.

The Yuha Basin ACEC was designated to provide additional protection to unique cultural and natural resources found in the region. The unique cultural and natural resources within this ACEC include the flat-tailed horned lizard, prehistoric resources, and historic resources. The Yuha Basin ACEC Management Plan was developed to protect these unique resource values while also providing for multiple uses. The Management Plan contains an energy and transmission-related goal and action. The goal is to "Minimize potential impacts resulting from the traversing of the ACEC by two utility corridors." The action is to "Permit the traversing of the ACEC by proposed lines and associated facilities if environmental analysis demonstrates that it is environmentally sound to do so." The Management Plan also states that surface-disturbing projects should be located outside the ACEC if possible but does not preclude projects from the ACEC. If the project must be located within the ACEC every effort should be made to locate the project within a previously disturbed area or in an area where habitat quality is considered poor. In addition, construction activity should be timed to minimize mortality of species known to occur in the area (BLM 1981).

3.10.1.1.1 Flat-tailed Horned Lizard Rangewide Management Strategy

The *Flat-tailed Horned Lizard Rangewide Management Strategy*, which includes the Yuha Desert Management Area for the flat-tailed horned lizard, is discussed in detail in Section 3.6, Biological Resources.

3.10.1.2 IMPERIAL COUNTY GENERAL PLAN

Lands under private ownership are near the Ocotillo Sol Project area. Private lands in the vicinity include a small parcel approximately one-half mile to the south, a larger parcel approximately 1 mile to the northwest, and private agricultural lands to the east. Applicable management plans and policies for these lands include the County of Imperial General Plan (Imperial County 2008) and Imperial County zoning regulations. The Ocotillo Sol Project area is entirely within BLM public lands. As Imperial County has no direct land use jurisdiction over public lands, neither the General Plan not Imperial County zoning regulations would be directly applicable to the Ocotillo Sol Project area.

3.10.2 EXISTING CONDITIONS

The 100-acre proposed solar facility and 15-acre temporary laydown area would be sited on BLM-managed lands adjacent to the existing Imperial Valley Substation, 4 miles south of Interstate 8, 5 miles south of Seeley, about 9 miles southwest of El Centro, and 82 miles east of San Diego. As previously mentioned, the Ocotillo Sol Project area is entirely within BLM-administered lands. The area is within the Yuha Basin ACEC, which includes the Yuha Desert Management Area. No Tribal or private lands are within or adjacent to the Ocotillo Sol Project area (see Figure 1-1 in Appendix A).

As detailed in Chapter 1, the Ocotillo Sol Project area is in the CDCA Plan area within Multiple Use Class L (Limited Use; Figure 3.10-1 in Appendix A). Under this classification, electrical generation plants are allowed in accordance with federal, state, and local laws. The CDCA Plan expressly provides for solar generation facilities on Class L lands after NEPA requirements are met.

3.10.2.1 EXISTING FACILITIES AND CORRIDORS

The Ocotillo Sol Project area lies immediately adjacent to the Imperial Valley Substation. This substation connects a 500 kV line that runs along the southern border of California to lines going to Mexico as well as local lines. The Sunrise Powerlink will also run to the Imperial Valley Substation once it is completed. The Sunrise Powerlink is currently under construction, with construction activities occurring adjacent to (west of) the Ocotillo Sol Project area. These construction activities include the following: laydown/staging area use, construction materials delivery (along route that connects to Highway 98), construction of towers, placement of power lines, and connection to the Imperial Valley Substation.

The Ocotillo Sol Project area is within CDCA Plan Utility Corridor N (see Figure 3.10-1 in Appendix A). This utility corridor is specified as being 2 to 5 miles in width. At the time the CDCA Plan was prepared, no energy-producing facilities existed within this designated corridor. The Imperial Valley and Dixieland substations are within Utility Corridor N, as well as transmission lines.

3.11 SPECIAL DESIGNATIONS

The BLM manages a variety of lands, including lands with unique and important historical, anthropological, ecological, biological, geological, and paleontological features. These features include undisturbed wilderness areas, critical habitat, natural environments, open spaces, scenic landscapes, historic locations, cultural landmarks, and paleontologically rich regions. Some of these unique lands have special designations, including Wilderness, National Historic Trails, and ACECs.

3.11.1 APPLICABLE REGULATIONS, PLANS, AND POLICIES/MANAGEMENT GOALS

3.11.1.1 FEDERAL LAND POLICY MANAGEMENT ACT

The designation of ACECs was authorized in Section 202 (c)(3) of FLPMA, and was designed to be used as a process for determining the special management required by certain environmental resources or hazards (BLM 2001). According to Section 103(a) of FLPMA, an ACEC is defined as the following:

> An area within the public lands where special management attention is required (when such areas are developed or used or where no development 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.

Prior to its designation, management prescriptions are developed for each proposed ACEC. These prescriptions are site-specific and include actions that the BLM has authority to carry out, as well as recommendations for actions that the BLM does not have direct authority to implement, such as cooperative agreements with other agencies and mineral withdrawals (BLM 2001). Refer to Chapter 1 for additional discussion of FLPMA.

3.11.1.2 CALIFORNIA DESERT CONSERVATION AREA PLAN

ACECs are the primary active wildlife management tools used in the CDCA Plan. The project site is within the Yuha Basin ACEC, which was designated to protect cultural and natural resources within the area. Refer to Chapter 1 and Chapter 3, Sections 3.6 (Biological Resources) and 3.10 (Lands and Realty) for a more detailed discussion of the CDCA Plan.

3.11.1.3 YUHA BASIN ACEC PLAN AND YUHA DESERT MANAGEMENT PLAN

The CDCA Plan established two ACECs to conserve the flat-tailed horned lizard—Yuha Basin (40,622 acres) and East Mesa (40,712 acres). The CDCA Plan also directed that habitat management plans be written for lands adjacent to these ACECs. In 1981, a combined plan was prepared for the Yuha Basin ACEC (BLM 1981). Specific actions in the plan were designed to

protect sensitive cultural and wildlife resources while allowing for mineral material sales, geothermal development, and motorized vehicle competitive events.

The Yuha Desert Management Plan was prepared in response to indications of declining flat-tailed horned lizard populations and increasing damage to cultural resources due to route proliferation and cross-country vehicle travel in the Yuha Basin (BLM 1985). The Yuha Desert Management Plan covers both of the previous areas plus several adjacent ACECs and natural areas. The plan tightened controls on, but did not eliminate, OHV competitive events, and routes of travel were reduced in number, among other measures. In 1985, the Yuha Basin ACEC was expanded to 63,000 acres (BLM 1985).

The WECO Desert Routes of Travel Designations Plan amended the CDCA Plan and included route amendments within the Yuha Basin ACEC and Yuha Desert Management Area. The WECO Plan designated routes of travel within the Yuha Basin area as limited use, with the limitation to street legal vehicles for most of the routes, among other measures to help conserve the natural and cultural resources in the area (BLM 2003).

3.11.1.4 NATIONAL LANDSCAPE CONSERVATION SYSTEM

The National Landscape Conservation System (NLCS) was created by BLM in June 2000 in response to growing concern over the loss of open space. The NLCS brings into a single system some of the BLM's premier land designations. The BLM hopes that by bringing these lands into an organized system public awareness of these areas' scientific, cultural, educational, ecological, and other values will increase. Inclusion in the NLCS does not create any new legal protections for these lands, but it does provide BLM field offices with overall guidance and direction for management of the system. NLCS lands include the following: National Conservation Areas, National Monuments, Wilderness Areas, Wilderness Study Areas, Wild and Scenic Rivers, and National Historic and Scenic Trails.

3.11.1.5 CALIFORNIA DESERT PROTECTION ACT OF 1994

The California Desert Protection Act designated 69 Wilderness Areas on BLM-managed public lands in the California Desert. The Act states, "wilderness is a distinguishing characteristic of the public lands in the California desert." and "The wilderness values of desert lands are increasingly threatened by . . . development." The Act further states that there are no buffer zones designated along with wilderness areas: "The fact that non-wilderness 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" (PL103-433, Section 103(d)).

3.11.1.6 WILDERNESS ACT

Wilderness Areas are designated by Congress, under the authority of the Wilderness Act of 1964 as part of the National Wilderness Preservation System, and are managed by one of the following four land management agencies: the BLM, the USFWS, the U.S. Forest Service, or the National Park Service.

According to the Wilderness Act, wilderness is defined as the following:

> (c) A wilderness, in contrast with those areas where man and his own works dominate the landscape, is hereby recognized as an area where the earth and its community of life are untrammeled by man, where man himself is a visitor who does not remain. An area of wilderness is further defined to mean in this chapter an area of undeveloped federal land retaining its primeval character and influence, without permanent improvements or human habitation, which is protected and managed so as to preserve its natural conditions and which (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 five thousand acres of land or is of sufficient size as 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. (PL 88-577, Section 2[c])

A number of uses are specifically prohibited within Wilderness Areas. Prohibited uses include commercial enterprises; permanent and temporary roads (with exceptions for administration and emergency purposes); use of motorized vehicles, equipment, motorboats, or mechanical transport; landing of aircraft; or the erection of a structure or installation (PL 88-577, Section 4[c]).

BLM Manual 8560, Management of Designated Wilderness Areas, identifies BLM's role in administering Wilderness Areas on public lands, provides policy guidance for BLM personnel, and sets the framework for wilderness management program development. It states the goals of wilderness management, as well as administrative functions and specific activities related to wilderness management.

3.11.2 EXISTING CONDITIONS

Existing special designations within or adjacent to the Ocotillo Sol Project area include only the Yuha Basin ACEC, which also includes the Yuha Desert Management Area, as described above. There are no NLCS lands or other BLM-supported special designations within the Ocotillo Sol Project area. The Juan Bautista de Anza National Historic Trail lies approximately 4.5 miles to the southwest of the Ocotillo Sol Project area (see Figure 1-1).

3.11.2.1 YUHA BASIN ACEC

The Yuha Basin ACEC consists of 63,000 acres in the Imperial Valley of California (see Figure 1-1 in Appendix A). The Yuha Desert is rich in both human and natural history. The Yuha Basin contains several unique areas, such as the Juan Bautista de Anza National Historic Trail, geoglyphs created by Native Americans, an area of rare crucifixion thorns, oyster shell beds, and the Yuha Well. The Yuha Basin ACEC was established to protect these unique cultural and natural resources, particularly habitat for the flat-tailed horned lizard.

The majority of the Yuha Basin ACEC overlaps the Yuha Desert Management Area (see Figure 3.10-1 in Appendix A). This management area was specifically designated by BLM for the flat-

tailed horned lizard, as outlined in the *Flat-tailed Horned Lizard Rangewide Management Strategy*, to provide guidance for the conservation and management of sufficient habitat to maintain the existing populations of flat-tailed horned lizard in five Management Areas and one research area.

3.11.2.2 JUAN BAUTISTA DE ANZA NATIONAL HISTORIC TRAIL

In 1774 and 1776, the Spanish crown commissioned the captain of the small Presidio of Tubac (promoted to Lieutenant-Colonel after the first expedition) Juan Bautista de Anza to lead two expeditions to establish a settlement on San Francisco Bay. Congress designated the route followed by Juan Bautista de Anza as a National Historic Trail in 1990. Within the U.S., the Juan Bautista de Anza National Historic Trail is approximately 1,200 miles long, extending from Tubac, Arizona, to San Francisco, California. In 1996, the National Park Service finalized a Comprehensive Management and Use Plan and EIS for the Juan Bautista de Anza National Historic Trail, which provides the BLM with trail management guidance. Local agencies were tasked to develop a recreational Juan Bautista de Anza National Historic Trail (see Figure 1-1 in Appendix A) inside of a one-mile wide corridor established by the National Park Service management plan and EIS. The de Anza Auto Route has already been established along Interstate 8.

3.12 LANDS WITH WILDERNESS CHARACTERISTICS

3.12.1 MANAGEMENT OF LANDS WITH WILDERNESS CHARACTERISTICS

Management of lands with wilderness characteristics is part of BLM's multiple-use mandate, and is recognized within the spectrum of resource values and uses within the CDCA. Lands with wilderness characteristics are defined as areas:

Having been affected primarily by the forces of nature, with the imprint of man's work substantially unnoticeable

Having outstanding opportunities for solitude or a primitive and unconfined type of recreation

Potentially containing ecological, geological, or other features of scientific, educational, scenic, or historical value

These lands may be managed for the use and enjoyment of area visitors and may be devoted to the public purposes of recreational, scenic, scientific, educational, conservation, and historical use. In addition, they could augment multiple-use management of adjacent and nearby lands through the protection of watersheds and water yield, wildlife habitat, natural plant communities, and similar natural values.

3.12.2 BACKGROUND OF WILDERNESS DESIGNATION IN THE CDCA

Public lands in the CDCA were inventoried and administratively identified for wilderness designation under the authority of Sections 201 (a), 202, and Section 603(a and b) of FLPMA in the March 1979 "Wilderness Inventory–Final Descriptive Narratives" for the CDCA.

Between 1976 and 1979, the BLM inventoried all public lands in the CDCA and identified 136 wilderness study areas of 5.7 million acres. Of these, the BLM recommended 45 wilderness study areas (2,099,000 acres) as suitable for inclusion in the National Wilderness Preservation System. The California Desert Protection Act of 1994 designated 69 wilderness areas, 65 of which were in the CDCA.

3.12.3 INVENTORY OF LANDS WITH WILDERNESS CHARACTERISTICS

Lands outside of designated wilderness or wilderness study areas are assessed during the resource management plan or amendment process to determine if they possess one or more wilderness characteristics. Plan decisions can also include a land use allocation requiring these lands to be managed to protect one or more wilderness characteristics during the life of the plan (see BLM Land Use Planning Handbook, H-1601-1, Appendix C, [K] Wilderness

Characteristics). These characteristics include naturalness, outstanding opportunities for solitude, and outstanding opportunities for primitive and unconfined recreation.

The BLM may consider whether there are lands with wilderness characteristics within areas proposed for a land use plan amendment. The proposed land use plan amendment for the Ocotillo Sol Project includes public lands that were inventoried for potential wilderness designation between 1976 and 1979. The proposed project site is on public lands that were inventoried but were not found to have values that justified further analysis as an inventory unit. Because of the intensive inventory and studies, which were completed under Section 603 of FLPMA in 1979, the BLM does not find that resource conditions or characteristics have changed on the site, and does not find that the area contains wilderness characteristics. For a complete description of the Inventory Units and the findings of the inventory, see the "Wilderness Inventory—Final Descriptive Narratives—California Desert Conservation Area" (1979) and the Draft CDCA Plan and Final EIS (1980).

3.13 RECREATION

3.13.1 APPLICABLE REGULATIONS, PLANS, AND POLICIES/MANAGEMENT GOALS

3.13.1.1 FEDERAL LAND POLICY AND MANAGEMENT ACT

FLPMA recognizes the value of public lands and includes the multiple use/sustained yield framework for management to provide for outdoor recreation for future generations. Title VI of FLPMA, *Designated Management Areas, California Desert Conservation Area*, acknowledges the recreational resources contained within the California desert environment and directs the BLM to develop a multiple use and sustained yield management plan to conserve the desert's resources, particularly recreational use.

3.13.1.2 CALIFORNIA DESERT CONSERVATION AREA PLAN

The CDCA Plan, as amended, defines Multiple Use Classes for all BLM-managed lands, which includes the lands within the Ocotillo Sol Project area. These Multiple Use Classes are described earlier in Section 1.7.7. The CDCA Plan establishes goals for management of recreation in the California Desert. The goals are to provide for the use of the public lands and resources of the CDCA, including recreational uses, in a manner that enhances wherever possible—and that does not diminish—the environmental, cultural, and aesthetic values of the desert (BLM 1999). The goals of the Recreation Element of the plan are to:

- Provide for a wide range of quality recreation opportunities and experiences emphasizing dispersed undeveloped use.
- Provide a minimum of recreation facilities. Those facilities should emphasize resource protection and visitor safety.
- Manage recreation use to minimize user conflicts, provide a safe recreation environment, and protect desert resources.
- Emphasize the use of public information and education techniques to increase public awareness, enjoyment, and sensitivity to desert resources.
- Adjust management approach to accommodate changing visitor use patterns and preferences.
- Encourage the use and enjoyment of desert recreation opportunities by special populations, and provide facilities to meet the needs of those groups.

The CDCA also contains a motorized-vehicle access element, which provides a system and a set of rules that governs access to the CDCA by motor vehicles. The rules include providing for constrained motorized vehicle access, while protecting desert resources (BLM 1999). When the CDCA Plan was first adopted, the BLM designated a network of motorized vehicle routes on public lands for north-central and southern portions of the CDCA. The BLM manages OHV use to help maintain the conditions of special status species and other natural and cultural resources.

3.13.1.3 WESTERN COLORADO OFF-HIGHWAY VEHICLE ROUTES OF TRAVEL DESIGNATION PLAN

The WECO OHV Routes of Travel Designation Plan, an amendment to the CDCA Plan, covers approximately 475,000 acres and approximately 2,320 miles of OHV routes of travel on BLM-managed lands in Imperial County, California. The WECO Plan designates routes within the WECO as open, limited, or closed. The majority of routes in the Yuha Basin ACEC are designated as limited. Only street-legal vehicles are allowed on the routes in the Yuha Basin ACEC, except for the routes that are identified as part of the Back Country Discovery Route (Route 346) or Juan Bautista de Anza National Historic Trail (Routes 274 and 308), which are designated as open. Camping is allowed only in designated camping areas. Camping next to roads in areas that are not designated as camping areas is not allowed. The Yuha Basin ACEC is used for on-route touring and limited camping; off-route play is not allowed (BLM 2002).

3.13.1.4 OFF-ROAD VEHICLES (TITLE 43 CFR 8340, ET SEQ.)

Title 43 CFR 8340 establishes criteria for designating public lands as open, limited, or closed to the use of OHVs and for establishing controls governing the use and operation of OHVs in such areas, while protecting resources, promoting safety, and minimizing user conflicts. Recreational use under Title VI includes the use of OHVs.

3.13.2 EXISTING CONDITIONS

The Ocotillo Sol Project area is within the Yuha Basin ACEC, which is a limited use area suitable for low to moderate recreational use densities. Recreational opportunities within the Ocotillo Sol Project vicinity include sightseeing and on-route motor vehicle touring (street legal only), bicycling, hiking, wildlife viewing, rockhounding, and hunting. OHV use is not allowed within the limited use area or along the BLM routes near the Ocotillo Sol Project. There are no recreational facilities within the project vicinity.

3.14 VISUAL RESOURCES

3.14.1 APPLICABLE REGULATIONS, PLANS, AND POLICIES/MANAGEMENT GOALS

3.14.1.1 FEDERAL LAND POLICY AND MANAGEMENT ACT AND VISUAL RESOURCE MANAGEMENT SYSTEM

BLM's responsibility to manage the scenic resources of the public lands is established by law:

FLPMA states, "public lands will be managed in a manner which will protect the quality of the scenic (visual) values of these lands."

NEPA requires that measures be taken to "assure for all Americans . . . aesthetically pleasing surroundings . . . ."

This responsibility is reinforced by BLM's mission statement, "to sustain the health, diversity, and productivity of the public lands for the use and enjoyment of present and future generations."

BLM's policy is that it has a basic stewardship responsibility to identify and protect visual values on all BLM lands. In order to meet this, BLM has developed a Visual Resource Management (VRM) system that identifies and evaluates scenic values to determine the appropriate levels of management. The VRM system also provides a way to analyze potential visual impacts and apply visual design techniques to ensure that surface-disturbing activities are in harmony with their surroundings.

The VRM system is described in BLM Manual Section 8400–Visual Resource Management (BLM 1984), with additional guidance in handbooks H-8410-1 Visual Resource Inventory (BLM 1986a) and H-8431-1 Visual Resource Contract Rating (BLM 1986b), and in instruction memorandum, including Instruction Memorandum 2009-167, Application of the Visual Resource Management Program to Renewable Energy (BLM 2009).

The Visual Resource Inventory (VRI) measures three primary components (scenic quality, sensitivity level, and distance zones) and serves as the baseline for analysis of potential impacts.

3.14.1.2 CALIFORNIA DESERT CONSERVATION AREA PLAN

The CDCA attracts millions of visitors annually to its diverse landscape settings, which provide the opportunity for a desert experience of natural beauty and solitude. Scenic values are often cited by the public as the desert's most important resource (BLM 1999). BLM manages the scenic and visual resources of the area in accordance with MUCs designated by the CDCA Plan. Acknowledging that management activities may involve alteration of the natural character of the landscape to some degree, BLM identifies appropriate levels of management, protection, and rehabilitation on all public lands in the CDCA, commensurate with visual resource management objectives in the Multiple Use Class guidelines.

The Multiple Use Class that applies to the Ocotillo Sol Project area is Class L (Limited Use). The CDCA Plan prescribes management for Class L as follows: "These lands are managed to protect sensitive, natural, scenic, ecological, and cultural resource values. They provide for generally lower-intensity, carefully controlled multiple uses that do not significantly diminish resource values" (BLM 1999). More specifically, the CDCA Plan provides for solar generation facilities on Class L lands after NEPA requirements have been met.

3.14.1.3 EL CENTRO FIELD OFFICE LANDSCAPE-LEVEL VISUAL RESOURCE INVENTORY

In 2010, the BLM completed a landscape-level VRI of the BLM-administered lands within the El Centro Field Office (Otak 2010). These lands were divided into Scenic Quality Rating Units (SQRU), Sensitivity Level Rating Units (SLRU), and Distance Zones.

The SQRUs are delineated based on physiographic characteristics such as geology, vegetation, hydrology, texture, color, variety, and topography. Each SQRU was given a number and name, and scenic quality was measured based on the scoring of seven factors including landform, vegetation, water, color, influence of adjacent scenery, scarcity, and cultural modification. Scenic Quality is then scored to meet one of three measures Scenic Quality A, B, or C with A being of the highest quality (or variability) and C being the lowest. The Ocotillo Sol Project area is entirely within the 52,666-acre SQRU 12, Yuha Desert

The SLRUs are delineated based on the measure of public concern for the maintenance of scenic quality. The sensitivity inventory addresses type of use, amount of use, public interest, adjacent land uses, special areas, and other factors that may be unique to a given setting. As with SQRUs, SLRUs are given a number and name. The Ocotillo Sol Project area is entirely within the 52,666-acre SLRU 12, Yuha Desert, which has a boundary that mirrors SQRU 12.

Distance Zones, landscapes are subdivided into three distanced zones based on relative visibility from travel routes or observation points. The three zones are the foreground–middleground, background, and seldom seen zones. The foreground–middleground zone includes areas seen from highways, rivers, or other viewing locations that are less than 3 to 5 miles away. Seen areas beyond the foreground–middleground zone but usually less than 15 miles away are in the background zone. Areas not seen as foreground–middleground or background (i.e., hidden from view) are in the seldom-seen zone.

Ocotillo Sol Project lies within a landscape setting that was inventoried to have the following visual values:

> **Scenic Quality:** Scenic Quality C (total score of 7.5). Featureless landform with some unique areas of vegetation in the western portion and views of wilderness area and Coyote Mountains to the west. This unit does not stand out as being unique; without adjacent scenery and diversity of vegetation to the west, it would be common and ordinary. Scenic Quality C represents 71 percent of the total area inventoried within the El Centro Field Office.

Sensitivity Level: Overall rating of High (Maintenance of Visual Quality has High Value). Culturally significant with many visually important features: Crucifixion Thorn Natural Area, Juan Bautista de Anza National Historic Trail. (All lands within SQRU 12 were shown to be within a 15-mile offset of this National Historic Trail. Additionally, the SQRU boundaries were defined by the Yuha ACEC.) Sensitivity Level High represents 48 percent of the total area inventoried within the El Centro Field Office.

Distance Zone: Foreground–Middleground Zone (area that can be seen from a travel route for a distance of 3 to 5 miles). All lands within the ECFO were identified as being within the Foreground/Middleground of either a major travel route or an established secondary travel route. Foreground/Middleground represents 93 percent of the overall El Centro VRI area.

Based on these evaluations, VRI Class III was assigned to this proximity of the inventoried boundary, as determined by the VRI Assignment Matrix Illustration 11 in the VRM Handbook and shown in Table 3.14-1. VRI Class III represents 36 percent of the total area inventoried within the El Centro Field Office.

TABLE 3.14-1
VISUAL RESOURCE INVENTORY CLASS DIAGRAM – BASIS FOR DETERMINING VISUAL RESOURCE INVENTORY CLASSES

		Visual Sensitivity Levels						
		High			Medium			Low
Special Areas		I	I	I	I	I	I	I
Scenic Quality	A	II	II	II	II	II	II	II
	B	II	III	III / IIV*	III	IV	IV	IV
	C	III	IV	IV	IV	IV	IV	IV
		f/m	b	s/s	f/m	b	s/s	s/s
		Distance Zones						

f/m = Foreground/Middleground
b = Background
s/s = Seldom Seen

* If adjacent area is Class I, II, or III, assign Class III; if Class IV, assign Class IV.

Source: Visual Resource Inventory – BLM Manual Handbook 8410-1

3.14.1.4 SITE-SPECIFIC VISUAL RESOURCE INVENTORY

For the purposes of this EIS, RECON Environmental, Inc. was directed to conduct a site-specific visual resource assessment of the Ocotillo Sol Project area to evaluate and document current conditions on a more detailed project level than previously done in the effort described above. This is discussed in sections 3.14.2 through 3.14.6 below.

3.14.1.5 IMPERIAL COUNTY GENERAL PLAN

The Imperial County General Plan contains guidance related to scenic resources and open spaces within the county. The Conservation and Open Space element of the General Plan recognizes the aesthetics of the Yuha Desert, and sets goals and objectives for protecting its unique geologic features including sand chimneys, painted gorge formations, and mountainous terrain. Unique features such as these, rock outcroppings, historic buildings, or prominent scenic landmarks do not occur within or near the Ocotillo Sol Project area.

The Circulation and Scenic Highways Element of the General Plan provides a means of protecting and enhancing scenic resources within highway corridors in Imperial County, consistent with the California Department of Transportation (Caltrans) State Scenic Highway Program. There are no county, state, or federally designated scenic highways within 15 miles or within viewing distance of the Ocotillo Sol Project area.

3.14.2 REGIONAL CONTEXT

3.14.2.1 LANDSCAPE CHARACTER AND TYPE

The regional location is the western portion of the Salton Trough, in the Basin and Range Province, and east of the rugged mountainous terrain of the Peninsular Ranges in the Lower California Province (California Geologic Survey 2002). This transitional zone between physiographic provinces is characterized by badlands landscape features, very rugged and sparsely vegetated low mountains, and relatively level alluvial plains with a sparse to moderate vegetated cover of creosote, saltbush, prickly pear, and other small subshrubs and grasses (creosote flats). The landscape type is panoramic, with a broad horizontal composition and little sense of boundary restriction other than distant views of rugged mountainous terrain. The regional landscape character is represented in Figure 3.14-1 (see Appendix A).

3.14.2.2 PROJECT VICINITY

The Ocotillo Sol Project area is in the Yuha Desert and within the boundaries of BLM's Yuha Basin ACEC. The northern boundary of the 115-acre site abuts the existing Imperial Valley Substation. High-voltage power lines and supporting structures are aligned along the east boundary of the Ocotillo Sol Project area, extending south. The project vicinity is represented in Figure 3.14-2 (see Appendix A). Lands adjacent to the eastern, southern, and western boundaries are similarly characterized by creosote flats.

The Westside Irrigation Canal lies approximately 2 miles east of the Ocotillo Sol Project area. A dense band of tamarisk and other vegetation parallels the west side of this canal, east of which

are cultivated agricultural lands. The nearest residences are approximately 1 mile to the north, 1.75 miles to the east, and over 2 miles to the southeast of the Ocotillo Sol Project area. There is a recreational vehicle resort and a mobile home park approximately 4 miles to the north/northeast of the Ocotillo Sol Project area. Views of the Ocotillo Sol Project site from these residences are either indistinguishable or screened from view due to the distance, tower structures at the existing Imperial Valley Substation, intervening vegetation and topography, and low angle of view.

3.14.3 DISTANCE ZONES AND KEY OBSERVATION POINTS

BLM considers landscape distance zones based on relative visibility from key observation points (KOPs). KOPs typically include scenic overlooks, important trails, significant viewpoints in Wilderness, nearby residential or sensitive use areas, and major recreational travel routes.

The distance zones include the foreground–middleground (visible areas within 3 to 5 miles), the background (visible areas beyond the foreground–middleground, but less than 15 miles away), and seldom-seen areas (i.e., areas hidden from view and/or over 15 miles away).

The Ocotillo Sol Project area is either not visible or is seldom seen from most locations within the Jacumba Mountains Wilderness. Certain locations at higher elevations and on east-facing slopes within the Jacumba Mountains Wilderness have a line of sight to the project area, but from these distances of over 12 miles, the project would be within distant background views and would not dominate nor detract from the viewshed. The viewshed analysis indicates that the total designated Wilderness with a line of site to the project area constitutes less than 5 percent of the Wilderness area (see map in Appendix L). The project would not visually dominate views from these locations due to the small size and scale within the overall viewshed, visual collocation with the existing substation, and the background agricultural development.

The project area is almost entirely screened from view by intervening trees and vegetation from locations within agricultural lands to the east. Views of the Ocotillo Sol Project area from the Juan Bautista de Anza National Historic Trail, at its nearest 4.5 miles to the southwest, are also indistinguishable due to distance and intervening vegetation and topography. The Ocotillo Sol Project area is not visible from the Vista de Anza kiosk and viewpoint location, at a distance of approximately 11 miles with intervening topography (see discussion below and Viewshed Analysis Map, Appendix L).

Three KOPs, representative of locations from which the viewing public could most often see the project area, were identified for this project in consultation with BLM. These include locations along Interstate 8 and Highway 98. The travel corridors of Interstate 8 and Highway 98 were both considered to be linear KOP features with the potential for foreground–middleground views of the Ocotillo Sol Project area. At its closest distance, Interstate 8 is over 4 miles to the north of the project area; Highway 98 is over 2 miles to the south at its closest distance. Both eastbound and westbound views of travelers along these corridors were considered. A detailed analysis (Visual Contrast Rating) and photographs for each of the KOPs is included in Appendix L, and is summarized as follows:

KOP #1: Location is 6-plus miles northwest of the project area, along Interstate 8 at the Dunaway Road Interchange. From this and similar locations along Interstate 8, views of the Ocotillo Sol Project area are indistinguishable due to the low angle of view and intervening line-of-sight obstructions between the KOP and the project area: vegetation, topography, and structures at the existing Imperial Valley Substation (the Imperial Valley Substation itself is indiscernible at this distance and blocks most views of the project area from locations along Interstate 8).

KOP #2: Location is 4-plus miles southwest of the project area, along Highway 98 Imperial Highway, at the San Diego Gas & Electric access road. From this location, views of the Ocotillo Sol Project area are indistinguishable due to the low angle of view, and intervening line-of-sight obstructions between the KOP and the project area: primarily vegetation and topography (the Imperial Valley Substation itself is indiscernible at this distance).

KOP #3: Location is approximately 2.5 miles southeast of the project area, along Highway 98 Imperial Highway, at Mount Signal Road, at approximately the same elevation. From this location along Highway 98, views of the Ocotillo Sol Project area are nearly indistinguishable due to the low angle of view, and intervening line-of-sight obstructions between the KOP and the project area: primarily vegetation, and topography (the Imperial Valley Substation and transmission line towers are barely discernible in the distance).

3.14.4 VISUAL SENSITIVITY

BLM lands are assigned a sensitivity rating of high, medium, or low, based on types of users, amount of use, public interest, adjacent land uses, and presence of special areas. Areas seen by large numbers of people engaged in recreational pursuits generally are assigned a high sensitivity level. Highway 98 is used by recreationists in the Yuha Basin ACEC. As discussed earlier, the Yuha Basin ACEC was assigned a high visual sensitivity level due to the presence of biological and cultural significant resources, wilderness access, recreational opportunities, travel corridors and other factors.

Visitor sensitivity to visual resources seen from the Juan Bautista de Anza National Historic Trail or the associated Vista de Anza Viewpoint is assumed to be high. BLM has interpretive information about the Juan Bautista de Anza National Historic Trail at the Vista de Anza Viewpoint, and has identified this as a location from which to view the National Historic Trail area.

Although the overall visual sensitivity of the Yuha Basin ACEC is considered high, viewer sensitivity to the Ocotillo Sol Project area and its immediate surroundings is considered to be relatively low to moderate. This is due to its location at the eastern boundary of the ACEC, in close proximity to agricultural lands and immediately adjacent to the Imperial Valley Substation and associated transmission corridors.

Numerous OHV routes are shown within the Yuha ACEC Limited Area, which generally includes the Ocotillo Sol Project area and extends west. Some of these nearby routes include locations with views of the Imperial Valley Substation and the Ocotillo Sol Project area. The OHV recreationists' viewer sensitivity to the appearance of the Ocotillo Sol Project area is considered to be low due to the dominant visual presence of the adjacent Imperial Valley Substation towers, structures, and overhead transmission lines.

3.14.5 SCENIC QUALITY

The on-site scenic quality field inventory was performed in March 2011. SQRUs were identified, evaluated, and mapped (see Figure 3.14-3 in Appendix A). SQRU evaluation forms were completed (see Appendix L) and are summarized in Table 3.14-2.

As discussed above, the Ocotillo Sol Project area is entirely within SQRU 12, Yuha Desert, identified by the El Centro Field Office landscape-level VRI. The site-specific field inventory identified two sub-areas of this SQRU, identified as SQRU 12a and SQRU 12b, which have differences related to vegetative density and diversity.

TABLE 3.14-2
SCENIC QUALITY RATING UNITS OF THE OCOTILLO SOL PROJECT AREA

SQRU	Description	Scenic Quality Classification*
SQRU-12a	Creosote flats	C
SQRU-12b	Xeroriparian shrub-scrub	B

*Note: BLM classifies scenic quality as A (high), B (medium), or C (low).

A detailed assessment and photographs of these two SQRUs are included in Appendix L, and is summarized as follows:

SQRU 12a: Sparsely vegetated open area with slightly rounded, raised hummocks (low mounds). Vegetation consists primarily of creosote shrubs, with some occasional occurrences of mesquite and acacia. The ground plane is seasonally colorful when wildflowers bloom.

> Views North: Views of Imperial Valley substation and transmission lines dominate the foreground views to the north and screen background and middleground views of areas further north.
>
> Views West: Foreground and middleground views of creosote flats, and distant background views of the Jacumba Mountains and Wilderness, over 11 miles to the west.
>
> Views South: Distant background views of Mount Signal in Mexico (4-plus miles), and linear alignment of transmission lines and support structures.
>
> Views East: Existing unpaved road and continued creosote flats in foreground, and distant, linear grove of tamarisk trees, which screen middleground and background views of agricultural cultivated lands further east.

SQRU 12b: This unit is limited to the southeastern area of the study area, but does not extend into the Ocotillo Sol site boundary. Visual character and scenic quality are similar to SQRU 12a (i.e., sparsely vegetated with slight variations in predominantly flat terrain), but with somewhat higher degree of vegetative structure and species diversity, due to hydrology (seasonal surface flows associated with Pinto Wash) and resulting presence of several xeroriparian plant species (e.g., smoke tree, mesquite, acacia, and Mormon tea).

Views North: Views of Imperial Valley substation and transmission lines dominate the foreground views to the north and screen background and middleground views of areas further north.

Views West: Foreground and middleground views of creosote flats xeroriparian shrub-scrub, and distant background views of the Jacumba Mountains and Wilderness, over 11 miles to the west.

Views South: Distant background views to the south of Mount Signal in Mexico (4-plus miles), and linear alignment of transmission lines and support structures.

Views East: Existing unpaved road and continued creosote flats in foreground, and distant, linear grove of tamarisk trees, which screen middleground and background views of agricultural cultivated lands further east.

3.14.6 INTERIM VISUAL RESOURCE MANAGEMENT CLASS

Interim VRM Classes are established where a project is proposed and there are no VRM Classes designated by the land use or resource management plan for the area. That is the case for the Ocotillo Sol Project Area; VRM Classes are not designated by the CDCA Plan. As discussed above, BLM manages the scenic and visual resources of the project area in accordance with the Multiple Use Class guidelines of the CDCA Plan. The CDCA Plan allocation for the project area is Multiple Use Class L (Limited Use). The CDCA Plan prescribes management for Class L as follows: "These lands are managed to protect sensitive, natural, scenic, ecological, and cultural resource values. They provide for generally lower-intensity, carefully controlled multiple uses that do not significantly diminish resource values" (BLM 1999). More specifically, the CDCA Plan provides for solar generation facilities on Class L lands after NEPA requirements have been met.

In the absence of VRM Class designations in the CDCA, BLM identifies an Interim VRM Class for the project area that reflects maximum protection of the visual values that supports and does not conflict with the decisions within the CDCA. For Multiple Use Class L visual management prescriptions, the VRM Class with closely corresponding visual management objective is Class III. The visual management objective of Class III is

> to partially retain the existing character of the landscape. The level of change to the 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 (BLM 1984).

An Interim VRM Class III assignment for the Ocotillo Sol Project area is consistent with the CDCA prescriptions and the inventory class (VRI Class III), and is proposed by BLM for the Ocotillo Sol Project area. Rationale for this is discussed further in Section 4.13.1. The ability to construct the project and maintain conformance with the VRM Class III objective is demonstrated in Chapter 4, Section 4.13.

3.14.7 LIGHT AND GLARE

The Ocotillo Sol Project area is in a remote and undeveloped area of Imperial County. The surrounding land uses consist of open desert, the Imperial Valley Substation, transmission lines, Westside Main Canal, and agricultural uses to the east of the canal. The nearest residences are approximately 1 mile to the north, 1.75 miles to the east, and over 2 miles to the southeast of the Ocotillo Sol Project area. There is a recreational vehicle resort and a mobile home park located approximately 4 miles to the north/northeast of the Ocotillo Sol Project area. Views of the Ocotillo Sol Project site from these residences are either indistinguishable or screened from view due to the distance, tower structures at the existing Imperial Valley Substation, intervening vegetation and topography, and low angle of view.

The Imperial Valley Substation is the primary source of artificial lighting and glare in the Ocotillo Sol Project vicinity. Night lighting of the substation consists of security lighting that is shielded and directed downward. The substation and associated transmission lines may occasionally produce glare during daylight hours from the sun's reflection on metal surfaces.

Routes and roads near the Ocotillo Sol Project area have little nighttime traffic overall. Major roadways, Highway 98 and Interstate 8, are 2 to 4 miles (and further), respectively, away from the Ocotillo Sol Project area. There is little light generated by the canal and agricultural fields to the east.

3.15 TRANSPORTATION AND PUBLIC ACCESS

3.15.1 APPLICABLE REGULATIONS, PLANS, AND POLICIES/MANAGEMENT GOALS

3.15.1.1 CALIFORNIA DESERT CONSERVATION AREA PLAN

The CDCA Plan provides a framework for land management decision-making for the BLM-administered lands in the California Desert District. First, land is assigned one of four BLM Multiple Use Classes. Then, specific land management decisions are made as needed based on the uses and usage level appropriate for that Class. The CDCA Plan addresses vehicle travel and access across public lands as follows:

> The need for access across public lands to permit utilization of state- and privately owned lands and to permit authorized developments on public lands, including mining claims, is recognized. The routes of travel and construction standards are subject to such BLM control as is required to prevent unnecessary or undue degradation of the public lands and their resources or to afford environmental protection.
>
> To engage in most desert recreational activities outside of open areas, visitors must use motorized vehicles and usually travel on some previously used or marked motorized-vehicle route. Understandably, vehicle access is among the most important recreation issues in the Desert. A primary consideration of the recreation program, therefore, is to ensure that access routes necessary for recreation enjoyment are provided. Specific route identification, as outlined in the Motorized-Vehicle Access Element, will be initiated upon adoption of this Plan. (BLM 1999)

3.15.1.2 WESTERN COLORADO OFF-HIGHWAY VEHICLE ROUTES OF TRAVEL DESIGNATION PLAN

The WECO Plan, an amendment to the CDCA Plan, covers approximately 475,000 acres and approximately 2,320 miles of OHV routes of travel on BLM-managed lands in Imperial County, California. The WECO Plan designates routes within the WECO as open, limited, or closed. BLM routes near the Ocotillo Sol Project area are designated as limited. Only street-legal vehicles are allowed on limited routes (BLM 2002). Additional detail on the WECO Plan is described in Section 3.13, Recreation.

3.15.1.3 FEDERAL TRANSPORTATION REGULATIONS (49 CFR, SUBTITLE B)

49 CFR, Subtitle B, contains procedures and regulations pertaining to interstate and intrastate transport, including hazardous materials program procedures, and provides safety measures for motor carriers and motor vehicles that operate on public highways.

3.15.1.4 CALIFORNIA VEHICLE CODE

The California Vehicle Code contains regulations applicable to roadway damage; licensing, size, weight, and load of vehicles operated on highways; safe operation of vehicles; and the transportation of hazardous materials.

3.15.1.5 CALIFORNIA STREETS AND HIGHWAY CODE

The California Streets and Highways Code specifies that permits issued by Caltrans be required for any roadway encroachment during truck transportation and delivery, as well as for any load that exceeds Caltrans's weight, length, or width standards for public roadways.

3.15.1.6 IMPERIAL COUNTY GENERAL PLAN

Use of Imperial County roads in the Ocotillo Sol Project area is subject to state regulation by the California Vehicle Code and enforced by the sheriffs' departments of Imperial County. Planning and improvement of major local roads is under the jurisdiction of the Imperial County Department of Public Works. Policies and programs for improvement to regional transportation, congestion management, and capacities of major circulation routes are provided in the Imperial County General Plan Circulation and Scenic Highways Element (2006).

3.15.2 EXISTING CONDITIONS

The Ocotillo Sol project area is on BLM-managed lands adjacent to a rural area with few public roadways in the vicinity (Figure 3.15-1 in Appendix A). To the north of the Ocotillo Sol Project area is Interstate 8, a primary east–west route between Yuma, Arizona, and San Diego, California.

Paralleling Interstate 8 to the south of the Ocotillo Sol Project area is Highway 98, a state highway that begins at a junction with Interstate 8 near Ocotillo and runs east approximately 56 miles, passing through the city of Calexico, to a second junction with Interstate 8 near the Imperial Sand Dunes.

BLM Route 358 runs north/northwest from Highway 98 to Interstate 8. From Highway 98, this route runs north to the Ocotillo Sol Project area, turns west at the northeast corner and traverses the area between the project site and the Imperial Valley Substation before turning northwest to connect to Interstate 8 to the north. BLM Route 358 is designated under WECO as Limited and is restricted to street legal vehicles only. An unnamed route, not designated as a BLM route, runs north, northeast from Highway 98 to the Imperial Valley Substation and is currently used as construction access for the Sunrise Powerlink project. This unnamed route would also be the access road for the Ocotillo Sol Project.

Drew Road, an Imperial County road approximately 2 miles east of the Ocotillo Sol Project area, runs north from Highway 98.

In addition to these public roadways, there are numerous private roads to the north and east of the Ocotillo Sol Project area that are used in support of agricultural operations.

According to a traffic analysis conducted for a neighboring project, all intersections within the vicinity of the Ocotillo Sol Project area currently operate at level of service (LOS) C or better during peak hours (LOS Engineering as cited in BLM 2010). Additionally, all freeway segments operate at LOS B or better and all roadway segments operate at LOS A within the vicinity of the Ocotillo Sol Project area (LOS Engineering as cited in BLM 2010). Level of service is defined on a scale of A to F, where LOS A through C represent free-flowing traffic conditions with little or no delay. LOS D represents limited congestion and some delay; however, the duration of periods of delay is acceptable to most people. LOS E and F represent significant delay on local streets. LOS A represents the best operating condition and LOS F denotes the worst operating condition.

3.16 NOISE AND VIBRATION

Noise is defined as unwanted sound. Airborne sound is a rapid fluctuation of air pressure above and below atmospheric pressure. There are several ways to measure noise, depending on the source of the noise, the receiver, and the reason for the noise measurement. Environmental noise levels are typically stated in terms of decibels on the A-weighted scale (dBA). Noise levels stated in terms of dBA reflect the response of the human ear by filtering out some of the noise in the low- and high-frequency ranges that the ear does not detect well. The A-weighted scale is used in most community ordinances and standards. Human hearing typically encompasses the sound range from just above 0 dBA at the quietest end to approximately 140 dBA, where pain is produced in most listeners and permanent hearing loss would result.

3.16.1 APPLICABLE REGULATIONS, PLANS, AND POLICIES/MANAGEMENT GOALS

3.16.1.1 FEDERAL AGENCIES

Noise and land use guidelines have been produced by a number of federal agencies, including the Federal Highway Administration, EPA, Department of Housing and Urban Development, and American National Standards Institute. These guidelines are all based upon statistical noise criteria, such as equivalent continuous sound level (L_{eq}), day-night average sound level (L_{dn}), or Community Noise Equivalent Level (CNEL). The EPA identified outdoor and indoor noise levels to protect public health and assets. An $L_{eq(24)}$ of 70 dB (24-hour average) was identified as a level of environmental noise that would not lead to measurable hearing loss over a lifetime. An L_{dn} of 55 dBA outdoors and 45 dBA indoors were identified as noise levels that would not result in activity interference or annoyance (EPA 1974).

3.16.1.2 CALIFORNIA DESERT CONSERVATION AREA PLAN

The CDCA Plan contains provisions for public land-use management in the California Desert District under the BLM's jurisdiction. Since its first date of publication in 1980, the CDCA Plan has been amended in order to incorporate public concerns and congressional mandates in regard to the use of desert resources, such as the provisions of the California Desert Protection Act of 1994.

In particular, noise-related guidelines established in the CDCA Plan include long-term monitoring of effects of vehicle noise on wildlife (Chapter 3, Wildlife Element) and implementation of land use compatibility standards within limited (vehicle use) areas in order to minimize conflicts between off-road vehicle use and other existing or proposed recreational uses of the same or neighboring public lands (Chapter 3, Motorized Vehicle Access). The CDCA Plan also identifies energy and utility corridors within the California Desert District, which are part of the effect analysis framework, particularly in terms of alternatives analysis and cumulative effects.

3.16.1.3 CALIFORNIA NOISE CONTROL ACT

The California Health and Safety Code finds that excessive noise is a serious hazard to the public health and welfare and that exposure to certain levels of noise can result in physiological, psychological, and economic damage. It also finds that there is a continuous and increasing bombardment of noise in the urban, suburban, and rural areas. The California Noise Control Act declares that the state of California has a responsibility to protect the health and welfare of its citizens by the control, prevention, and abatement of noise. It is the policy of the state of California to provide an environment for all Californians free from noise that jeopardizes their health or welfare.

3.16.1.4 IMPERIAL COUNTY

The Noise Element of the Imperial County General Plan (1993) provides information to be used in setting land use policies to protect noise sensitive land uses and for developing and enforcing a local noise ordinance. The Noise Element of the Imperial County General Plan provides a program for incorporating noise issues into the land use planning process, with a goal of minimizing adverse noise impacts to receptors that are sensitive to noise.

3.16.1.4.1 Operational Noise

The Noise Element of the Imperial County's General Plan states:

> The increase of noise levels generally results in an adverse impact to the noise environment. The Noise/Land Use Compatibility Guidelines are not intended to allow the increase of ambient noise levels up to the maximum without consideration of feasible noise reduction measures. The following guidelines are established by the County of Imperial for the evaluation of significant noise impact:
>
> a. If the future noise level after the project is completed will be within the "normally acceptable" noise levels shown in the Noise/Land Use Compatibility Guidelines, but will result in an increase of 5 dB CNEL or greater, the project will have a potentially significant noise impact and mitigation measures must be considered.
>
> b. If the future noise level after the project is completed will be greater than the "normally acceptable" noise levels shown in the Noise/Land Use Compatibility Guidelines, a noise increase of 3 dB CNEL or greater shall be considered a potentially significant noise impact and mitigation measures must be considered. (1993)

3.16.1.4.2 Construction Noise

The Noise Element of the County's General Plan states:

> Construction noise, from a single piece of equipment or a combination of equipment, shall not exceed 75 dB L_{eq}, when averaged over an eight (8) hour period, and measured at the nearest sensitive receptor. This standard assumes a construction period, relative to an individual sensitive receptor of days or weeks. In cases of extended length construction times, the standard may be tightened so as not to exceed 75 dB L_{eq} when averaged over a one (1) hour period.

Construction equipment operation shall be limited to the hours of 7 A.M. to 7 P.M., Monday through Friday, and 9 A.M. to 5 P.M. Saturday. No commercial construction operations are permitted on Sunday or holidays.

3.16.2 NOISE AND VIBRATION IN THE OCOTILLO SOL PROJECT AREA

The Ocotillo Sol Project area is in a relatively remote desert region of the southeastern portion of the state, and lies within the Yuha Basin. The city of El Centro lies to the east, and Mexico lies to the south.

Ambient noise level measurements for the Ocotillo Sol Project area were taken by RECON Environmental, Inc. on September 14, 2011, using one Larson–Davis Model 820 Type 2 Integrating Sound Level Meters, serial number 1824.

The following parameters were used:

Filter:	A-weighted
Response:	Fast
Time History Period:	5 seconds

The meter was calibrated before the day's measurements. Four ground-floor measurements (5 feet above the ground) were taken for 30 minutes each.

Noise measurements were taken between the hours of 10:00 A.M. and 2:00 P.M. to obtain existing ambient noise levels. Four measurements were made on and around the Ocotillo Sol Project area as described below. The primary source of on-site noise was due to traffic on the access roads and operational noise from the Imperial Valley Substation. The locations of the measurements are shown on Figure 3.16-1 (see Appendix A), and the noise measurement results are summarized below.

Measurement 1 was taken in the northwestern portion of the Ocotillo Sol Project area near the main access road. The dominant noise source was traffic on the access road. Measurement 2 was taken in the northern portion of the Ocotillo Sol Project area near the access road along the southern portion of the Imperial Valley Substation. The dominant noise source was operational noise from the Imperial Valley Substation. Measurement 3 was taken southeast of the project boundary near an access road and transmission towers. Measurement 4 was taken southwest of the project boundary near the main access road. During the 30-minute measurement period of Measurements 1 and 4, traffic on the access road was counted (Table 3.16-1). During the measurement period, the average noise levels were 49.4, 55.3, and 35.8, and 48.6 dBA L_{eq} at Measurement Locations 1, 2, 3, and 4, respectively.

TABLE 3.16-1
30-MINUTE TRAFFIC COUNTS ON MAIN ACCESS ROAD ADJACENT TO THE OCOTILLO SOL PROJECT AREA

Measurement	Cars	Motorcycles	Buses	Medium Trucks	Heavy Trucks
1	3	0	0	2	1
4	2	0	0	2	0

Ambient noise levels in the Ocotillo Sol Project area and vicinity generally are low and typical of remote desert areas.

3.16.2.1 SENSITIVE RECEPTORS

Sensitive noise receptors are, in general, those areas of human habitation or substantial use where the intrusion of noise has the potential to adversely impact the occupancy, use, or enjoyment of the environment. These can include residences, schools, hospitals, parks, and places of business requiring low levels of noise. The Ocotillo Sol Project area is situated in a very remote area and there are no typical sensitive human receptors onsite or in the vicinity. The nearest residences to the Ocotillo Sol Project area occur approximately 1 mile to the north, 1.75 miles to the east, and over 2 miles to the southeast.

Sensitive receptors may also be non-human species. For example, some raptor and riparian bird species are sensitive to excessive noise.

3.17 PUBLIC HEALTH AND SAFETY

3.17.1 APPLICABLE REGULATIONS, PLANS, AND POLICIES/MANAGEMENT GOALS

3.17.1.1 CLEAN WATER ACT

The CWA (33 USC §1251 et seq.) is the principal federal statute protecting navigable Waters of the U.S. and adjoining shorelines from the discharge of pollution from point sources. Since its enactment, the CWA has formed the foundation for the regulations and permitting of pollution prevention and response measures in waters subject to federal jurisdiction. The CWA establishes basic structure for regulating discharges of pollutants into the waters of the U.S., establishes pollution control programs such as setting wastewater standards for industry, and sets water quality standards for all contaminants in surface waters.

3.17.1.2 TOXIC SUBSTANCES CONTROL ACT

The Toxic Substances Control Act of 1976 (15 USC §2601 et seq.) provides EPA with authority to require reporting, record-keeping and testing requirements, and restrictions relating to chemical substances and mixtures. Toxic Substances Control Act addresses the production, importation, use, and disposal of specific chemicals including polychlorinated biphenyls (PCBs), asbestos, radon, and lead-based paint.

3.17.1.3 HAZARDOUS MATERIALS TRANSPORTATION ACT

The U.S. Department of Transportation has regulatory authority for the safe transportation of hazardous materials under the Hazardous Materials Transportation Act, as amended and codified in 49 USC 5101 et seq. Vehicles transporting hazardous materials must comply with strict containment, safety, labeling and manifesting requirements.

3.17.1.4 RESOURCE CONSERVATION AND RECOVERY ACT

The Resource Conservation and Recovery Act (RCRA) of 1976 (42 USC § 6901 et seq.) establishes a program administered by the EPA for the regulation of the generation, transportation, treatment, storage and disposal of hazardous waste. RCRA was amended in 1984 by the Hazardous and Solid Waste Act, which affirmed and extended the “cradle to grave” system of regulating hazardous waste. The use of certain techniques for the disposal of some hazardous wastes was specifically prohibited by the Hazardous and Solid Waste Act. RCRA regulates hazardous waste from the time that the waste is generated, through to its management, storage, transport, and treatment until its final disposal. In California, the EPA has authorized the Department of Toxic Substance Control to administer the RCRA program, pursuant to the state’s Hazardous Waste Control Law.

3.17.1.5 COMPREHENSIVE ENVIRONMENTAL RESPONSE, COMPENSATION, AND LIABILITY ACT (SUPERFUND)

The Comprehensive Environmental Response, Compensation and Liability Act (CERCLA) 1980 (42 USC § 9601 et seq.) provides a federal Superfund to clean up uncontrolled or abandoned hazardous waste sites as well as accidents, spills and other emergency releases of pollutants and contaminants into the environment. The EPA generally administers CERCLA. This law provides broad federal authority to respond directly to releases or threatened releases of hazardous substances that may endangered public health or the environment.

3.17.1.6 THE SUPERFUND AMENDMENTS AND REAUTHORIZATION ACT OF 1986

The Superfund Amendments and Reauthorization Act (Title III 40 CFR§ 68.110 et seq.) amended CERCLA and established a nationwide emergency planning and response program, and imposed reporting requirements for businesses that store, handle or produce significant quantities of extremely hazardous materials. Administered by the EPA, the act requires states to implement a comprehensive system to inform local agencies and the public when a significant quantity of such materials is stored or handled at a facility. Additionally, the Superfund Amendments and Reauthorization Act identifies requirements for planning, reporting, and notification concerning hazardous materials.

3.17.1.7 ENVIRONMENTAL PLANNING AND COMMUNITY RIGHT-TO-KNOW ACT

The Superfund Amendments and Reauthorization Act of 1986 also created Environmental Planning and Community Right-to-Know Act (40 CFR Parts 350-372), a statute designed to improve community access to information about chemical hazards and to facilitate the development of chemical emergency response plans by state/tribe and local governments. The Community Right-to-Know Act required the establishment of state/tribe emergency response commissions, responsible for coordinating certain emergency response activities and for appointing local emergency planning committees.

3.17.1.8 IMPERIAL COUNTY–MEXICALI EMERGENCY RESPONSE PLAN

The EPA's U.S.–Mexico Environmental Program (Border 2012) is collaboration between the U.S. and Mexico to improve the environment and protect the health of people living along the border. The bi-national program focuses on cleaning the air, providing safe drinking water, reducing the risk of exposure to hazardous waste, and ensuring emergency preparedness along the U.S.–Mexico border. According to the EPA, rapid economic and population growth along the U.S.–Mexico border has increased the potential for hazardous waste releases and emergencies. The ability to plan and prepare bi-nationally improves the probability of adequately responding to incidents and protecting the environment and public from exposure to harmful contaminants and possible serious environmental or health impacts.

The Imperial County–Mexicali Emergency Response Plan is intended to streamline emergency response, notification, and communication efforts. The plan also guarantees cooperation among all levels of emergency response personnel. Along with reducing risks associated with hazardous materials, the plan calls for necessary training, a crucial element in emergency response (EPA 2005).

3.17.1.9 CALIFORNIA DEPARTMENT OF TOXIC SUBSTANCES CONTROL

The California Department of Toxic Substances Control, part of the California Environmental Protection Agency, regulates the generation, handling, treatment, and disposal of hazardous waste in California. The California Department of Toxic Substances Control also cleans up thousands of hazardous waste sites in California including disposal sites and industrial sites that resulted in contamination of soil and groundwater.

3.17.1.10 CALIFORNIA EMERGENCY MANAGEMENT AGENCY

The California Emergency Management Agency was formed in January 1, 2009 as a result of a merger between the Governor's Office of Emergency Services and the Office of Homeland Security. The Hazardous Materials Unit of the California Emergency Management Agency is responsible for hazardous materials emergency planning and response, spill release notifications, and enforcement of the Unified Program. The Office of Emergency Services provides emergency response services in support of local jurisdictions.

3.17.1.11 SAFE DRINKING WATER AND TOXIC ENFORCEMENT ACT OF 1986

The Safe Drinking Water and Toxic Enforcement Act of 1986 (Proposition 65), was enacted as a ballot initiative in November 1986. The proposition was intended by its authors to protect California citizens and the state's drinking water sources from chemicals known to cause cancer, birth defects, or other reproductive harm, and to inform citizens about exposures to such chemicals. The act requires the Governor to publish, at least annually, a list of chemicals known to the state to cause cancer or reproductive toxicity.

3.17.1.12 CALIFORNIA HEALTH AND SAFETY CODE SECTION 25501

California law defines a hazardous material as any material that, because of its quantity, concentration, or physical, chemical, or infectious characteristics, may pose a present or potential hazard to human health and safety or to the environment if released in the workplace or the environment.

3.17.1.13 TOXIC RELEASE CONTINGENCY PLAN

The Toxic Release Contingency Plan (California Government Code Section 8574.16) requires that regional and local planning agencies incorporate within their planning the state's effort to respond to emergency toxic releases, and ensure the effective and efficient use of regional and

local resources in the areas of traffic and crowd control, firefighting, hazardous materials response and cleanup, radio and communications control, and provision of medical emergency services.

3.17.1.14 IMPERIAL COUNTY GENERAL PLAN

Imperial County General Plan provides a regulatory framework to address potential environmental impacts that may result from a proposed project within Imperial County. Fire protection is provided to the County of Imperial by the Imperial County Fire Department. Imperial County Environmental Services participates within the Imperial County Hazardous Emergency Assistance Team in providing health and safety expertise in containment and cleanup of accidental spills or releases of hazardous material within Imperial County.

Sections within the Imperial County General Plan that are applicable include Seismic and Public Safety, Land Use and Water Elements. Pursuant to Section 25500 et seq. of the California Health and Safety Code, the County Health Services Department is designated as the "administering agency" responsible for maintaining a list of handlers/vendors of toxic materials within the County (Imperial County 1997).

3.17.2 EXISTING CONDITIONS

A Phase I Environmental Site Assessment of the 351-acre original study area was conducted in 2010 (Ninyo and Moore 2010). The following is a summary of the findings for the 351-acre original study area:

The study area consisted of 351 acres of vacant, undeveloped desert land. The study area surrounds the existing Imperial Valley Substation on its eastern, southern, and southwestern sides. There are no structures currently or historically present in the study area, based on historical aerial photographs and maps reviewed for the assessment.

The study area was not listed on regulatory databases reviewed. Facilities of potential environmental concern were not listed on environmental databases within the American Society for Testing and Materials specified search distances. Review of online environmental regulatory databases indicated the presence of the former Camp Seeley Ordnance Desert Proving Ground, approximately 1 mile to the south of the study area. The proving ground consisted of 1,040 acres acquired by the Army from the Department of Interior in 1944 for use as a dust proving ground by the Desert Test Command headquartered at Camp Seeley, which was approximately 8 miles north of the proving ground. The proving ground allowed the Army to test transport and combat vehicles under dusty conditions. Such tests reportedly did not involve the use of ordnance or explosive materials. The property was retransferred to the DOI in April 1946 and has been administered by the BLM as a desert recreational area. The U.S. Navy used part of the proving ground property as a parachute drop testing area from 1954 to 1959.

According to the San Diego Gas & Electric representative interviewed for the assessment, a spill of mineral oil/transformer oil reportedly occurred at the substation adjacent to the study area between 2002 and 2003, and was reportedly cleaned up (i.e., all visible signs were excavated and removed). Soil sampling was conducted during and after the spill cleanup, but no laboratory analytical reports were found in San Diego Gas & Electric files. Regulatory agencies were

notified of the spill, including the National Response Center, RWQCB, and the Imperial County Environmental Services were notified but the regulatory agencies were not involved with the spill beyond the initial notification.

3.17.2.1 TYPES OF HAZARDOUS MATERIALS

Hazardous materials past and present on site include transformer oil and mineral oil. Transformer oil and mineral oil are known to contain PCBs, which are considered hazardous to human health. According to the San Diego Gas & Electric representative, the substation on-site was commissioned in 1983; therefore, PCBs were not present in the mineral oil. Soil sampling was conducted during and after the spill cleanup (Ninyo and Moore 2010). CdTe is present from photovoltaic solar panels used within the energy project. CdTe is considered toxic if ingested or inhaled via dust particles.

3.17.2.2 TRANSPORT OF HAZARDOUS MATERIALS

Potential land use hazards may exist with the transport of potentially hazardous cargo on major highways; specifically Interstate 8 to the north and State Highway 98 to the south. Types of hazardous cargo that may be transported by freeway include flammable liquids, corrosive materials, compressed and/or poisonous gases, explosives, and flammable solids (Imperial County 1997). Some potential exists for a highway mishap that could cause hazardous cargo to spill, contaminating surrounding areas. If flammable liquids were to ignite, they could quickly spread fire and poisonous fumes that could impact human health and/or cause property damage. Provisions to address highway accidents have been formulated within the County of Imperial General Plan.

3.17.2.3 LANDFILLS

Three different types of landfills (Class I, Class II, Class III) exist within Imperial County. Class I landfill sites are designated solely for the disposal of hazardous wastes. Class II landfill sites are designated for disposal of special waste. Class III landfill sites are designated for disposal of non-hazardous/municipal waste. The nearest landfill to the Ocotillo Sol Project area is the Mesquite Regional Landfill (Class III) approximately 10.4 miles to the northwest.

3.17.2.4 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. These conditions affect the potential magnitude and extent of public exposure to such materials, as well as their health risks. When wind speeds are low and the atmosphere is stable, dispersion is significantly reduced and can lead to increased localized public exposure (Imperial County 1997).

3.18 SOCIOECONOMICS

This section identifies the existing conditions (a baseline) for the socioeconomic characteristics of the Ocotillo Sol Project in terms of the regional economy of Imperial County and the local socioeconomic impact area as defined below.

3.18.1 APPLICABLE REGULATIONS, PLANS, AND POLICIES/MANAGEMENT GOALS

By statute, regulation, and EO the BLM must use social science in the preparation of informed, sustainable land use planning decisions. Section 202(c)(2) of FLPMA requires BLM to integrate physical, biological, economic, and other sciences in developing land-use plans (43 USC 1712(c)(2)). FLPMA regulations 43 CFR 1610.43 and 1610.46 also require BLM to analyze social, economic, and institutional information. Section 102(2)(A) of NEPA requires federal agencies to "ensure the integrated use of the natural and social sciences in planning and decision making" (42 USC 4332(2)(A)).

3.18.2 DEMOGRAPHIC AND SOCIOECONOMIC CHARACTERISTICS

The Ocotillo Sol Project area is relatively isolated, undeveloped desert land and is not closely associated with residential neighborhoods or commercial activities. The Ocotillo Sol Project would be located entirely on BLM-managed land and would not directly impact any private land. Public access to the site is limited, there are no improved roads in the vicinity, and it is in an area of Imperial County that is not generally known or frequented by the general public. For the purposes of the socioeconomic analysis, the Local Socioeconomic Impact Area (LSIA) was defined as the 18 Census Tracts encompassing a radius of approximately 15 miles and including the major local cities of El Centro and Calexico, as well as Heber and the city of Imperial. This LSIA was chosen due to proximity and the likelihood of providing commercial and public services for the construction activities and the post-construction operation of the Ocotillo Sol Project area.

This section describes and compares the demographic and socioeconomic characteristics of the residents of the LSIA and the regional socioeconomic impact area as defined as Imperial County. Data for the LSIA were aggregated from 18 Census Tracts (i.e., Census Tracts 110, 111, 112.01, 112.02, 113, 114, 115, 116, 117, 118.01, 118.02, 118.03, 119, 120.01, 120.02, 121, 122, and 123.01).

The demographic data presented in the following Table 3.18-1 were derived from the U.S. Bureau of the Census, 2000 U.S. Census (2012a), 2010 U.S. Census (2012b), and the 2010 U.S. Census American Community Survey (2012b). The Southern California Association of Governments (SCAG) provided a 2030 forecast of population for Imperial County (2011).

TABLE 3.18-1
DEMOGRAPHIC PROFILES FOR THE LOCAL SOCIOECONOMIC IMPACT AREA AND IMPERIAL COUNTY, CALIFORNIA

Characteristic	LSIA	Imperial County
Total Population		
2000 (U.S. Census)	95,272	142,361
2010 (U.S. Census)	119,075	174,528
2030 (SCAG)	N/A	312,316
Population percent change (2000-2010)	25.0%	22.6%
Population percent change (2010-2030)	N/A	78.9%
Gender[1]	**100.0%**	**100.0%**
Male	50.6%	51.4%
Female	49.4%	48.6%
Age Distribution and Median Age[1]	**100.0%**	**100.0%**
Under 5 years	7.6%	7.8%
5 to 19	3.7%	9.9%
20 to 34	21.5%	21.5%
35 to 54	26.4%	26.0%
55 to 64	9.3%	9.5%
65 years or older	9.9%	10.4%
Median Age in Years[1]	31.7	31.9
Household Income and Poverty Level		
Median Household Income (1999)[2]	$31,394	$31,870
Median Household Income (2010)[1]	N/A	$41,802
Families Below Poverty (1999)[2]	21.4%	19.4%
Families Below Poverty (2010)[1]	N/A	19.6%
College Graduate (Population 25+years)[2]	**11.9%**	**10.3%**
Race and Ethnicity[1]	**100.0%**	**100.0%**
Non-Hispanic	*15.7%*	*19.6%*
American Indian and Alaska Native	0.2%	0.9%
Asian and Pacific Islander	1.4%	1.3%
Black or African American	2.4%	2.9%
White	11.1%	13.7%
Other or Multiple Race	0.6%	0.7%
Hispanic[1]	*84.3%*	*80.4%*
Language Spoken at Home[2]	**100.0%**	**100.0%**
English Only	23.5%	32.2%
Spanish	73.9%	65.3%
Other Language	0.0%	2.5%
Total Housing Units[1]	**36,206**	**56,067**
Occupied Housing Units[2]	32,820	49,126
Owner Occupied (%)	56.2%	55.9%
Renter Occupied (%)	43.8%	44.1%
Persons Per Dwelling Unit[2]	**3.4**	**3.3**
Employment and Unemployment Rate[2]	**122**	**44,092**
Employment (2000)[2]	31,712	44,092
Employment (2010)[1]	N/A	56,573
Unemployed (%)[2]	N/A	12.6%
Unemployed (%)[1]	N/A	20.5%

TABLE 3.18-1
DEMOGRAPHIC PROFILES FOR THE LOCAL SOCIOECONOMIC IMPACT AREA AND IMPERIAL COUNTY, CALIFORNIA

Characteristic	LSIA	Imperial County
Occupation[1,2]	**100.0%**	**100.0%**
Management, professional, and related occupations	24.5%	22.6%
Service occupations	22.1%	22.9%
Sales and office occupations	28.3%	26.5%
Natural Resource, construction, extraction, and maintenance	12.7%	13.3%
Production, transportation, and materials moving occupations	12.4%	14.7%

[1] U.S. Bureau of the Census 2012c
[2] U.S. Bureau of the Census 2012a
[3] SCAG 2011

3.18.2.1 POPULATION

There were 119,075 residents in the LSIA in 2010, representing about 68 percent of the 174,528 residents in Imperial County. Over the last decade (2000 to 2010), the population of the LSIA has increased 25 percent and the population of Imperial County has increased 22.6 percent. The 2030 population forecast by SCAG expects the population of Imperial County to increase by about 80 percent to 312,000 residents.

3.18.2.2 GENDER AND AGE

The male-to-female gender ratio for the LSIA was about 51 percent male to 49 percent female. In contrast, the U.S. population is about 49 percent male and 51 percent female. The percentage of males is higher as well in Imperial County (51 percent male v. 49 percent female). The median age of residents of the LSIA was 31.7 years in 2010, which is about equal to the median age of 31.9 years for Imperial County residents and significantly lower than the median age of 37.2 years for the U.S. population.

3.18.2.3 HOUSEHOLD INCOME AND POVERTY

The median household income for the LSIA was $31,394 in 1999 (U.S Census Bureau 2012a) and was very close to the median income of $31,870 reported for Imperial County. The median household income of residents in Imperial County rose about 31 percent to $41,802 by 2010, but was still substantially below the median U.S. household income of $50,046. The percentage of families below the poverty level in Imperial County was estimated at 19.6 percent in 2010 based on the U.S. Census American Community Survey (2012c) and was substantially higher than the 11.3 percent of families below the poverty level in the United States. No household income data are currently available for the LSIA.

3.18.2.4 EDUCATION LEVEL

The proportion of the population 25 years or older with a bachelor's degree or higher was 11.9 percent in the LSIA and 10.3 percent for Imperial County. This level of educational attainment was substantially lower than the 28.2 percent reported for the U.S. population.

3.18.2.5 RACE, ETHNICITY, AND LANGUAGE SPOKEN AT HOME

A notable characteristic of the LSIA and Imperial County residents was the large Hispanic population. The proportion of the population reporting a Hispanic ethnicity was 84 percent in the LSIA and 80 percent for Imperial County. In contrast, 16 percent of the U.S. population was recorded as Hispanic. Both the LSIA and Imperial County reported a very small proportion of residents who were Non-Hispanic and Asian, Black/African American, or American Indian. The residents of the LSIA and the county reported that Spanish language was predominately spoken in the home.

3.18.2.6 HOUSING, OWNERSHIP, AND HOUSEHOLD SIZE

There were 36,206 housing units in the LSIA, which represented about 65 percent of the 56,067 housing units in Imperial County. There were 32,820 occupied housing units or about 9 percent of the units were vacant in the LSIA. Imperial County reported a housing vacancy rate of about 12 percent. These are relatively high levels of vacant housing in the LSIA and Imperial County, but it is also equivalent to the U.S. housing vacancy rate of 11 percent. The proportion of owner-occupied (56 percent) and renter occupied housing (44 percent) in the LSIA and Imperial County were very similar. About 65 percent of the housing units are owner-occupied in the United States. A relatively large average household size was reported for the LSIA with 3.4 people and Imperial County with 3.3 people. In contrast, the average household size for the U.S. was substantially smaller at 2.6 people.

3.18.2.7 EMPLOYMENT AND UNEMPLOYMENT

Total non-farm employment for residents of the LSIA was 31,712 as reported in the 2000 U.S. Census (U.S Census Bureau 2012a). This represented about 72 percent of the 44,092 total employed residents in Imperial County. Employment of residents within Imperial County rose 28 percent to 56,573 in 2010. Even with this growth in jobs, the unemployment rate has skyrocketed to 20.6 percent in 2010 from a relatively low 6.2 percent unemployment rate reported in the 2000 Census. For December 2011, an unemployment rate of 26.8 percent was reported for Imperial County by the California Economic Development Department.[1] The U.S. Department of Labor reported a nationwide unemployment rate of 8.5 percent for December 2011.

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[1] Please note that the labor force and employment of U.S. residents as reported by the U.S. Census is not strictly comparable with the measurement of covered employment (covered by state unemployment insurance) and the unemployment rate as reported monthly by the California Employment Development Department. The annual average unemployment rate reported by California Economic Development Department for Imperial County was 17.4 percent in 2000 compared to 6.2 percent as reported by the 2000 U.S. Census (U.S Census Bureau 2012a).

3.18.2.8 OCCUPATION

About 28 percent of the residents of the LSIA who were in the labor force reported occupations in sales and office work and about one-quarter reported management or professional occupations. About 22 percent reported working in a service occupation, while about 13 percent were in natural resource, mining, or construction occupations. The remaining 12 percent of the labor force reported occupations in manufacturing, transportation, and materials. Very similar proportions of occupations were reported for the resident workforce of Imperial County.

3.18.2.9 SUMMARY OF DEMOGRAPHIC CHARACTERISTICS

In general, the residents of the LSIA and Imperial County are primarily Hispanic and the median age is much younger than the general population of the United States. Educational attainment levels are below average, income is below average, and the poverty rate among families is substantially higher than the national average. The unemployment rate among residents of Imperial County is nearly three times the national average.

3.18.3 REGIONAL ECONOMIC CONDITIONS

To produce estimates of employment and the value of regional product, CIC developed an input-output model for the regional economy. The regional economy was defined as Imperial County. The regional input-output model was based on software and data provided by Impact Analysis for Planning (IMPLAN).[2] The value of using the IMPLAN system was to provide a basis for measuring the size of key economic sectors of the regional economy in terms of output, income, and employment. In addition to providing measurements of existing economic conditions for the region, the input-output system also provided the ability to model the expected impact of exogenous changes in the regional economy based on the proposed project alternatives.

The economic impacts (direct, indirect, and induced) were determined for each of the proposed project alternatives for Imperial County and are presented in Chapter 4. The economic impact definitions listed below explain the terms that will be used in the following paragraphs and the economic impact tables:

Output is a measure of the sales generated within the regional economy. The total output (cumulative impact) has three sub-components: the direct sales impact, the indirect sales impact, and the induced sales impact.

1. *Direct sales impacts* would occur when the Ocotillo Sol Project construction contractor(s) are hired to construct and/or install the photovoltaic equipment and supporting structures, facilities, access, and transmission systems as required by the Project design.

[2] IMPLAN was based on software originally developed by the U.S. Forest Service in cooperation with FEMA and the BLM to assist the U.S. Forest Service in land and resource management planning.

2. *Indirect sales impacts* would occur when the construction contractor(s) make purchases of supplies, materials, and services from other businesses in Imperial County (e.g. construction materials, fuel, equipment, equipment repairs, parts, utilities, insurance, legal, and accounting). In turn, each of the indirect businesses would also make purchases from their suppliers.
3. *Induced sales* are generated by the purchases of employees and owners of the businesses with direct, indirect, and induced sales. The employees and owners spend their incomes from the compensation for labor and ownership that were required to produce the direct output, as well as all indirect and induced output required by the direct sales impacts.

Employment is a measure of the amount of full and part-time annual average employment, including self-employed proprietors, within the regional economy.

Value-added is a measure of the amount of value created within the economy. In this study, value-added refers to the amount of value created within the Imperial County economy. There are four sub-components of value-added.

1. Employee compensation includes the wages and salaries of workers who are paid by employers, as well as the cost of benefits such as health and life insurance, retirement payments, and non-cash compensation.
2. Proprietary income consists of payments received by self-employed individuals as income from the private businesses they own. This includes income received by many private business owners such as farmers, lawn care service operators, or a dry-cleaning business, as well as doctors, attorneys, consultants, and other professionals that own their business.
3. Other property type income consists of payments for interest, rents, royalties, and dividends. Payments to individuals in the form of rents received on property, royalties from contracts, and dividends paid by corporations are included here as well as corporate profits earned by corporations.
4. Indirect business taxes consist of excise taxes, property taxes, fees, licenses, and sales taxes paid by businesses. These taxes occur during the normal operation of businesses, but do not include taxes on profit or income.

Imperial County generates about $4.6 billion in gross regional product as measured by value added (Table 3.18-2). The economy supports almost 70,000 jobs and generates $2.7 billion in employment income. The total value added per job is approximately $66,000.

TABLE 3.18-2
IMPERIAL COUNTY TOTAL ECONOMIC VALUE ADDED BY MAJOR SECTOR DURING 2011

Major Category	Value Added (millions)	Number of Employees
Agriculture, Forestry, Fishing, and Hunting	810.5	14,481
Retail Trade	384.1	7,884
Real Estate and Rental	345.1	940
Manufacturing	218.5	2,566
Health and Social Services	192.0	4,217
Wholesale Trade	186.6	2,060
Transportation and Warehousing	153.6	2,432
Utilities	150.7	395
Other Services (not elsewhere listed)	107.7	4,013
Construction	105.8	1,465
Finance and Insurance	104.6	1,336
Accommodation and Food Services	94.5	3,379
Administrative and Waste Services	70.5	1,725
Professional, Scientific, and Technical Services	66.8	1,197
Information	46.7	369
Management of Companies	18.5	386
Educational Services	15.4	472
Arts, Entertainment, and Recreation	8.7	276
Mining	5.0	51
Government and non-NAICS*	1,518.4	17,923
Totals	4,603.7	69,467

*North American Industrial Classification System
Source: IMPLAN 2011

The largest non-government sector in the county in terms of value added is agriculture. This sector added $810.5 million for the local economy while employing nearly 14,500 people. Retail trade was the next most important sector, contributing $384.1 million and employing about 7,900 people, followed by the real estate sector, which added $345.1 million while employing 940 people. Manufacturing generated about $218.5 million and nearly 2,600 jobs in the region. Health and social services contributed $192.0 million and employed more than 4,200 people (Figure 3.18-1).

The construction sector of the local economy generated about $106 million in regional product during 2011 with 1,465 jobs in the sector. As of 2011, the construction sector in Imperial County had declined by more than one-third from a peak of more than 2,200 jobs in 2006, representing a loss of more than 700 jobs for the industry. In contrast, the government sector is the largest employer in the region with 19,900 jobs and a value added of about $1.5 billion for the regional economy.

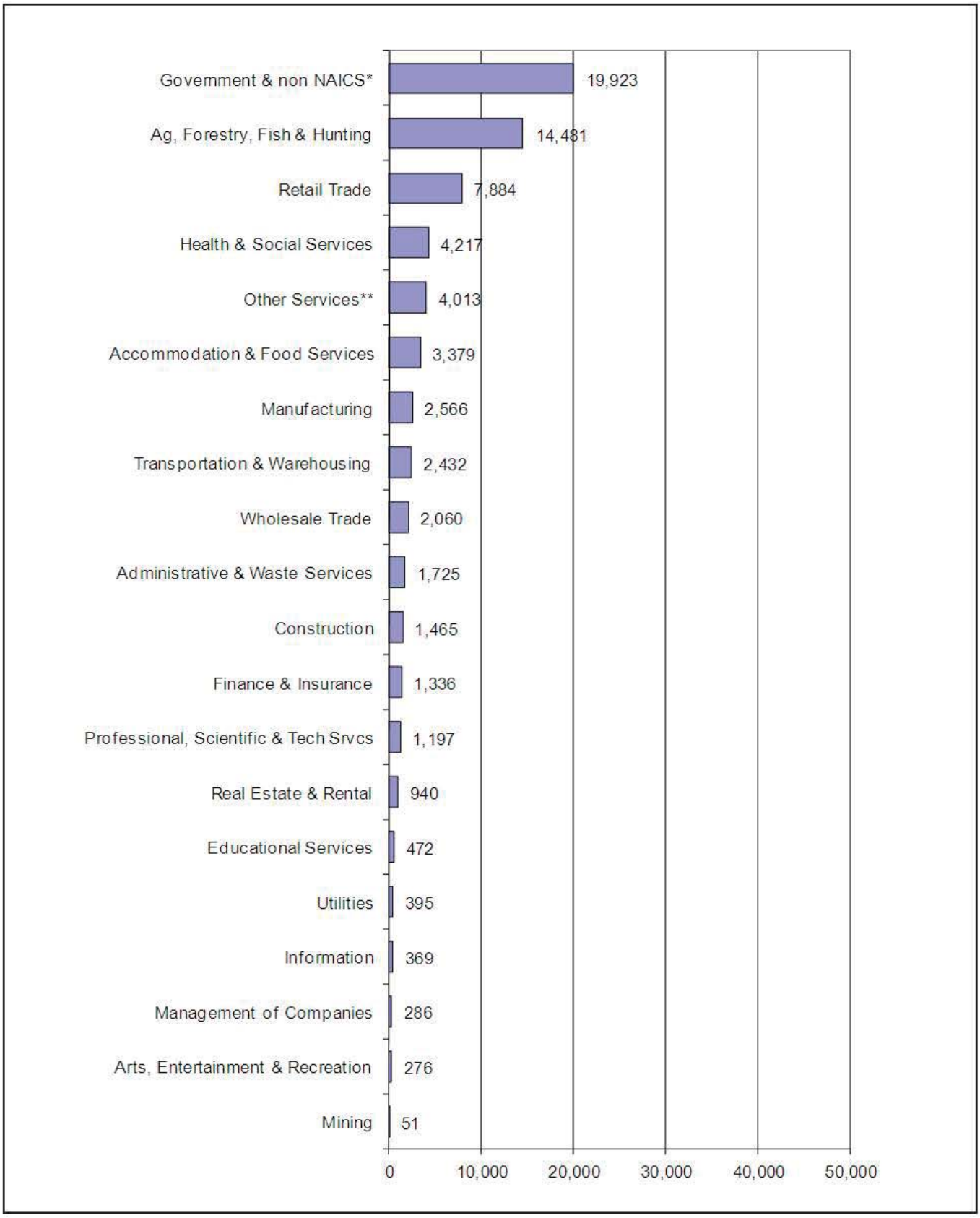

FIGURE 3.18-1

Imperial County Employment by Industry Sector

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3.18.4 TAXABLE RETAIL SALES

Taxable retail sales are one measure of the health of the economy. Historical retail sales data were compiled for the local socioeconomic impact area and for Imperial County for the period of 2000 through 2011 (forecast estimate). Total reported retail sales within Imperial County were about $1.4 billion in 2000. The LSIA local impact area which is largely represented by the cities of Calexico and El Centro, had retail sales of about $840 million in 2000. The LSIA represented about 60 percent of the retail sales in Imperial County. Retail sales peaked in the LSIA in 2006 and in the County in 2007. Retail sales volume declined dramatically in 2009 reflecting the collapse of the local construction industry and the national economic recession (Table 3.18-3).

Retail sales volume in 2010 began to recover for the LSIA and for Imperial County. Recovery has continued in 2011, but at a slower pace than 2010. As of the end of 2011, the retail sales volumes for the LSIA and for Imperial County are about equal to the 2005 retail sales volume (without adjustment for inflation). This is a strong indicator of the weakened local economy. It is likely that retail sales volumes will not recover to the prior peak levels until 2013 (or 2015 with adjustment for inflation).

TABLE 3.18-3
TAXABLE RETAIL SALES

Year	LSIA Sales ($000s)	LSIA Percent Change	Imperial County Sales ($000s)	Imperial County Percent Change
2000	840,698	N/A	1,403,560	N/A
2001	871,600	3.7%	1,381,668	-1.6%
2002	934,158	1.7%	1,462,537	5.9%
2003	970,427	3.9%	1,528,886	4.5%
2004	1,070,493	10.3%	1,689,539	10.5%
2005	1,246,395	16.4%	2,000,619	18.4%
2006	1,350,070	8.3%	2,148,730	7.4%
2007	1,342,109	-0.6%	2,253,133	4.9%
2008	1,268,457	-5.5%	2,179,276	-3.3%
2009	1,070,742	-15.6%	1,773,930	-18.6%
2010p	1,137,268	6.2%	1,930,036	8.8%
2011f	1,180,000	3.8%	2,007,000	4.0%
Percent Change (2000–2011f)		40.4%		43.0%

p=preliminary estimate; f=forecast (CIC Research, Inc.)
Source: California State Board of Equalization 2012

3.18.5 OVERNIGHT TRANSIENT ACCOMMODATIONS

The proposed Ocotillo Sol Project construction period would be 8 to 11 months with a peak onsite labor force of 250 workers. On average, 80 to 120 construction and supervisory personnel would be required onsite to construct the Ocotillo Sol Project. The construction workforce would consist of, but would not be limited to, surveyors, inspectors, linemen, laborers, operators, supervisors, health and safety personnel, and environmental monitors (San Diego Gas & Electric 2010). The construction workers required for the Ocotillo Sol Project would be hired predominately from the available labor pool in Imperial County. There are substantial

construction labor resources available in Imperial County. It is likely that a portion of the labor would be drawn from outside Imperial County. This would be especially true of some specialized trades required by the project design.

Imperial County has 45 hotels and motels with a total room inventory of 2,741 rooms (CIC Research 2012a). Thirty-five of these lodging establishments are in El Centro and Calexico. Seasonal occupancy rates for the hotels and motels vary substantially with the higher occupancy period during the months of October through May. Holiday weekends and weekends at the start of bird/waterfowl hunting season also record peak room occupancy regardless of the time of year. Long-term stay construction workers would find transient housing resources available in Imperial County even during peak periods, because of their ability to commit to stays of longer than two or three nights.

In addition to the transient hotel rooms for the temporary construction workforce, there would be available rental housing resources as identified in Table 3.18-1 above. Currently there are 3,400 vacant housing units within the LSIA and there are nearly 7,000 vacant housing units within the County. Finally, there are housing resources available for campers and recreational vehicles within the LSIA, comprising 1,333 spaces in five RV parks (CIC Research 2012b).

3.19 ENVIRONMENTAL JUSTICE

3.19.1 APPLICABLE REGULATIONS, PLANS, AND POLICIES/MANAGEMENT GOALS

On February 11, 1994, President Clinton issued an "Executive Order on Federal Actions to Address Environmental Justice in Minority Populations and Low-Income Populations" (EO 12898, 1994). This EO focuses federal attention on environmental and human health conditions in minority communities and low-income communities. The EO promotes non-discrimination in federal programs substantially affecting human health and the environment and provides for information access and public participation relating to such matters.

Environmental Justice involves the fair treatment and meaningful involvement of all people regardless of race, color, national origin, or income with respect to the development, implementation, and enforcement of environmental laws, regulations, and policies. Fair treatment means that no group of people, including racial, ethnic, or socioeconomic group should bear a disproportionate share of the negative environmental consequences resulting from industrial, municipal, and commercial operations or the execution of federal, state, local, and Tribal programs and policies.

3.19.1.1 BLM GUIDANCE FOR ENVIRONMENTAL JUSTICE

BLM's Environmental Justice principles include the following:

1. The BLM will determine if its proposed actions will adversely and disproportionally impact minority populations, low-income communities, and Tribes (reference EO 12898, Environmental Justice) and consider aggregate, cumulative, and synergistic effects, including results of actions taken by other parties. While Environmental Justice analysis is specifically concerned with disproportionate effects on the three populations, the social and economic analysis produced in accord with NEPA considers all potential social and economic effects, positive and negative, on any distinct group.
2. The BLM will promote and provide opportunities for full involvement of minority populations, low-income communities, and Tribes in BLM decisions that affect their lives, livelihoods, and health.
3. The BLM will incorporate Environmental Justice considerations in land use planning alternatives to adequately respond to Environmental Justice issues and problems facing minority populations, low-income communities, and Tribes living near public lands, working with, and/or using public land resources.
4. Where disproportionately high adverse impacts are anticipated, the BLM will work with local community groups/associations, governments, and Tribal leaders to determine if land disposition and/or acquisition policies affect real estate values and real income of minority and low-income communities, and Tribes.
5. The BLM State and Field Offices will continue to make Environmental Justice a mandatory critical element for consideration in all land use planning and NEPA documents.

The President's Council on Environmental Quality has defined minority populations as including members of the following population groups: American Indian or Alaskan Native; Asian or Pacific Islander; Black/African-American; or Hispanic regardless of race. Further, the President's Council on Environmental Quality has provided guidance that an Environmental Justice impact threshold would be met if the low-income or minority population represents more than 50 percent of the affected area's population.

The President's Council on Environmental Quality has defined "low-income populations" as populations with mean annual incomes below the annual statistical poverty level as annually published by the U.S. Department of Health and Human Services.

3.19.2 ENVIRONMENTAL SETTING FOR ENVIRONMENTAL JUSTICE

As previously identified in Table 3.18-1 (Section 3.18 Socioeconomics), the residents of the LSIA and Imperial County are predominately Hispanic, comprising nearly three-quarters of the population in the LSIA and about two-thirds of the population of Imperial County. When other minority populations (not also identified as Hispanic) are included, the cumulative total minority population of the LSIA (89 percent) and Imperial County (86 percent) are substantially above the threshold impact level as established by the President's Council on Environmental Quality. Based on the demographic characteristics of the affected socioeconomic environment a population of concern has been identified for the Environmental Justice impact analysis. Whether the minority population of the affected environment would sustain disproportionately high and adverse environmental impacts is analyzed for each project alternative in Chapter 4– Environmental Consequences, of this environmental document.

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CHAPTER 4.0 ENVIRONMENTAL CONSEQUENCES

4.1 INTRODUCTION AND OVERVIEW

This chapter analyzes the environmental consequences or impacts that may be expected to occur due to implementation of the alternatives to the Ocotillo Sol Project and associated Plan Amendment that are described in Chapter 2. The scope of the impact analysis presented in this chapter is commensurate with the detail level of the actions considered in Chapter 2 and the availability and/or quality of the data necessary to assess impacts. Current conditions (existing environment) in the Ocotillo Sol Project area as described in Chapter 3 were used as a baseline for assessing the expected impacts of the Applicant's proposed Ocotillo Sol Project and alternatives. Chapter 4 is organized by resource, parallel to their presentation in Chapter 3.

The analysis in this chapter considers direct, indirect, and cumulative impacts of the alternatives, including both short-term impacts during construction and decommissioning, and long-term impacts from operation and maintenance activities. This chapter also identifies mitigation measures to address adverse impacts and summarizes unavoidable adverse impacts.

4.1.1 METHODOLOGY

The assessment of environmental consequences in this chapter focuses on the general impacts that could due to implementation of each of the alternatives presented in Chapter 2. The methodology for this assessment conforms to the guidance found in the following section of the CEQ regulations for implementing NEPA: 40 CFR 1502.24 (Methodology and Scientific Accuracy); 40 CFR 1508.7 (Cumulative impact); 40 CFR 1508.8 (Effects); and the BLM NEPA Handbook (H-1790-1).

4.1.2 ANALYTICAL ASSUMPTIONS

The following impacts analysis was conducted with the following assumptions:

- The laws, regulations, and policies applicable to the BLM authorizing ROW grants for renewable energy development facilities would be applied consistently for all action alternatives.
- The proposed facility would be constructed, operated, maintained, and decommissioned as described in the action alternatives.
- Short-term impacts are those expected to occur during the construction phase, the first five years of the operation and maintenance phase, and during project decommissioning. Long-term impacts are those that would occur after the first five years of operation.

4.1.3 TYPES OF EFFECTS

This chapter considers three types of potential impacts for each resource: direct, indirect, and cumulative effects. Effects and impacts as used in this document are synonymous and could be beneficial or adverse.

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. Because it can be difficult to distinguish between direct and indirect effects, BLM policy does not require an EIS to differentiate between the two (BLM NEPA Handbook H-1790-1, Section 6.8.2). This chapter considers indirect and direct impacts together.

Section 1502.16 of the CEQ regulations forms the scientific and analytic basis for the comparisons of alternatives. Section 102(2)(C) of NEPA sets forth the elements that must be addressed in an EIS. The environmental consequences section consolidates that discussion. The discussion will include the environmental impacts of the alternatives, including any adverse environmental effects that cannot be avoided, the relationship between short-term uses of the human 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.

4.1.4 CUMULATIVE IMPACTS

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). They can result from similar projects or actions, as well as projects or actions that have similar impacts. Additionally, they can occur as a result of individually insignificant but collectively significant actions taking place over the same period of time. For cumulative impact analysis, short-term impacts occur only for a short time after implementation of an action (e.g., noise impacts from construction activities would be considered short-term in nature). Long-term effects occur for an extended period after implementation of an action (e.g., removal of vegetation in desert environments can result in long-term impacts as regeneration is slow).

4.1.4.1 GEOGRAPHIC AND TEMPORAL SCALE

The intensity or severity of cumulative impacts considers the magnitude, geographic extent, duration, and frequency of effects (CEQ 1997). The magnitude of an effect reflects relative size or amount of an effect. Geographic extent considers how widespread the effect might be. Duration or frequency refers to whether the effect is a one-time event, intermittent, or chronic (CEQ 1997). This cumulative effects analysis is limited to those resources that would be directly impacted by the Applicant's Ocotillo Sol Project or the alternatives.

4.1.4.2 OTHER ONGOING/FORESEEABLE PROJECTS/ACTIVITIES AFFECTING RESOURCE

This EIS analyzes the cumulative impacts of the construction, operation and maintenance, and decommissioning of the Applicant's proposed Ocotillo Sol Project and alternatives, taking into account the effects in common with other past, present, and reasonably foreseeable future actions. The cumulative impacts analysis highlights past actions that are closely related either in geographically or temporally (proximity in space or time) to the Ocotillo Sol Project; 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 probably, based on known opportunities of trends.

The geographic extent of the analysis considers how widespread the effect may be. The specific area of cumulative effect varies by resource. The geographic extent of analysis is based on the topography surrounding the Ocotillo Sol Project area and the natural boundaries of the resource affected, rather than jurisdictional boundaries. The geographic extent 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 alternatives.

The cumulative scenario for the Ocotillo Sol Project EIS includes projects and actions identified in Table 4.1-1, which provides a listing of the foreseeable projects that could contribute to a cumulative impact on the environment. Projects listed include renewable energy projects located on BLM-administered lands and private lands, other BLM actions and activities, and projects identified by local governments, such as Imperial County. Table 4.1-1 presents the project name, location, type, status, total acres, and a brief description of each project, to the extent available. The majority of projects listed in Table 4.1-1 have been, are being, or would be required to undergo appropriate independent environmental review under NEPA or the California Environmental Quality Act (CEQA), as applicable. Figure 4.1-1 in Appendix A shows the location of each of the projects listed in Table 4.1-1 using a corresponding identification number.

The cumulative scenario for specific resources was compiled from information provided during public scoping, BLM staff input, BLM project lists near the Ocotillo Sol Project area, and information gathered from Imperial County agencies. Table 4.1-2 identifies each resource or BLM program, the cumulative analysis impact area (which is the geographic scope for each cumulative effects issue), elements to consider, BLM authorized actions, and other known actions or activities that are located or would occur within the cumulative impacts area. Additional analysis is included for each resource area within the sub-sections of this chapter.

TABLE 4.1-1
CUMULATIVE PROJECTS LIST

#	Project Name	Location	Project Type	Status	Acres	Project Description
1	Geothermal Overlay	Imperial County 8 miles east of Brawley	Geothermal	Environmental Impact Report initiation in progress	27,875	The project would create the East Brawley Geothermal Zone Overlay, which would be a contiguous area of private lands with the potential for geothermal resource development
2	Rancho Los Lagos Specific Plan	Adjacent to City of Brawley	Residential	Draft Environmental Impact Report comment response in progress; Draft EIS October 2009	1,076	Up to 3,830 homes, golf course, and business park; multiple use
3	Brookfield 101 Ranch Specific Plan	Adjacent to City of Brawley to south	Residential	Draft Environmental Impact Report is in progress	1,897	Up to 6,986, schools, mixed use commercial and parks
4	Keystone Solar Farm	South of Brawley	Solar	Environmental Impact Report under review	40	6.06 MW solar field
5	Desert Springs Oasis	City of El Centro	Resort	Draft Environmental Impact Report in progress	1,105	Luxury resort community
6	Alder 70	City of El Centro	Residential	Application in progress	75	Mixed residential community
7	Mosaic Specific Plan	South Imperial County	Residential	Draft Environmental Impact Report September 2008; in progress	201.5	Up to 1,154 homes, commercial uses
9	Calexico Solar Farm II	West of Calexico	Solar Energy	In progress, service date estimate 2014	1,477	200 MW solar project (two phases of 100 MW each)

TABLE 4.1-1
CUMULATIVE PROJECTS LIST

#	Project Name	Location	Project Type	Status	Acres	Project Description
8	Mount Signal Solar Farm	Imperial Valley south	Solar Energy	Request For Proposals in process	1,375	Proposed 200 MW solar thermal generating station with a biomass generation component, associated 230 kV transmission line for the Imperial Irrigation District
10	Calexico Solar Farm I	West of Calexico	Solar Energy	Under construction	1,013	200 MW solar project on agricultural lands (two phases of 100 MW each)
11	Imperial Solar Energy Center South Solar Farm	Imperial Valley south	Solar Energy	ROW granted 6/14/2011	946.6	200 MW solar facility; transmission line to Imperial Valley Substation; roadway widening for access
12	Centinela Solar Farm	Imperial Valley south	Solar Energy	Decision Record 11/2011	2,067	175 MW solar facility (planned completion in 2014); associated transmission line
13	Acorn Greenworks Solar Farm	Imperial Valley southwest	Solar Energy	Application in process	693	150 MW solar energy facility
14	Silverleaf Solar Farm	Imperial Valley southwest	Solar Energy	Application in process	1,096	160 MW solar photovoltaic energy facility
15	Campo Verde Solar Farm	Imperial Valley southwest	Solar Energy	Active Environmental Impact Report	2,266	226 MW solar energy facility
16	Imperial Valley Solar West Solar Farm	Imperial Valley southwest of Seeley	Solar Energy	Decision Record 8/2011	1,130	250 MW solar energy facility and associated transmission line to Imperial Valley Substation
17	Sunrise Powerlink - Transmission	San Diego County to Imperial Valley Substation	Transmission Line	Under construction	282.3	150-mile transmission line from Imperial County (Imperial Valley Substation) to Sycamore Canyon near Poway

TABLE 4.1-1
CUMULATIVE PROJECTS LIST

#	Project Name	Location	Project Type	Status	Acres	Project Description
18	Ocotillo Express Wind Farm	Imperial County West	Wind	Final Environmental Impact Report and Final EIS 3/2012	1,167	About 465 MW wind energy project
	BLM Actions	Imperial Valley, within BLM-administered lands	Various	Ongoing	n/a	Road maintenance, recreation designations
	Other Actions	Imperial Valley	Various	Ongoing	n/a	Imperial Valley Substation operation and maintenance, Imperial Valley Substation expansion for North Gila to Imperial Valley Substation #2 transmission line, Sunrise Powerlink, transmission and utility corridor maintenance, Interstate 8 and Highway 98, agricultural activities, Mosaic Specific Plan, recreational activity, North Gila to Imperial Valley Substation #2 transmission line, Dixieland Imperial Irrigation District transmission line and connection, sand and gravel mining, Imperial Irrigation District canal and drain maintenance

TABLE 4.1-2
CUMULATIVE SCENARIO BY RESOURCE OR BLM PROGRAM

Resource or BLM Program	Cumulative Analysis Impact Area	Elements to Consider	BLM-authorized Actions; Other Known Actions or Activities
Air Quality	An approximate 6-mile radius around the Ocotillo Sol Project area; a 1-mile radius for sensitive receptors	$PM_{2.5}$, PM_{10}, O_3	*BLM Actions*: Road maintenance, recreation designations Renewable energy projects: • Calexico Solar Farm II • Mount Signal Solar Farm • Calexico Solar Farm I • Imperial Solar Energy Center South Solar Farm • Centinela Solar Farm • Acorn Greenworks Solar Farm • Campo Verde Solar Farm (and shared transmission line with Acorn Greenworks Solar Farm) • Imperial Valley Solar West Solar Farm • Solar Reserve Imperial Valley *Other Actions*: Imperial Valley Substation operation and maintenance; Imperial Valley Substation expansion for North Gila to Imperial Valley Substation #2 transmission line; Sunrise Powerlink; transmission and utility corridor maintenance; Interstate 8, Highway 98; agricultural activities; recreational activity; North Gila to Imperial Valley Substation #2 transmission line; Dixieland Imperial Irrigation District transmission line and connection; sand and gravel mining; Imperial Irrigation District canal and drain maintenance
Global Climate Change / GHG	International, national, and regional	CO_2 equivalent	All projects listed in Table 4.1-1
Geology and Soil Resources	An approximate 1-mile radius around the Ocotillo Sol Project area	Erosion; surface disturbing activities	*BLM Actions*: Road maintenance, recreation designations *Other Actions*: Sunrise Powerlink; Imperial Valley Substation; transmission and utility corridor maintenance; agricultural activities; recreational activity

TABLE 4.1-2
CUMULATIVE SCENARIO BY RESOURCE OR BLM PROGRAM

Resource or BLM Program	Cumulative Analysis Impact Area	Elements to Consider	BLM-authorized Actions; Other Known Actions or Activities
Water Resources	Groundwater basin	Hydrology and quality basin balance, levels and quality	All projects listed in Table 4.1-1
Biological Resources	Yuha Desert Wildlife Management Area	Natural vegetation communities, special status plants; invasive species; flat-tailed horned lizard; burrowing owl; eagle; migratory birds	*BLM Actions*: Road maintenance, recreation designations Renewable energy projects (with gen-ties to the Imperial Valley Substation): • Mount Signal Solar Farm • Imperial Solar Energy Center South Solar Farm • Centinela Solar Farm • Silverleaf Solar Farm • Campo Verde Solar Farm (and shared transmission line with Silverleaf Solar Farm) • Imperial Valley Solar West Solar Farm • Solar Reserve Imperial Valley *Other Actions*: Imperial Valley Substation operation and maintenance; Imperial Valley Substation expansion for North Gila to Imperial Valley Substation #2 transmission line; Sunrise Powerlink; transmission and utility corridor maintenance; recreational activity; North Gila to Imperial Valley Substation #2 transmission line; Dixieland Imperial Irrigation District transmission line and connection; sand and gravel mining; Imperial Irrigation District canal and drain maintenance

TABLE 4.1-2
CUMULATIVE SCENARIO BY RESOURCE OR BLM PROGRAM

Resource or BLM Program	Cumulative Analysis Impact Area	Elements to Consider	BLM-authorized Actions; Other Known Actions or Activities
Cultural Resources	Cultural sites, traditional use areas, and cultural landscapes within an approximate 2-mile radius of the Ocotillo Sol Project area	Cultural resources (prehistoric and historic); ethnographic resources; cultural character of sites and vicinity	*BLM Actions*: Road maintenance, recreation designations Renewable energy projects: • Calexico Solar Farm II • Mount Signal Solar Farm • Calexico Solar Farm I • Imperial Solar Energy Center South Solar Farm • Centinela Solar Farm • Acorn Greenworks Solar Farm • Silverleaf Solar Farm • Campo Verde Solar Farm (and shared transmission line with Silverleaf Solar Farm) • Imperial Solar Energy Center West Solar Farm • Keystone Solar • Ocotillo Express Wind Farm • Solar Reserve Imperial Valley *Other Actions*: Imperial Valley Substation operation and maintenance; Imperial Valley Substation expansion for North Gila to Imperial Valley Substation #2 transmission line; Sunrise Powerlink; transmission and utility corridor maintenance; Interstate 8, Highway 98; agricultural activities; recreational activity; North Gila to Imperial Valley Substation #2 transmission line; Dixieland Imperial Irrigation District transmission line and connection; Geothermal Overlay; Rancho Los Lagos; Brookfield Specific Plan; Desert Springs Oasis; Alder 70; Mosaic Specific Plan; sand and gravel mining; Imperial Irrigation District canal and drain maintenance

TABLE 4.1-2
CUMULATIVE SCENARIO BY RESOURCE OR BLM PROGRAM

Resource or BLM Program	Cumulative Analysis Impact Area	Elements to Consider	BLM-authorized Actions; Other Known Actions or Activities
Paleontological Resources	An approximate 1-mile radius around the Ocotillo Sol Project area	Surface disturbing activities within the project area	*BLM Actions*: Road maintenance, recreation designations *Other Actions*: Sunrise Powerlink; Imperial Valley Substation; transmission and utility corridor maintenance; agricultural activities; recreational activity
Fire/Fuels	An approximate 2-mile radius around the Ocotillo Sol Project area	Mortality of plants and wildlife, loss of forage and cover; changes to vegetation communities; spread of invasive species; air quality	*BLM Actions*: Road maintenance, recreation designations Renewable energy projects: • Calexico Solar Farm II • Mount Signal Solar Farm • Calexico Solar Farm I • Imperial Solar Energy Center South Solar Farm • Centinela Solar Farm • Acorn Greenworks Solar Farm • Silverleaf Solar Farm • Campo Verde Solar Farm (and shared transmission line with Silverleaf Solar Farm) • Imperial Solar Energy Center West Solar Farm *Other Actions*: Imperial Valley Substation operation and maintenance; Imperial Valley Substation expansion for North Gila to Imperial Valley Substation #2 transmission line; Sunrise Powerlink; transmission and utility corridor maintenance; agricultural activities; recreational activity; North Gila to Imperial Valley Substation #2 transmission line; Dixieland Imperial Irrigation District transmission line and connection; Imperial Irrigation District canal and drain maintenance

TABLE 4.1-2
CUMULATIVE SCENARIO BY RESOURCE OR BLM PROGRAM

Resource or BLM Program	Cumulative Analysis Impact Area	Elements to Consider	BLM-authorized Actions; Other Known Actions or Activities
Lands and Realty	Imperial County area in the region surrounding the Ocotillo Sol Project area	Designated utility corridors (e.g., transmission lines, communication sites); existing ROWs; Interstate 8 and Highway 98	All projects listed in Table 4.1-1

TABLE 4.1-2
CUMULATIVE SCENARIO BY RESOURCE OR BLM PROGRAM

Resource or BLM Program	Cumulative Analysis Impact Area	Elements to Consider	BLM-authorized Actions; Other Known Actions or Activities
Special Designations	An approximate 15-mile radius around the Ocotillo Sol Project area	Views, noise, recreation activities	*BLM Actions*: Road maintenance, recreation designations Renewable energy projects: • Calexico Solar Farm II • Mount Signal Solar Farm • Calexico Solar Farm I • Imperial Solar Energy Center South Solar Farm • Centinela Solar Farm • Acorn Greenworks Solar Farm • Silverleaf Solar Farm • Campo Verde Solar Farm (and shared transmission line with Silverleaf Solar Farm) • Imperial Solar Energy Center West Solar Farm • Keystone Solar • Ocotillo Express Wind Farm • Solar Reserve Imperial Valley *Other Actions*: Imperial Valley Substation operation and maintenance; Imperial Valley Substation expansion for North Gila to Imperial Valley Substation #2 transmission line; Sunrise Powerlink; transmission and utility corridor maintenance; Interstate 8, Highway 98; agricultural activities; recreational activity; North Gila to Imperial Valley Substation #2 transmission line; Dixieland Imperial Irrigation District transmission line and connection; Mosaic Specific Plan; sand and gravel mining; Imperial Irrigation District canal and drain maintenance

TABLE 4.1-2
CUMULATIVE SCENARIO BY RESOURCE OR BLM PROGRAM

Resource or BLM Program	Cumulative Analysis Impact Area	Elements to Consider	BLM-authorized Actions; Other Known Actions or Activities
Recreation	An approximate 2-mile radius around the Ocotillo Sol Project area	Dispersed recreation opportunities and experiences, ACECs, designated wilderness	*BLM Actions*: Road maintenance, recreation designations Renewable energy projects: • Calexico Solar Farm II • Mount Signal Solar Farm • Calexico Solar Farm I • Imperial Solar Energy Center South Solar Farm • Centinela Solar Farm • Acorn Greenworks Solar Farm • Silverleaf Solar Farm • Campo Verde Solar Farm (and shared transmission line with Silverleaf Solar Farm) • Imperial Solar Energy Center West Solar Farm *Other Actions*: Imperial Valley Substation operation and maintenance; Imperial Valley Substation expansion for North Gila to Imperial Valley Substation #2 transmission line; Sunrise Powerlink; transmission and utility corridor maintenance; agricultural activities; recreational activity; North Gila to Imperial Valley Substation #2 transmission line; Dixieland Imperial Irrigation District transmission line and connection; Imperial Irrigation District canal and drain maintenance

TABLE 4.1-2
CUMULATIVE SCENARIO BY RESOURCE OR BLM PROGRAM

Resource or BLM Program	Cumulative Analysis Impact Area	Elements to Consider	BLM-authorized Actions; Other Known Actions or Activities
Visual Resources	An approximate 15-mile radius around the Ocotillo Sol Project area	OHV recreation-related dust and activity, other recreational activity, development (renewable energy), views from KOPs	*BLM Actions*: Road maintenance, recreation designations Renewable energy projects: • Calexico Solar Farm II • Mount Signal Solar Farm • Calexico Solar Farm I • Imperial Solar Energy Center South Solar Farm • Centinela Solar Farm • Acorn Greenworks Solar Farm • Silverleaf Solar Farm • Campo Verde Solar Farm (and shared transmission line with Silverleaf Solar Farm) • Imperial Solar Energy Center West Solar Farm • Keystone Solar • Ocotillo Express Wind Farm • Solar Reserve Imperial Valley *Other Actions*: Imperial Valley Substation operation and maintenance; Imperial Valley Substation expansion for North Gila to Imperial Valley Substation #2 transmission line; Sunrise Powerlink; transmission and utility corridor maintenance; Interstate 8, Highway 98; agricultural activities; recreational activity; North Gila to Imperial Valley Substation #2 transmission line; Dixieland Imperial Irrigation District transmission line and connection; Mosaic Specific Plan; sand and gravel mining; Imperial Irrigation District canal and drain maintenance

TABLE 4.1-2
CUMULATIVE SCENARIO BY RESOURCE OR BLM PROGRAM

Resource or BLM Program	Cumulative Analysis Impact Area	Elements to Consider	BLM-authorized Actions; Other Known Actions or Activities
Transportation and Public Access	An approximate 2-mile radius around the Ocotillo Sol Project area	Traffic and access, OHV recreation opportunities, changes in viewscape, unauthorized routes	*BLM Actions*: Road maintenance, recreation designations Renewable energy projects: • Ocotillo Express Wind Farm • Imperial Valley Solar • CSOLAR West • CSOLAR South • Centinela Solar Farm *Other Actions*: Sunrise Powerlink; Imperial Valley Substation; transmission and utility corridor maintenance; agricultural activities; recreational activity
Noise and Vibration	An approximate 2-mile radius around the Ocotillo Sol Project area	Sensitive receptors	*BLM Actions*: Road maintenance, recreation designations Renewable energy projects: • Ocotillo Express Wind Farm • Imperial Valley Solar • CSOLAR West • CSOLAR South • Centinela Solar Farm *Other Actions*: Sunrise Powerlink; Imperial Valley Substation; transmission and utility corridor maintenance; agricultural activities; recreational activity

TABLE 4.1-2
CUMULATIVE SCENARIO BY RESOURCE OR BLM PROGRAM

Resource or BLM Program	Cumulative Analysis Impact Area	Elements to Consider	BLM-authorized Actions; Other Known Actions or Activities
Public Health and Safety	An approximate 20-mile radius around the Ocotillo Sol Project area	Emergency vehicle access, fire hazards, hazardous waste, recreational safety	*BLM Actions*: Road maintenance, recreation designations Renewable energy projects: • Ocotillo Express Wind Farm • Imperial Valley Solar • CSOLAR West • CSOLAR South • Mount Signal Solar • Centinela Solar Farm • Mount Signal Solar Farm *Other Actions*: Imperial Valley Substation; transmission and utility corridor maintenance; Interstate 8, Highway 98; agricultural activities; Mosaic Specific Plan; recreational activity
Socioeconomic	Imperial County	Flow of goods and services, impacts to local services, employment/labor demand, regional economics, user group impacts	All projects listed in Table 4.1-1
Environmental Justice	Imperial County area in the region surrounding the Ocotillo Sol Project area	Impacts to low and minority populations	All projects listed in Table 4.1-1

4.1.5 MITIGATION

Section 1508.20 of the CEQ regulations for implementing NEPA define mitigation as follows:

a) Avoiding the impact altogether by not taking a certain 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

For impacts identified in the resource sections, mitigation measures have been developed that would be implemented during all appropriate phases of the Applicant's proposed project from initial ground breaking to operations, through closure and decommissioning. The mitigation measures include a combination of the following:

- Measures that have been proposed by the Applicant
- Regulatory requirements of other federal, state, and local agencies
- Additional BLM-proposed mitigation measures, standard ROW grant terms and conditions, and BMPs

Some of these measures have been incorporated into the Applicant's project design features and discussed in Chapter 2. Additional mitigation measures designed to reduce, avoid, or compensate for impacts are included in under each resource topic and are the same for each action alternative.

4.1.6 IRREVERSIBLE AND IRRETRIEVABLE COMMITMENT OF RESOURCES

CEQ regulations (40 CFR, Part 1502.16) and the BLM NEPA Handbook (H-1790-1) require a discussion of adverse impacts that would remain after all reasonable and effective mitigation is applied, and disclosure of irreversible and irretrievable commitments of resources if the project is implemented. A resource commitment is considered irreversible when direct and indirect effects from its use limit future use options. Irreversible commitments apply primarily to nonrenewable resources, such as cultural resources, and to those resources that are renewable only over long periods of time, such as soil productivity. A resource commitment is considered irretrievable when the use of the resource is neither renewable nor recoverable for future use. Irretrievable commitments apply to loss of production, harvest, or use of natural resources.

4.2 AIR QUALITY

4.2.1 MANAGEMENT GOALS

The CDCA Plan provides management direction for air quality protection in the region. Under this plan, areas will be managed to protect their air quality and visibility in accordance with Class II objectives of Part C of the Clean Air Act Amendments, unless otherwise designated another class by the State of California as a result of recommendations developed by any BLM air quality management plan. The Ocotillo Sol Project area has not been designated another class by the state.

4.2.2 EMISSION CALCULATIONS

Air quality impacts can result from the construction and operation of a project. Construction impacts are generally short-term and result from fugitive dust, equipment exhaust, and indirect effects associated with construction workers and deliveries. Operational impacts can occur from siting stationary emitting equipment, traffic associated with facility operation, regional impacts resulting from growth-inducing development, or local hot-spot effects stemming from sensitive receivers being placed close to highly congested roadways. In the case of this project, the primary source of emissions would be construction activities. As discussed below, operational emissions would be primarily related to facility worker trips associated with maintenance and operation of the facility.

Air emissions were calculated using emission factors and other inputs from the California Emissions Estimator Model (CalEEMod) computer program (CARB 2011), the Emissions Factor (EMFAC) 2007 emissions model (CARB 2007), and the SCAQMD ICAPCD CEQA Air Quality Handbook (ICAPCD 2007), and the SCAQMD CEQA Air Quality Handbook (SCAQMD 1993). The CalEEMod program estimates air emissions resulting from land development projects in California. The model generates estimates of emissions from three basic sources: construction sources, area sources (e.g., natural gas heating), and operational sources (e.g., traffic). The EMFAC 2007 model was developed by CARB to calculate emission rates from all motor vehicles, such as passenger cars and heavy-duty trucks, operating on highways, freeways, and local roads in California. The SCAQMD CEQA Air Quality Handbook provided emission factors for certain types of equipment not found in CalEEMod or EMFAC. Adopted thresholds from the ICAPCD CEQA Air Quality Handbook are presented in Table 4.2-1 and general conformity *de minimus* thresholds are presented in Table 4.2-2.

TABLE 4.2-1
ICAPCD THRESHOLDS OF SIGNIFICANCE

Pollutant	Construction (pounds/day)	Operation (pounds/day) Tier I	Operation (pounds/day) Tier II
CO	550	< 550	≥ 550
NO_2	100	< 55	≥ 55
SO_2	--	< 150	≥ 150
PM_{10}	150	< 150	≥ 150
$PM_{2.5}$	150	--	--
VOC	75	< 55	≥ 55
Level of Significance	Significant	Less than Significant	Significant
Level of Analysis		Initial Study	Comprehensive Air Quality Report
Environmental Document		Negative Declaration	Mitigated Negative Declaration or Environmental Impact Report

Source: ICAPCD 2007

TABLE 4.2-2
FEDERAL *DE MINIMIS* THRESHOLDS—IMPERIAL VALLEY NONATTAINMENT AREAS

Pollutant	Federal Designation	Threshold (tons/year)
O_3* (VOCs)	Nonattainment, Moderate	100
O_3* (NO_x)	Nonattainment, Moderate	100
PM_{10}	Nonattainment, Serious	70
$PM_{2.5}$	Nonattainment	
Direct Emissions		100
SO_2		100
NO_x†		100
VOC or ammonia‡		100
CO	Attainment	N/A

Source of Thresholds: 40 CFR 93
VOCs=volatile organic compounds; NO_x=oxides of nitrogen; N/A: not applicable
*Emission thresholds are given for O_3 precursor elements, VOCs and NO_x, based on the attainment status of O_3.
† unless determined not to be significant precursors
‡ if determined to be significant precursors

4.2.3 IMPACTS BY ALTERNATIVE

4.2.3.1 ALTERNATIVES 1, 4, AND 5

Under Alternative 1, the Ocotillo Sol Project would not be approved by the BLM and the CDCA Plan would not be amended. The Ocotillo Sol Project would not be constructed and the BLM

would continue to manage the site consistent with the CDCA Plan (1980, as amended), Yuha Basin ACEC Management Plan (1981), Yuha Desert Wildlife Habitat Management Plan (1983), Yuha Desert Management Plan (1985), and the *Flat-tailed Horned Lizard Rangewide Management Strategy*.

Under Alternative 4, the Ocotillo Sol Project would not be approved and no ROW grant would be issued to the Applicant. The project area would remain in its existing condition, with no construction of structures or facilities resulting in ground disturbance, and no impacts associated with the Ocotillo Sol Project would occur. Under Alternative 4, the CDCA Plan would be amended to identify the Ocotillo Sol Project area as suitable for solar energy development. As a result, a project might be proposed in the future using the same or different solar energy technology on the project site, possibly resulting in impacts similar to the proposed Ocotillo Sol Project. The impacts of such a future project, however, are speculative at this time.

Under Alternative 5, the Ocotillo Sol Project would not be approved and no ROW grant would be issued to the Applicant. The project area would remain in its existing condition, with no construction of structures or facilities resulting in ground disturbance, and no impacts associated with the Ocotillo Sol Project would occur. Under Alternative 5, the CDCA Plan would be amended to identify the Ocotillo Sol Project area as unsuitable for solar energy development.

Under Alternatives 1, 4, and 5, there would be no direct or indirect impacts to air quality related to the Ocotillo Sol Project.

4.2.3.2 ALTERNATIVE 2

Under Alternative 2, the Applicant would construct, operate, maintain, and decommission a 100-acre solar PV facility on BLM-managed lands under an authorized ROW. This alternative includes a 15-acre temporary ROW that would be used as a laydown are during construction of the solar facility. Construction of the Ocotillo Sol Project would include grading, foundation excavation, trenching, and fencing.

4.2.3.2.1 Construction

Construction-related pollutants result from dust raised during grading, emissions from construction vehicles and equipment, and chemicals used during construction. Fugitive dust emissions vary greatly during construction and are dependent on the amount and type of activity, silt content of the soil, and the weather. Vehicles moving over paved and unpaved surfaces, demolition, excavation, earth movement, grading, and wind erosion from exposed surfaces are all sources of fugitive dust.

Heavy-duty construction equipment is usually diesel powered. In general, emissions from diesel-powered equipment contain more nitrogen oxides, sulfur oxides, and particulate matter than gasoline-powered engines. Diesel-powered engines generally produce less carbon monoxide and less reactive organic gases than do gasoline-powered engines. Standard construction equipment includes dozers, rollers, scrapers, dewatering pumps, backhoes, loaders, paving equipment, delivery/haul trucks, jacking equipment, welding machines, pile drivers, and so on.

Construction for the Ocotillo Sol Project would occur over an 11-month period. This schedule is based on "typical working hours" with hours of operation assumed to be between 7:00 A.M. and 7:00 P.M., Monday through Friday. The Ocotillo Sol Project's overall construction schedule is shown in Table 4.2-3.

Construction equipment parameters (e.g., types, hours of operation) were provided by the Applicant and are summarized in Table 4.2-4. Since the conformity *de minimis* thresholds are expressed in tons per year, it was assumed that all construction equipment indicated in Table 4.2-4 could operate in a single year.

TABLE 4.2-3
CONSTRUCTION TIMELINE

	Construction Month										
Phase	1	2	3	4	5	6	7	8	9	10	11
Site Preparation/Access Roads	X										
Module Rack Supports		X	X	X							
Security Fencing			X								
Underground Electrical			X	X	X						
Rack Installation				X	X	X	X				
Module Installation					X	X	X	X	X		
Above Ground Electrical							X	X			
Power Conversion Stations								X	X		
Maintenance Building								X	X	X	X
Combining Switchgear										X	
Commissioning											X

Source: S. Peterson pers. comm., 2012

TABLE 4.2-4
CONSTRUCTION EQUIPMENT PARAMETERS

Phase	Equipment	Quantity	Fuel Type	Engine hp	Operating Hours per Day	Operating Duration (days)	Total Operating Hours	Total Hours Unit	VTM/ Unit
Site Preparation/ Access Roads	ATV	10	gas	50	4	40	160	160	2400
Site Preparation/ Access Roads	Backhoe/trencher	2	diesel	350	8	2	16	16	
Site Preparation/ Access Roads	Dump Truck	2	diesel	350	8	20	160	160	
Site Preparation/ Access Roads	Front End Loader	1	diesel	350	8	20	160	160	
Site Preparation/ Access Roads	Generators/Compressors	1	diesel	100	8	20	160	160	
Site Preparation/ Access Roads	Grader	1	diesel	350	8	50	400	400	
Site Preparation/ Access Roads	Personal Cars	20	gas	150	2	40	80	80	1200
Site Preparation/ Access Roads	Roller/Compactor	1	diesel	350	8	40	320	320	
Site Preparation/ Access Roads	Scraper/Dozer	1	diesel	400	8	40	320	320	
Site Preparation/ Access Roads	Semi (equipment & supplies delivery)	1	diesel	350	4	20	80	80	1200
Site Preparation/ Access Roads	Water Truck	2	diesel	350	4	40	160	160	
Module Rack Supports	ATV	10	gas	50	8	40	320	320	4800
Module Rack Supports	Crew Delivery Bus	3	diesel	250	2	40	80	80	1200
Module Rack Supports	Flat-bed truck	2	diesel	200	2	20	40	40	600
Module Rack Supports	Personal cars	20	gas	150	1	40	40	40	600

TABLE 4.2-4
CONSTRUCTION EQUIPMENT PARAMETERS

Phase	Equipment	Quantity	Fuel Type	Engine hp	Operating Hours per Day	Operating Duration (days)	Total Operating Hours	Total Hours Unit	VTM/ Unit
Module Rack Supports	Semi (equipment & supplies delivery)	1	diesel	350	4	30	120	120	1800
Module Rack Supports	Vibratory Post Driver	2	diesel	100	8	30	240	240	
Module Rack Supports	Water Truck	2	diesel	350	4	40	160	160	
Security Fencing	ATV	10	gas	50	4	20	80	80	1200
Security Fencing	Backhoe/trencher	2	diesel	350	8	2	16	16	
Security Fencing	Concrete Truck	1	diesel	350	8	10	80	80	
Security Fencing	Flat-bed truck	2	diesel	200	4	3	12	12	180
Security Fencing	Forklift	2	diesel	100	8	3	24	24	
Security Fencing	Hand Held Vibrator	2	gas	50	8	20	160	160	
Security Fencing	Personal cars	20	gas	150	1	20	20	20	
Security Fencing	Semi (equipment & supplies delivery)	1	diesel	350	4	5	20	20	300
Underground Electrical	ATV	10	gas	50	8	50	400	400	6000
Underground Electrical	Backhoe/trencher	2	diesel	350	8	20	160	160	
Underground Electrical	Crew Delivery Bus	3	diesel	250	2	40	80	80	1200
Underground Electrical	Flat-bed truck	2	diesel	200	2	40	80	80	1200
Underground Electrical	Forklift	2	diesel	100	4	40	160	160	
Underground Electrical	Hand Held Vibrator	2	gas	50	8	10	80	80	
Underground Electrical	Personal cars	20	gas	150	1	40	40	40	600

TABLE 4.2-4
CONSTRUCTION EQUIPMENT PARAMETERS

Phase	Equipment	Quantity	Fuel Type	Engine hp	Operating Hours per Day	Operating Duration (days)	Total Operating Hours	Total Hours Unit	VTM/ Unit
Underground Electrical	Roller/Compactor	1	diesel	350	8	20	160	160	
Underground Electrical	Semi (equipment & supplies delivery)	1	diesel	350	4	40	160	160	2400
Underground Electrical	Water Truck	2	diesel	350	4	40	160	160	
Rack Installation	ATV	10	gas	50	8	40	320	320	4800
Rack Installation	Cranes/Lifts	1	diesel	150	8	40	320	320	
Rack Installation	Crew Delivery Bus	3	diesel	250	2	40	80	80	1200
Rack Installation	Flat-bed truck	2	diesel	200	2	50	100	100	1500
Rack Installation	Forklift	2	diesel	100	4	50	200	200	
Rack Installation	Personal cars	20	gas	150	1	40	40	40	600
Rack Installation	Semi (equipment & supplies delivery)	1	diesel	350	4	40	160	160	2400
Rack Installation	Water Truck	2	diesel	350	4	40	160	160	
Module Installation	ATV	10	gas	50	8	40	320	320	4800
Module Installation	Crew Delivery Bus	3	diesel	250	2	40	80	80	1200
Module Installation	Flat-bed truck	2	diesel	200	2	50	100	100	1500
Module Installation	Forklift	2	diesel	100	8	50	400	400	
Module Installation	Personal cars	20	gas	150	1	40	40	40	600
Module Installation	Semi (equipment & supplies delivery)	1	diesel	350	4	60	240	240	3600
Module Installation	Water Truck	2	diesel	350	4	40	160	160	
Aboveground Electrical	ATV	10	gas	50	8	30	240	240	3600
Aboveground Electrical	Concrete Truck	1	diesel	350	8	5	40	40	

TABLE 4.2-4
CONSTRUCTION EQUIPMENT PARAMETERS

Phase	Equipment	Quantity	Fuel Type	Engine hp	Operating Hours per Day	Operating Duration (days)	Total Operating Hours	Total Hours Unit	VTM/ Unit
Aboveground Electrical	Cranes/Lifts	1	diesel	150	8	10	80	80	
Aboveground Electrical	Crew Delivery Bus	3	diesel	250	2	20	40	40	600
Aboveground Electrical	Flat-bed truck	2	diesel	200	2	40	80	80	1200
Aboveground Electrical	Forklift	2	diesel	100	4	40	160	160	
Aboveground Electrical	Personal cars	20	gas	150	1	20	20	20	300
Aboveground Electrical	Semi (equipment & supplies delivery)	1	diesel	350	4	20	80	80	1200
Aboveground Electrical	Water Truck	10	diesel	350	8	20	160	160	2400
Power Conversion Stations	ATV	2	gas	50	8	30	240	240	3600
Power Conversion Stations	Backhoe/trencher	1	diesel	350	8	2	16	16	
Power Conversion Stations	Concrete Truck	1	diesel	350	8	20	160	160	
Power Conversion Stations	Cranes/Lifts	3	diesel	150	8	10	80	80	
Power Conversion Stations	Crew Delivery Bus	2	diesel	250	2	20	40	40	600
Power Conversion Stations	Flat-bed truck	2	diesel	200	2	40	80	80	1200
Power Conversion Stations	Forklift	1	diesel	100	4	40	160	160	
Power Conversion Stations	Generators/ Compressors	2	diesel	100	8	10	80	80	

TABLE 4.2-4
CONSTRUCTION EQUIPMENT PARAMETERS

Phase	Equipment	Quantity	Fuel Type	Engine hp	Operating Hours per Day	Operating Duration (days)	Total Operating Hours	Total Hours Unit	VTM/ Unit
Power Conversion Stations	Hand Held Vibrator	20	gas	50	8	10	80	80	
Power Conversion Stations	Personal cars	1	gas	150	1	20	20	20	300
Power Conversion Stations	Roller/Compactor	1	diesel	350	8	2	16	16	
Power Conversion Stations	Semi (equipment & supplies delivery)	2	diesel	350	4	40	160	160	2400
Power Conversion Stations	Water Truck	10	diesel	350	4	20	80	80	
Maintenance Building	ATV	2	gas	50	8	30	240	240	3600
Maintenance Building	Backhoe/trencher	1	diesel	350	8	2	16	16	
Maintenance Building	Concrete Truck	1	diesel	350	8	10	80	80	
Maintenance Building	Cranes/Lifts	3	diesel	150	8	4	32	32	
Maintenance Building	Crew Delivery Bus	2	diesel	250	2	40	80	80	1200
Maintenance Building	Forklift	1	diesel	100	4	40	160	160	
Maintenance Building	Front End Loader	1	diesel	350	8	1	8	8	
Maintenance Building	Grader	20	diesel	350	8	5	40	40	
Maintenance Building	Personal cars	1	gas	150	1	40	40	40	600
Maintenance Building	Roller/Compactor	1	diesel	350	8	2	16	16	

TABLE 4.2-4
CONSTRUCTION EQUIPMENT PARAMETERS

Phase	Equipment	Quantity	Fuel Type	Engine hp	Operating Hours per Day	Operating Duration (days)	Total Operating Hours	Total Hours Unit	VTM/ Unit
Maintenance Building	Scraper/Dozer	1	diesel	400	8	2	16	16	
Maintenance Building	Semi (equipment & supplies delivery)	2	diesel	350	4	30	120	120	1800
Maintenance Building	Water Truck	10	diesel	350	8	40	320	320	
Combining Switchgear	ATV	2	gas	50	8	30	240	240	3600
Combining Switchgear	Backhoe/trencher	1	diesel	350	8	1	8	8	
Combining Switchgear	Concrete Truck	1	diesel	350	8	5	40	40	
Combining Switchgear	Cranes/Lifts	3	diesel	150	8	4	32	32	
Combining Switchgear	Crew Delivery Bus	2	diesel	250	2	20	40	40	600
Combining Switchgear	Flat-bed truck	2	diesel	200	2	20	40	40	600
Combining Switchgear	Forklift	20	diesel	100	4	20	80	80	
Combining Switchgear	Personal cars	1	gas	150	1	20	20	20	300
Combining Switchgear	Semi (equipment & supplies delivery)	2	diesel	350	4	30	120	120	1800
Combining Switchgear	Water Truck	10	diesel	350	8	20	160	160	
Commissioning	ATV	1	gas	50	8	40	320	320	4800
Commissioning	Cranes/Lifts	3	diesel	150	8	2	16	16	
Commissioning	Crew Delivery Bus	2	diesel	250	2	10	20	20	300

TABLE 4.2-4
CONSTRUCTION EQUIPMENT PARAMETERS

Phase	Equipment	Quantity	Fuel Type	Engine hp	Operating Hours per Day	Operating Duration (days)	Total Operating Hours	Total Hours Unit	VTM/ Unit
Commissioning	Flat-bed truck	2	diesel	200	1	20	20	20	300
Commissioning	Forklift	1	diesel	100	2	20	40	40	
Commissioning	Generators/Compressors	20	diesel	100	8	10	80	80	
Commissioning	Personal cars	2	gas	150	0.5	40	20	20	300
Commissioning	Water Truck	10	diesel	350	8	30	240	240	

Source: S. Peterson, pers. com. 2012

Exhaust emission factors for the off road construction equipment were obtained from Appendix D of the CalEEMod User's Guide (CARB 2011), except for the hand-held vibrators, which are gasoline powered. Exhaust emission factors for the hand held vibrators were obtained from Table A9-3-A of the CEQA Air Quality Handbook (SCAQMD 1993). The posted speed on the roadways near the project site is 15 miles per hour. Although the average speed for vehicles traveling to and from the Ocotillo Sol Project area may be greater than 15 miles per hour, an average speed of 15 miles per hour was assumed for these vehicles. This assumption is conservative because the higher the average speed, the lower the exhaust emission rates per mile. Thus assuming an average speed of 15 miles per hour will result in conservatively high exhaust emissions.

Exhaust emission factors for on-road vehicles were obtained by running EMFAC 2007 with the following parameters: Imperial County, year 2013, annual emissions, average annual temperature 70°F, average annual humidity 25 percent, and average vehicle speed of 15 miles per hour. The average trip length for the on-road vehicles was assumed to be 15 miles. Exhaust emission factors for each type of equipment are shown in Table 4.2-5.

TABLE 4.2-5
EQUIPMENT EMISSION FACTORS

Equipment	Fuel Type	Engine hp	Load Factor*	TOG[1]	ROG[1]	CO[1]	NO_X[1]	SO_2[1]	PM_{10}[1]	$PM_{2.5}$[1]	CO_2[1]	CH_4[1]
Backhoe/trencher	diesel	350	0.55	21.129	0.377	1.226	3.404	0.006	0.115	0.115	568.299	0.034
Concrete Truck	diesel	350	0.57	3.173	0.452	1.327	3.728	0.005	0.132	0.132	568.299	0.040
Cranes/Lifts	diesel	150	0.43	6.607	0.729	3.41	5.495	0.006	0.314	0.314	568.299	0.065
Dump Truck	diesel	350	0.57	3.173	0.452	1.327	3.728	0.005	0.132	0.132	568.299	0.040
Forklift	diesel	100	0.3	4.118	0.788	3.953	5.038	0.006	0.434	0.434	568.299	0.071
Front End Loader	diesel	350	0.54	16.768	0.447	1.533	4.114	0.005	0.147	0.147	568.299	0.040
Generators / Compressors	diesel	100	0.74	16.078	0.792	3.567	5.478	0.006	0.424	0.424	586.299	0.071
Grader	diesel	350	0.61	8.815	0.459	1.557	4.171	0.005	0.150	0.150	568.299	0.041
Hand-held Vibrator	gas	50	0.371	NA	0.0033	0.0872	0.0023	0.0001	0.0001	NA	NA	NA
Roller/Compactor	diesel	350	0.56	34.702	0.428	1.637	4.362	0.005	0.153	0.153	568.299	0.038
Scraper/Dozer	diesel	400	0.72	5.862	0.563	2.141	5.001	0.005	0.194	0.194	568.300	0.005
Vibratory Post Driver	diesel	100	0.62	13.792	0.581	3.625	4.225	0.006	0.31	0.31	568.299	0.52
Water Truck	diesel	350	0.57	3.173	0.452	1.327	3.728	0.005	0.132	0.132	568.299	0.040

SOURCE: CalEEMod 2011 (CARB 2011).
*Described in SCAQMD 1993 as an "efficiency factor."
[1] OFFROAD Equipment Emission Factors (g/bhp-hr)
NA: not available.

TABLE 4.2-5
EQUIPMENT EMISSION FACTORS (CONT.)

Equipment	Fuel Type	Engine hp	TOG[2]	ROG[2]	CO[2]	NO_X[2]	SO_2[2]	PM_{10}[2]	$PM_{2.5}$[2]	CO_2[2]	CH_4[2]
ATV	gas	50	NA	2.380	12.289	1.089	0.002	0.003	0.003	195.937	NA
Crew Delivery Bus	diesel	250	NA	0.303	3.227	6.550	0.014	0.388	0.357	1505.000	NA
Flat-bed truck	diesel	200	NA	0.310	3.233	6.712	0.014	0.379	0.349	1505.000	NA
Personal cars	gas	150	NA	0.468	5.695	0.654	0.006	0.025	0.023	597.267	NA
Semi (equipment & supplies delivery)	diesel	350	NA	2.022	6.225	13.944	0.025	0.675	0.621	2595.958	NA

SOURCE: EMFAC 2007 (CARB 2007).

[2] EMFAC Emission Factors (grams/mile)

Fugitive dust emissions associated with grading activities were estimated using default assumptions from CalEEMod (e.g., a scraper is assumed to grade 1 acre per 8-hour day). With these assumptions, Table 4.2-6 shows the projected construction emissions associated with the Ocotillo Sol Project.

As seen in Table 4.2-6, none of the criteria pollutant emissions due to construction of the Ocotillo Sol Project are anticipated to exceed the pertinent *de minimis* thresholds. Comparison with Tables 3.2-7 and 3.2-8 indicates that the construction emissions are well below 10 percent of the air basin emissions. Emissions due to construction of the Ocotillo Sol Project would not be locally or regionally significant. Therefore, the Ocotillo Sol Project is presumed to conform to the applicable SIP and adverse direct and indirect impacts to air quality would be negligible. Dust Control Plans for construction and operation (two plans) will be implemented to further avoid and reduce dust emissions in the project area associated with project construction and operation. Potential adverse impacts associated with CO hot spot formation and air toxics would similarly be negligible.

TABLE 4.2-6
ESTIMATED ANNUAL CONSTRUCTION AIR QUALITY EMISSIONS DUE TO THE OCOTILLO SOL PROJECT (TONS/YEAR)

Pollutant	Ocotillo Sol Project	Imperial County *de minimis* Threshold	Exceed Threshold?
Reactive organic gas	2.0	100	No
CO	10.0	N/A	N/A
NO_X	7.6	100	No
SO_X	0.0	100*	No
PM_{10}	0.3	70	No
$PM_{2.5}$	0.3	100	No

*Threshold applies to SO_2 as a $PM_{2.5}$ non-attainment area

4.2.3.2.2 Operation

Operational emissions would be due primarily to worker vehicle travel to and from the site, as well as on-site vehicle emissions associated with maintenance activities. Table 4.2-7 shows the anticipated sources associated with facility operations.

Using the same general assumptions as described above for construction (e.g., average trip length of 15 miles), Table 4.2-8 shows the projected operational emissions associated with the Ocotillo Sol Project.

As seen in Table 4.2-8, none of the criteria pollutant emissions due to operation of the Ocotillo Sol Project are anticipated to exceed the pertinent *de minimis* thresholds. Comparison with Tables 3.2-7 and 3.2-8 indicate that the operational emissions are well below 10 percent of the air basin emissions.

TABLE 4.2-7
OPERATIONAL ACTIVITIES

Equipment	Fuel Type	Engine hp	Total Annual Operation and Maintenance Hours Per Equipment Category	VMT
ATV	Gas	50	720	10,800
Flat-bed truck	Diesel	200	120	1,800
Semi-truck	Diesel	350	20	300
Personal car	Gas	150	720	10,800
Crane/Lift	Diesel	150	40	-
Forklift	Diesel	100	360	-
Water Truck	Diesel	350	20	-

Source: S. Peterson, pers. comm. 2012
hp = horsepower; VMT = vehicle miles traveled

TABLE 4.2-8
ESTIMATED ANNUAL OPERATIONAL AIR QUALITY EMISSIONS DUE TO THE OCOTILLO SOL PROJECT (TONS/YEAR)

Pollutant	Ocotillo Sol Project	Imperial County *de minimis* Threshold	Exceed Threshold?
Reactive organic gas	16.0	100	No
CO	101.0	N/A	N/A
NO_X	17.6	100	No
SO_X	0.1	100*	No
PM_{10}	0.6	70	No
$PM_{2.5}$	0.6	100	No

*Threshold applies to SO_2 as a $PM_{2.5}$ non-attainment area

In addition to the operational sources discussed above, it is possible that the energy produced by the solar facility would avoid the production of an equal amount of energy by a conventional power plant. The Applicant's proposed Ocotillo Sol Project is anticipated to generate between 32,000 and 44,000 MW hours (MWh) per year (San Diego Gas & Electric 2012). Table 4.2-9 shows the emission factors associated with conventional (i.e., fossil fuel) energy production obtained from Table A9-11-B in the SCAQMD's CEQA Air Quality Handbook (SCAQMD 1993). Emission factors are not provided for $PM_{2.5}$ in Table A9-11-B of the Handbook. Per the guidance found in the SCAQMD's *Final Methodology to Calculate $PM_{2.5}$ and $PM_{2.5}$ Significance Thresholds* (2006), for gaseous combustion the $PM_{2.5}$ fraction of PM_{10} emissions is estimated to be nearly 100 percent. Therefore, $PM_{2.5}$ emissions were assumed to be equal to PM_{10} emissions.

TABLE 4.2-9
EMISSIONS FROM ELECTRICAL ENERGY GENERATION

	CO	Reactive organic gas	NO_X	SO_X	PM_{10}	$PM_{2.5}$
Emission Factor (lbs/MWh)	0.20	0.01	1.15	0.12	0.04	0.04
For 32,000 MWh/year						
Emissions (lbs/year)	6,400	320	36,800	3,840	1,280	6,400
Emissions (tons/year)	3.2	0.16	18.4	1.92	0.64	3.2
For 44,000 MWh/year						
Emissions (lbs/year)	8,800	440	50,600	5,280	1,760	8,800
Emissions (tons/year)	4.4	0.22	25.3	2.64	0.88	4.4

lbs. = pounds

Table 4.2-9 also shows the projected criteria pollutant emissions associated with the generation of 32,000 and 44,000 MWh of electricity per year.

The net emissions in the region could be less than those shown in Table 4.2-8 due to operation of the Ocotillo Sol Project.

The ICAPCD has set a significance threshold of 150 pounds per day for construction PM_{10} emissions. Worst-case daily exhaust PM_{10} emissions are less than 13 pounds per day. There are no sensitive receptors within one-quarter mile of the Ocotillo Sol Project area.

Because the Ocotillo Sol project is located in an area designated as nonattainment of the federal standards and State of California standards for both O_3 and PM_{10}, a conformity review was conducted for O_3 (NO_x and VOCs) and PM_{10} (see Table 4.2-6). Emissions due to construction of the Ocotillo Sol Project would not be locally or regionally significant and the project would conform to the applicable SIP.

Traffic "Hot Spots"

Small-scale, localized concentrations of CO above the state and national standards have the potential to occur at intersections with stagnation points such as those that occur on major highways and heavily traveled and congested roadways. Localized high concentrations of CO are referred to as "CO hot spots" and are a concern at congested intersections, where automobile engines burn fuel less efficiently and their exhaust contains more CO.

According to a traffic analysis conducted for a neighboring project, all intersections within the vicinity of the Ocotillo Sol Project area currently operate at LOS C or better during peak hours (BLM 2011), with those nearest to the Ocotillo Sol Project area operating at LOS B or better. Additionally, all freeway segments operate at LOS B or better and all roadway segments operate at LOS A within the vicinity of the Ocotillo Sol Project area (BLM 2011). Operational traffic associated with the Ocotillo Sol Project would be minimal. Furthermore, Imperial County is an attainment of the CO NAAQS and CAAQS. Therefore, CO hot spot formation is not of concern.

Air Toxics

The Ocotillo Sol Project would not emit substantial air toxic pollutants. As a solar generating facility, it could indirectly reduce the emissions of air toxics in the region and beyond by offsetting the need for electrical generation by conventional (e.g., natural gas fired) facilities.

4.2.3.3 ALTERNATIVE 3

Under Alternative 3, the Applicant would construct, operate, maintain, and decommission a 100-acre solar PV facility on BLM-managed lands under an authorized ROW. The temporary ROW would be reduced to 2 acres. The 2-acre temporary ROW would provide for parking during construction of the Ocotillo Sol Project. Laydown and staging would occur within the 100-acre Ocotillo Sol Project area as construction activities progress.

Construction of the Applicant's 100-acre Ocotillo Sol Project would include grading, foundation excavation, trenching, and fencing. Because the 15-acre temporary ROW would be reduced to 2 acres, emissions associated with Alternative 3 would be equal to or slightly less than those associated with Alternative 2.

4.2.4 CUMULATIVE IMPACTS

4.2.4.1 GEOGRAPHIC SCOPE

The geographic scope of air quality impacts is a 6-mile radius for regionally based impacts and a 1-mile radius for sensitive receptor impacts. These cumulative analysis impact areas are appropriate for air quality due to the state, regional, and local nature of air quality impacts that could occur cumulatively. Generally, the identification of cumulative projects for air quality ranges from approximately 1 mile to as far as 6 miles of a proposed project because the effect of downwind dispersion eliminates the potential for project-level significant cumulative air quality impacts over areas larger than a few square miles. The cumulative impacts to regional ambient air quality concentrations from projects more than approximately 6 miles apart are typically minimal due to dispersion that would occur over that distance. The emissions sources for this project would be minimal, ground-based, and have limited exhaust plume buoyancy. During construction, dust and vehicle emissions would be highest within the project site (up to the site boundary where construction activity would be occurring) and would disperse rapidly with distance. For fossil-fuel fired plants, the California Energy Commission typically applies a 6-mile radius for air quality cumulative analysis. A similar standard was used for the proposed Ocotillo Sol project and alternatives.

4.2.4.2 EXISTING CONDITIONS

Past, present, and reasonably foreseeable future projects are listed in Table 4.1-1. Projects within the air quality cumulative analysis impact area are listed in Table 4.1-2. These projects include the following: BLM actions (within BLM-administered lands) include ongoing road maintenance and recreation designations. Other actions include the following: Imperial Valley Substation operation and maintenance, Imperial Valley Substation expansion for North Gila to Imperial Valley Substation #2 transmission line, Sunrise Powerlink, transmission and utility corridor

maintenance, Interstate 8 and Highway 98, agricultural activities, recreational activity, North Gila to Imperial Valley Substation #2 transmission line, Dixieland Imperial Irrigation District transmission line and connection, sand and gravel mining, Imperial Irrigation District canal and drain maintenance. Reasonably foreseeable future renewable energy projects within 6 miles of the Ocotillo Sol Project area include the following:

- Calexico Solar Farm II
- Mount Signal Solar Farm
- Calexico Solar Farm I
- Imperial Solar Energy Center South Solar Farm
- Centinela Solar Farm
- Acorn Greenworks Solar Farm
- Silverleaf Solar Farm
- Campo Verde Solar Farm (and shared transmission line with the Silverleaf Solar Farm)
- Imperial Solar Energy Center West Solar Farm

The existing conditions for air resources in the Ocotillo Sol Project area are described in Chapter 3, Section 3.2. The existing cumulative conditions for the project area are represented by the current area designations for criteria air pollutants. The SSAB is in attainment of all federal pollutant standards except for O_3, PM_{10}, and $PM_{2.5}$. The Imperial Valley Planning Area, which includes the Ocotillo Sol Project area, is a serious PM_{10} nonattainment area, nonattainment for the $PM_{2.5}$ 24-hour standard, and a moderate 8-hour O_3 nonattainment area under Subpart 2. The reasonably foreseeable future projects listed above would result in short-term adverse impacts to air quality, primarily during construction and decommissioning activities. The combination of these projects could deteriorate the air quality in the area over a short period if they occur concurrently. Operation and maintenance activities are anticipated to result in minimal emissions over the long-term and are not anticipated to result in significant impacts to air quality. Air quality mitigation measures will be required for all reasonably foreseeable future projects.

4.2.4.3 ALTERNATIVES 1, 4, AND 5

Under Alternatives 1, 4, and 5, there would be no direct or indirect impacts to air quality related to the Ocotillo Sol Project. These alternatives, in combination with other reasonably foreseeable future projects, would not contribute to cumulative air quality impacts within the 6-mile radius of the project area or within the larger region.

4.2.4.4 ALTERNATIVES 2 AND 3

Negligible short-term impacts to air quality would occur during construction and decommissioning of the Applicant's proposed Ocotillo Sol Project under Alternatives 2 and 3. Emissions under these alternatives are projected to be below the *de minimis* thresholds and impacts would be negligible. These impacts would not be locally or regionally significant. Approved renewable energy projects or those pending approval are not expected to be under peak construction concurrent with the proposed Ocotillo Sol Project (cumulative peak construction would not likely coincide with construction activities described under Alternatives 2 and 3). The majority of past, present, and reasonably foreseeable activities, with the exception of activities at the Imperial Valley Substation, would occur 2 miles or more away from the

proposed Ocotillo Sol Project area. The renewable energy projects, along with other activities within the 6-mile geographic scope for air quality, combined with construction activities under Alternatives 2 and 3, would result in short-term cumulative impacts to air quality. These impacts are not expected to have a significant cumulative effect on local or regional air quality. All renewable energy projects within a 6-mile radius of the proposed Ocotillo Sol Project area have or will be required to implement air quality dust control plans or mitigation measures to reduce impacts.

During operation and maintenance, no long-term air quality impacts are anticipated, and no increases in traffic would occur during the operational life of the proposed solar facility. During operation and maintenance activities under Alternatives 2 and 3, emissions for all criteria pollutants would be near zero. No direct cumulative impacts to air quality are anticipated during operation and maintenance activities under Alternatives 2 and 3 in combination with other reasonably foreseeable future projects in the area.

4.2.5 MITIGATION

Dust control plans for the construction period as well as the operation and maintenance period would be implemented to reduce emissions (the dust control plan will be developed prior to the Record of Decision). Dust control measures would be taken from the Water Quality Construction BMP Manual (San Diego Gas & Electric 2002) and Renewable Energy Action Team BMPs and Guidance Manual (2010). The Applicant would conduct construction dust control within the project area, construction laydown areas, and the access road by using water applied by trucks or other palliative means deemed acceptable by BLM. Wind erosion control techniques (such as windbreaks, water, chemical dust suppressants, or vegetation) would be used where soils are disturbed (Renewable Energy Action Team 2010).

4.2.6 IRREVERSIBLE AND IRRETRIEVABLE COMMITMENT OF RESOURCES

Construction and decommissioning activities for the Ocotillo Sol Project would result in unavoidable adverse impacts to air quality from particulate matter and vehicle emissions. These impacts would be temporary negligible residual effects. BMPs and implementation of a dust control plan would minimize impacts. The Ocotillo Sol Project would not trigger federal or state conformity levels, and would not cause irreversible or irretrievable commitment of air resources. Unavoidable adverse impacts to air quality would be temporary and negligible, primarily during the construction period of the Ocotillo Sol project under Alternatives 2 and 3. No unavoidable or adverse impacts to air quality would result from selection of Alternatives 1, 4, or 5.

4.3 GREENHOUSE GASES AND CLIMATE CHANGE

4.3.1 MANAGEMENT GOALS

Based on the applicable BLM guidance, climate change analyses should attempt to account for and disclose the BLM's potential contribution to or mitigation of climate change and/or related impact and compare those contributions or mitigation to other relevant climate drivers (SO 3289, Amendment 1).

4.3.2 EMISSIONS CALCULATIONS

As with air emissions, GHG emissions can result from the construction and operation of a project. Construction impacts are generally short term and result from equipment exhaust and indirect effects associated with construction workers and deliveries. Operational impacts can occur from siting stationary emitting equipment, traffic associated with facility operation, or regional impacts resulting from growth-inducing development. In the case of the Ocotillo Sol Project, the primary source of emissions would be construction activities. As discussed below, operational emissions would be primarily related to facility worker trips associated with maintenance and operation of the facility.

GHG emissions were calculated using emission factors and other inputs from the CalEEMod computer program (SCAQMD 2011) and the EMFAC 2007 emissions model (CARB 2007). The CalEEMod program is a tool used to estimate air emissions, including GHG emissions, resulting from land development projects in the state of California. The model generates emissions from three basic sources: construction sources, area sources (e.g., fireplaces and natural gas heating), and operational sources (e.g., traffic). The EMFAC 2007 model was developed by CARB to calculate emission rates from all motor vehicles, such as passenger cars and heavy-duty trucks, operating on highways, freeways, and local roads in California.

4.3.3 IMPACTS BY ALTERNATIVE

4.3.3.1 ALTERNATIVES 1, 4, AND 5

Under Alternative 1, the Ocotillo Sol Project would not be approved by the BLM and the CDCA Plan would not be amended. The Ocotillo Sol Project would not be constructed and the BLM would continue to manage the site consistent with the CDCA Plan (1980, as amended), Yuha Basin ACEC Management Plan (1981), Yuha Desert Wildlife Habitat Management Plan (1983), Yuha Desert Management Plan (1985), and the *Flat-tailed Horned Lizard Rangewide Management Strategy*.

Under Alternative 4, the Ocotillo Sol Project would not be approved and no ROW grant would be issued to the Applicant. The project area would remain in its existing condition, with no construction of structures or facilities resulting in ground disturbance, and no impacts associated with the Ocotillo Sol Project would occur. Under Alternative 4, the CDCA Plan would be amended to identify the Ocotillo Sol Project area as suitable for solar energy development. As a

result, a project might be proposed in the future using the same or different solar energy technology on the project site, possibly resulting in impacts similar to the proposed Ocotillo Sol Project. The impacts of such a future project, however, are speculative at this time.

Under Alternative 5, the Ocotillo Sol Project would not be approved and no ROW grant would be issued to the Applicant. The project area would remain in its existing condition, with no construction of structures or facilities resulting in ground disturbance, and no impacts associated with the Ocotillo Sol Project would occur. Under Alternative 5, the CDCA Plan would be amended to identify the Ocotillo Sol Project area as unsuitable for solar energy development.

Under Alternatives 1, 4, and 5, the project area would remain in its existing condition, with no construction of structures or facilities resulting in ground disturbance. Under these alternatives, there would be no adverse direct or indirect impacts from GHG emissions. These alternatives would result in continued production of energy by a conventional (fossil fueled) power plant, however, and there would be no GHG emissions reductions from the use of a renewable energy source.

4.3.3.2 ALTERNATIVE 2

Under Alternative 2, the Applicant would construct, operate, maintain, and decommission a 100-acre solar PV facility on BLM-managed lands under an authorized ROW. This alternative includes a 15-acre temporary ROW that would be used as a laydown area during construction of the solar facility. Construction of the Ocotillo Sol Project would include grading, foundation excavation, trenching, and fencing.

4.3.3.2.1 Construction

Under Alternative 2, construction-related GHG emissions would result primarily from construction vehicles and equipment. Heavy-duty construction equipment is usually diesel powered. Standard construction equipment includes bulldozers, rollers, scrapers, dewatering pumps, backhoes, loaders, paving equipment, delivery/haul trucks, jacking equipment, welding machines, pile drivers, and so on.

Construction equipment parameters (e.g., types, hours of operation) were provided by the applicant and are summarized in Table 4.2-4 for each phase. Under Alternative 2, overall project construction is anticipated to take 11 months as discussed in Section 4.2. Since the GHG threshold (25,000 $MTCO_2E$) is expressed in metric tons per year, it was assumed that all construction equipment indicated in Table 4.2-4 could operate in a single calendar year.

Under Alternative 2, construction is assumed to occur in the year 2013. Exhaust emission factors for the off road construction equipment were obtained from Appendix D of the CalEEMod User's Guide (CARB 2011), except for the hand held vibrators, which are gasoline powered. Emission factors for N_2O are not provided in this appendix. It is assumed that N_2O emissions from construction equipment are minimal.

GHG exhaust emission factors for the hand held vibrators are not available. This relatively small piece of equipment is only used occasionally during project construction and is not anticipated to

contribute substantial GHG emissions. Therefore, this piece of equipment was omitted from the GHG analysis.

For the on-road traffic, emissions were estimated using the EMFAC 2007 model as indicated. This model does not provide emission factors for N_2O or CH_4. It is assumed that vehicular emissions of these pollutants are minimal. The EMFAC parameters are the same as those discussed in Section 4.2. Exhaust emission factors for each type of equipment are shown in Table 4.2-5.

With these assumptions, Table 4.3-1 shows the projected construction emissions associated with the Ocotillo Sol Project under Alternative 2.

TABLE 4.3-1
ALTERNATIVE 2 ESTIMATED ANNUAL CONSTRUCTION GHG EMISSIONS (METRIC TONS/YEAR)

Pollutant	Ocotillo Sol Project	GWP	CO_2E
CO_2	1,077	1.0	1,077
CH_4	0.07	21	1.5
Total	--	--	**1,078**

Note: The sum of values may not equal total shown, due to rounding.
CO_2E=carbon dioxide equivalent

As seen in Table 4.3-1, GHG equivalent emissions during project construction under Alternative 2 are projected to be well below 25,000 $MTCO_2E$ per year. Under Alternative 2, the construction related GHG emissions would be negligible.

4.3.3.2.2 Operation

Under Alternative 2, operational emissions would be due primarily to worker vehicle travel to and from the site, as well as on-site vehicle emissions associated with maintenance activities. Table 4.2-8 shows the anticipated sources associated with facility operations.

Using the same general assumptions as described above for construction (e.g., average trip length of 15 miles), Table 4.3-2 shows the projected operational emissions associated with the Ocotillo Sol Project under Alternative 2.

TABLE 4.3-2
ALTERNATIVE 2 ESTIMATED ANNUAL OPERATIONAL GHG EMISSIONS (METRIC TONS/YEAR)

Pollutant	Ocotillo Sol Project	GWP	CO_2E
CO_2	5,478	1.0	5,478
CH_4	0.00	21	0.02
Total	--	--	**5,478**

Note: The sum of values may not equal total shown, due to rounding.
CO_2E=carbon dioxide equivalent

As seen in Table 4.3-2, GHG equivalent emissions under Alternative 2 are projected to be less than 25,000 $MTCO_2E$ per year for the operation and maintenance period.

In addition to the operational sources discussed above, it is possible that the energy produced by the Ocotillo Sol solar facility would avoid the production of an equal amount of energy by a conventional (fossil fueled) power plant. Under Alternative 2, the Ocotillo Sol Project is anticipated to generate between 32,000 and 44,000 MWh per year (San Diego Gas & Electric 2012). Table 4.3-3 shows the emission factors associated with conventional (fossil fueled) energy production obtained from the CalEEMod program for the Applicant as the utility provider. Table 4.3-3 also shows the projected criteria pollutant emissions associated with the generation of 32,000 and 44,000 MWh of electricity per year.

TABLE 4.3-3
GHG EMISSIONS FROM ELECTRICAL ENERGY GENERATION BY A CONVENTIONAL POWER PLANT

	Emission Factor (pounds/MWh)	Emissions	GWP	CO_2E
For 32,000 MWh/year				
CO_2	780.79	11,333	1	11,333
CH_4	0.029	0.4	21	8.8
N_2O	0.011	0.2	310	49.5
Total				**11,392**
For 44,000 MWh/year				
CO_2	780.79	15,583	1	15,583
CH_4	0.029	0.6	21	12.2
N_2O	0.011	0.2	310	68.1
Total				**15,663**

Note: CO_2E=carbon dioxide equivalent

Under Alternative 2, the net emissions in the region would likely be less than those shown in Table 4.3-2 due to operation of the Ocotillo Sol Project.

4.3.3.3 ALTERNATIVE 3

Under Alternative 3, the Applicant would construct, operate, maintain, and decommission a 100-acre solar PV facility on BLM-managed lands under an authorized ROW. The temporary ROW would be reduced to 2 acres. The 2-acre temporary ROW would provide for parking during construction of the Ocotillo Sol Project. Laydown and staging would occur within the 100-acre Ocotillo Sol Project area as construction activities progress. Because the 15-acre temporary ROW would be reduced to 2 acres, emissions associated with this alternative would be equal to or slightly less than those associated with Alternative 2 for construction. Emissions for operation and maintenance activities would be the same under Alternatives 2 and 3.

4.3.4 CUMULATIVE IMPACTS

The existing conditions for air resources in the Ocotillo Sol Project area are described in Chapter 3, Section 3.3. This section also provides a summary of climate changes issues and effects.

It is generally agreed within the scientific community that increases in global GHG emission concentration can cause changes to current global climate conditions, which could include changes to the local climate at the project site. The specific nature of any localized climate change cannot be reasonably predicted, but could include increases or decreases in temperature and rainfall, the increase in severe weather events, or otherwise cause changes to the local climatology that could be disruptive to the existing flora and fauna, could increase surface soil loss, and could decrease agricultural productivity.

This entire GHG impact assessment is a cumulative impact assessment; there are no direct localized impacts from project-level GHG emissions. The information needed to link any particular instance of GHG emissions or sequestration to any specific climate-related environmental effects does not currently exist, and the effect of GHG emissions must be understood in the aggregate. The proposed Ocotillo Sol Project alone, or any of the project alternatives, would not be sufficient to effect global climate change, but the project would emit GHGs and, therefore, has been analyzed as a source of potential cumulative impacts in the context of long-term global impacts and existing GHG regulatory requirements and GHG energy policies. The broad integration of renewable energy, however, would allow for a sizable reduction in current GHG emission rates and could have long-term beneficial impacts in relation to climate change. Specifically, the Ocotillo Sol Project would enable GHG emission reductions, and so has been found to provide beneficial cumulative GHG impacts.

4.3.5 MITIGATION

No specific mitigation measures for GHG would be required.

4.3.6 IRREVERSIBLE AND IRRETRIEVABLE COMMITMENT OF RESOURCES

Construction and decommissioning activities for the Ocotillo Sol Project would result in negligible GHG emissions. The Ocotillo Sol Project would not result in a significant increase of GHG emissions within the region nor would it hinder attainment of the state's goals of reducing GHG emissions to 1990 levels by 2020. As a result, it would not result in an irreversible or irretrievable commitment of air resources causing a significant increase in GHG emissions.

4.4 GEOLOGY AND SOILS

4.4.1 MANAGEMENT GOALS

The CDCA Plan did not establish any goals for geology or soil resources.

4.4.2 TYPICAL IMPACTS FROM SOLAR ENERGY DEVELOPMENT

The Ocotillo Sol Project area is relatively flat and overall grading would be minimal to prepare the site for solar panels. No significant soil conditions were observed or are known to exist. Moreover, compaction and erosion of soil resources have the potential to occur from construction activities, maintenance activities, and decommissioning related to solar energy development.

4.4.3 IMPACTS BY ALTERNATIVE

4.4.3.1 ALTERNATIVES 1, 4, AND 5

Under Alternative 1, the Ocotillo Sol Project would not be approved by the BLM and the CDCA Plan would not be amended. The Ocotillo Sol Project would not be constructed and the BLM would continue to manage the site consistent with the CDCA Plan (1980, as amended), Yuha Basin ACEC Management Plan (1981), Yuha Desert Wildlife Habitat Management Plan (1983), Yuha Desert Management Plan (1985), and the *Flat-tailed Horned Lizard Rangewide Management Strategy*.

Under Alternative 4, the Ocotillo Sol Project would not be approved and no ROW grant would be issued to the Applicant. The project area would remain in its existing condition, with no construction of structures or facilities resulting in ground disturbance, and no impacts associated with the Ocotillo Sol Project would occur. Under Alternative 4, the CDCA Plan would be amended to identify the Ocotillo Sol Project area as suitable for solar energy development. As a result, a project might be proposed in the future using the same or different solar energy technology on the project site, possibly resulting in impacts similar to the proposed Ocotillo Sol Project. The impacts of such a future project, however, are speculative at this time.

Under Alternative 5, the Ocotillo Sol Project would not be approved and no ROW grant would be issued to the Applicant. The project area would remain in its existing condition, with no construction of structures or facilities resulting in ground disturbance, and no impacts associated with the Ocotillo Sol Project would occur. Under Alternative 5, the CDCA Plan would be amended to identify the Ocotillo Sol Project area as unsuitable for solar energy development.

Under Alternatives 1, 4, and 5, the project area would remain in its existing condition, with no construction of structures or facilities resulting in ground disturbance. No loss or degradation of geological and soil resources from construction, operation, or decommissioning would occur. The area would continue to be available for other uses that are consistent with the CDCA Plan,

Yuha Basin ACEC Management Plan, and *Flat-tailed Horned Lizard Rangewide Management Strategy*. There would be no direct or indirect impacts to geology or soils under Alternatives 1, 4, and 5.

4.4.3.2 ALTERNATIVE 2

Under Alternative 2, the Applicant would construct, operate, maintain, and decommission a 100-acre solar PV facility on BLM-managed lands under an authorized ROW. This alternative includes a 15-acre temporary ROW that would be used as a laydown area during construction of the solar facility. Construction of the Ocotillo Sol Project would include grading, foundation excavation, trenching, and fencing. Based on the known geologic features within the Ocotillo Sol Project area, no impacts to geology are anticipated under Alternative 2.

No known faults exist on or in the immediate vicinity of the Ocotillo Sol Project area. The site is within an area that historically has experienced seismic activity due to the presence of nearby active faults capable of producing moderately high magnitude and intensity earthquakes. Structures built within the Ocotillo Sol Project area would likely experience ground shaking related to seismic activity, but any potential impact would be mitigated by incorporation of standard building practices and design recommendations from the geotechnical report. Liquefaction, another geologic hazard associated with seismic shaking, would not be significant due to the depth to groundwater and types of geologic materials reported near the Ocotillo Sol Project area. Differential settlement resulting from land subsidence, due to its regional nature, would be negligible; impacts from expansive soils would not be significant. Under Alternative 2, the proposed Ocotillo Sol Project would not result in impacts to geologic features in the area.

Almost none of the soils within a 1-mile radius of the Ocotillo Sol Project area have been or are currently being used for agricultural purposes. Active agricultural fields are present, however, approximately 1 mile downslope from the project site. Construction activities under Alternative 2 would involve grading to level the site. Erosion could occur within graded areas due to removal of vegetation and soil exposure. Soil erosion and compaction could occur due to maintenance and decommissioning activities. As outlined in Chapter 2, erosion control measures would be implemented to minimize the amount of soil erosion during construction. In addition, a SWPPP would be implemented, which would also minimize erosion potential. These measures would also be used during operation and maintenance activities, as well as decommissioning.

The incorporation of standard building practices and design recommendations from the geotechnical report would minimize any potential impacts related to faulting and seismicity. Erosion control measures, the SWPPP, and BMPs outlined under Alternative 2 in Chapter 2 would also minimize impacts to soil resources. Direct and indirect adverse impacts to soil resources within the Ocotillo Sol Project area would be negligible under Alternative 2.

4.4.3.3 ALTERNATIVE 3

Under Alternative 3, the Applicant would construct, operate, maintain, and decommission a 100-acre solar PV facility on BLM-managed lands under an authorized ROW. The 15-acre temporary ROW described under Alternative 2 would be reduced to 2 acres under Alternative 3. The 2-acre temporary ROW would provide for parking during construction of the Ocotillo Sol

Project. Laydown and staging would occur within the 100 acres as construction activities progress. Construction under Alternative 3 would include grading, foundation excavation, trenching, and fencing. As with Alternative 2, no impacts to geologic features are anticipated and impacts to soil resources would be negligible under Alternative 3. The erosion control measures, SWPPP, and BMPs outlined under Alternative 2 in Chapter 2 would be the same under Alternative 3. Impacts related to seismic activity would the same for Alternative 3 as for Alternative 2.

4.4.4 CUMULATIVE IMPACTS

4.4.4.1 GEOGRAPHIC SCOPE

The cumulative analysis impact area for geology and soil resources is a 1-mile radius surrounding the Ocotillo Sol Project area. Potential impacts to geology and soils related to construction, operation and maintenance, and decommissioning activities from to the Applicant's proposed Ocotillo Sol Project would be site specific and would only occur within the proposed project boundaries. The geographic scope of cumulative impact analysis, however, includes a 1-mile area surrounding the project site to incorporate projects in the vicinity to address any effects on topography, soil erosion potential, or geology.

Project or actions within the 1-mile radius include BLM actions (within BLM-administered lands) such as ongoing road maintenance and recreation designations. Other actions include Imperial Valley Substation operation and maintenance, Sunrise Powerlink, transmission and utility corridor maintenance, recreational activity, and agricultural activities.

The existing conditions for geology and soils in the Ocotillo Sol Project area are described in Chapter 3, Section 3.4. Past, present, and reasonably foreseeable future projects are listed in Table 4.1-1. Projects within the cumulative analysis impact area are listed in Table 4.1-2. Reasonably foreseeable future projects could result in adverse impacts to geology and soils, primarily during construction and decommissioning activities. The combination of these projects could result in increased levels of erosion, particularly if they occur concurrently. Operation and maintenance activities are anticipated to result in minimal cumulative impacts to soils over the long term and are not anticipated to result in significant impacts. Soil resource mitigation measures will be required for all reasonably foreseeable future projects. Operation and maintenance activities for these projects are not likely to result in cumulative impacts to geology.

4.4.4.2 ALTERNATIVES 1, 4, AND 5

Based on direct and indirect impact analysis presented in Section 4.4.3, it is expected that Alternatives 1, 4, and 5 would not result in impacts to geology or soil resources. These alternatives, in combination with other reasonably foreseeable future projects, would not contribute to geology and soil resource cumulative impacts in the area.

4.4.4.3 ALTERNATIVES 2 AND 3

Alternatives 2 and 3 would result in negligible impacts to soil resources. Activities occurring on lands within a 1-mile radius of the Ocotillo Sol Project area (e.g., recreation, transmission line

development and maintenance, and agricultural activities) have had minimal impacts to geology and soils within the Ocotillo Sol Project area, and these ongoing activities would likely continue to have minimal impacts to geology and soil resources, even when combined with potential impacts from the Ocotillo Sol Project.

Erosion control measures would be implemented during construction, operation and maintenance, and decommissioning to minimize impacts related to erosion and compaction. These measures, along with measures incorporated into present and reasonably foreseeable future projects, would minimize cumulative impacts to soil resources under Alternatives 2 and 3.

Alternatives 2 and 3 would not result in impacts to geologic resources. Alternatives 2 and 3, when combined with other reasonably foreseeable future projects, are not expected to result in cumulative impacts to geologic resources.

4.4.5 MITIGATION

The following mitigation measures for geology and soils would be implemented. The potential effects of ground shaking on any project-associated structures would be mitigated by adhering to the Uniform Building Code or the standards of care established by the Structural Engineers Association of California (EGA 2011) and the recommendations of any subsequent geotechnical investigations during final Project design.

A detailed SWPPP would be developed and implemented to minimize erosion during construction in compliance with the NPDES General Construction Permit.

4.4.6 IRREVERSIBLE AND IRRETRIEVABLE COMMITMENT OF RESOURCES

No direct or indirect impacts to geology would occur due to the Ocotillo Sol Project and no irreversible or irretrievable commitment of geological resources would occur. The Ocotillo Sol Project would result in negligible adverse impacts to soil erosion and compaction during construction, operation and maintenance, and decommissioning activities. Erosion control measures would be implemented to minimize soil erosion during construction. In addition, a SWPPP would be implemented, which would also minimize erosion potential. There would be an irreversible and irretrievable commitment of soil resources on areas where revegetation fails and subsequent erosion occurs. It is expected that these areas would be small overall and minimal, if any, erosion would occur.

Effects to soils could also occur from petroleum or other hazardous material spills. BMPs related to hazardous materials spills would be implemented and the affected area would be cleaned. If a spill occurred, affected soils would be irretrievably and irreversibly lost.

4.5 WATER RESOURCES

4.5.1 MANAGEMENT GOALS

There are no management goals for water resources in the CDCA Plan.

4.5.2 TYPICAL IMPACTS FROM SOLAR ENERGY DEVELOPMENT

4.5.2.1 HYDROLOGY

Impacts to water resources are typically related to surface and groundwater use and quality, and changes in hydrologic function from surface alteration. Impacts to water resources are generally confined to watersheds, groundwater basins, and recharge zones.

The Ocotillo Sol Project area is largely undeveloped, with minimal recreational use. There would be few new structures (which would be relatively small), and new impervious surfaces (such as building pads) would be a relatively minor source of increased surface runoff and would not substantially change runoff characteristics. Therefore, the risk associated with potential impacts to surface water hydrology would be negligible.

4.5.2.2 SURFACE WATER QUALITY

Construction activities associated with solar field development may result in the erosion of disturbed soil from stormwater events. Development of the Applicant's Ocotillo Sol Project, however, would not significantly alter the existing drainage patterns because grading of the project site would not require significant landform modification.

4.5.2.3 GROUNDWATER QUALITY

Development of the Applicant's Ocotillo Sol Project would not significantly alter the existing drainage pattern of groundwater infiltration because grading of the project site would not require significant landform modification. The risk associated with potential impacts to groundwater quality or quantity is low and would not be considered adverse.

4.5.2.4 FLOODPLAINS

The Pinto Wash drainage area located south of the Ocotillo Sol Project area may be subject to flash floods during heavy rainstorms. Flash floods could cause damage to roads or other structures developed within the solar field. The Ocotillo Sol Project has been sited to avoid the Pinto Wash drainage area. Under the action alternatives, very few acres would be paved for building pads and land needed for solar panel placement. Overland flow would not likely be increased and would not contribute to flash flood potential in the area.

4.5.2.5 WATER SUPPLY

The Ocotillo Sol Project area is relatively flat with a topographical drainage feature, Pinto Wash, near the southeast corner of the project site. None of the project development intersects this wash; flooding due to precipitation would not result in significant impact to the structures within the Ocotillo Sol Project area.

The amount of water required for the development of the Ocotillo Sol Project has been estimated to be approximately 150 acre-feet for construction activities, and approximately 1,350 gal of potable water for construction personnel uses. For operation and maintenance (primarily panel washing), water use is estimated to be between 1 and 2 acre-feet of water per year. Potential water sources include the Imperial Irrigation District and municipal sources. Groundwater would not be extracted from beneath the project site under any alternative.

4.5.3 IMPACTS BY ALTERNATIVE

4.5.3.1 ALTERNATIVES 1, 4, AND 5

Under Alternative 1, the Ocotillo Sol Project would not be approved by the BLM and the CDCA Plan would not be amended. The Ocotillo Sol Project would not be constructed and the BLM would continue to manage the site consistent with the CDCA Plan (1980, as amended), Yuha Basin ACEC Management Plan (1981), Yuha Desert Wildlife Habitat Management Plan (1983), Yuha Desert Management Plan (1985), and the *Flat-tailed Horned Lizard Rangewide Management Strategy*.

Under Alternative 4, the Ocotillo Sol Project would not be approved and no ROW grant would be issued to the Applicant. The project area would remain in its existing condition, with no construction of structures or facilities resulting in ground disturbance, and no impacts associated with the Ocotillo Sol Project would occur. Under Alternative 4, the CDCA Plan would be amended to identify the Ocotillo Sol Project area as suitable for solar energy development. As a result, a project might be proposed in the future using the same or different solar energy technology on the project site, possibly resulting in impacts similar to the proposed Ocotillo Sol Project. The impacts of such a future project, however, are speculative at this time.

Under Alternative 5, the Ocotillo Sol Project would not be approved and no ROW grant would be issued to the Applicant. The project area would remain in its existing condition, with no construction of structures or facilities resulting in ground disturbance, and no impacts associated with the Ocotillo Sol Project would occur. Under Alternative 5, the CDCA Plan would be amended to identify the Ocotillo Sol Project area as unsuitable for solar energy development.

Under Alternatives 1, 4, and 5, the project area would remain in its existing condition, with no construction of structures or facilities resulting in ground disturbance. No loss or degradation of water resources from construction, operation, or decommissioning would occur. There would be no direct or indirect impacts to water resources under Alternatives 1, 4, and 5.

4.5.3.2 ALTERNATIVE 2

Under Alternative 2, the Applicant would construct, operate, maintain, and decommission a 100-acre solar PV facility on BLM-managed lands under an authorized ROW. This alternative includes a 15-acre temporary ROW that would be used as a laydown area during construction of the solar facility. Construction of the Applicant's Ocotillo Sol Project would include grading, foundation excavation, trenching, and fencing.

The Ocotillo Sol Project area is within a relatively flat desert area with drainage to the northeast and east. Pinto Wash, located southeast of the site, is a well-defined ephemeral desert wash conveying seasonal runoff. Due to site topography and SWPPP measures that will be implemented prior to construction, impacts to site structures resulting from flooding or erosion due to seasonal surface water runoff to Pinto Wash and conveyance of water within the wash would be minimal, if any. The Ocotillo Sol Project area is also outside of the area that would experience a 100-year flood event. The Ocotillo Sol Project would be designed in compliance with all water quality standards or waste discharge requirements. Additionally, potential impacts due to surface water runoff and quality would be mitigated by implementation of BMPs as part of a SWPPP, in compliance with the NPDES Construction Permit requirements. The estimated water requirements for the Ocotillo Sol Project would be met by importation from water sources, such as the Imperial Irrigation District and municipal sources. Groundwater resources at or near the Ocotillo Sol Project area are limited, vary in quality, and are not proposed to be used. As a result, there are no direct or indirect impacts to water resources under Alternative 2.

No drainages, wetlands, or other topographical or hydrological features with potential to be subject to USACE, RWQCB, or CDFG jurisdiction were observed within the 115-acre Ocotillo Sol Project area. No evidence of streambed and banks as defined by CDFG was observed within the project area, nor were any defined channels observed that would be subject to agency jurisdiction. No impacts to USACE, RWQCB, or CDFG jurisdictional waters would occur under Alternative 2.

4.5.3.3 ALTERNATIVE 3

Under Alternative 3, the Applicant would construct, operate, maintain, and decommission a 100-acre solar PV facility on BLM-managed lands under an authorized ROW. The 15-acre temporary ROW described under Alternative 2 would be reduced to 2 acres under Alternative 3. The 2-acre temporary ROW would provide for parking during construction of the Ocotillo Sol Project. Laydown and staging would occur within the 100 acres as construction activities progress. The direct or indirect impacts to water resources under Alternative 3 would be the same or slightly less than Alternative 2.

4.5.4 CUMULATIVE IMPACTS

4.5.4.1 GEOGRAPHIC SCOPE

The cumulative analysis impact area for water resources is the West Mesa groundwater recharge area, within the Imperial Valley Groundwater Basin, of the Ocotillo Sol Project area. Any water used within the project site during construction (e.g., dust control) or maintenance (e.g., panel

washing) that does not evaporate on the ground could potentially be absorbed into the groundwater basin. Minimal water use would be required for the Applicant's proposed Ocotillo Sol Project and no water is likely to reach the Imperial Valley Groundwater Basin.

The existing condition for water resources in the Ocotillo Sol Project area, which represents the aggregate effect of past and present actions impacting water resources, is described in Chapter 3, Section 3.5.2. All the projects described in Table 4.1-1 would fall within the geographic scope for water resource cumulative impacts. The reasonably foreseeable future projects listed in Table 4.1-1 are likely to have minimal adverse impacts on water resources. These projects are anticipated to use minimal, if any, groundwater. These projects would likely result in impacts to surface water and drainage patterns; however, these impacts would be mitigated and are not likely to be cumulatively significant in the area. Reasonably foreseeable future projects are not likely to impact groundwater or water and drainage during operation and maintenance as these activities would occur within previously disturbed areas and require minimal, if any, groundwater resources. Agricultural activities in the area use Colorado River water supplied through a network of canals, not groundwater resources, and would not contribute to cumulative impacts to groundwater resources or surface water and drainage patterns.

4.5.4.2 ALTERNATIVES 1, 4, AND 5

Based on direct and indirect impact analysis presented in Section 4.5.3, it is expected that Alternatives 1, 4, and 5 would not result in impacts to water resources. These alternatives, in combination with other reasonably foreseeable future projects, would not contribute to cumulative impacts to water resources in the groundwater basin.

4.5.4.3 ALTERNATIVES 2 AND 3

Alternatives 2 and 3 would not result in direct or indirect impacts to water resources. Existing and reasonably foreseeable projects occurring on lands within the ground water basin (e.g., renewable energy projects, recreation, transmission line development and maintenance, and agricultural activities) have had minimal impacts to ground water resources. Therefore, these ongoing activities, in combination with Alternatives 2 and 3, would likely continue to have minimal cumulative impacts on water resources.

Mitigation measures in the form of a SWPPP and erosion control measures (described below in Section 4.5.5) would be implemented during construction, operation and maintenance, and decommissioning to minimize impacts to water resources. Alternatives 2 and 3, when added to other reasonably foreseeable future projects, are not expected to result in cumulative impacts to water resources.

4.5.5 MITIGATION

Although no direct or indirect impacts to water resources are anticipated as a result of construction, operation and maintenance, and decommissioning of the proposed Ocotillo Sol Project under Alternatives 2 or 3, several standard mitigation measures would be employed to ensure impacts to water resource are avoided. The measures would include the following:

- Development and implementation of a SWPPP as required by the State General Construction Activity Storm Water Permit. The SWPPP would include:
  - a detailed description of all BMPs that would be employed;
  - an outline of the areas onsite that would be disturbed during the construction project;
  - an outline of all areas that would be stabilized by temporary or permanent erosion control measures; and
  - a proposed schedule for the implementation of erosion control measures.
- Surface waters (canals/drains) and wells within 1,000 feet of construction activities would be identified. Construction activities would not be carried out within 100 feet of these resources without using BMPs.
- The use or storage of hazardous material near a canal, drain, or well would be prohibited. Additionally, special precautions would be implemented to prevent spills of hazardous materials, discharges of foreign materials, and sedimentation discharges near a canal, drain, or well.

4.5.6 IRREVERSIBLE AND IRRETRIEVABLE COMMITMENT OF RESOURCES

No direct or indirect impacts to water resources would occur due to the Ocotillo Sol Project and no irreversible or irretrievable commitment of water resources would occur. By implementing the mitigation measures identified above, and by avoiding groundwater extraction from beneath the project site, no unavoidable adverse impacts to water resources are expected to occur under any of the alternatives.

4.6 BIOLOGICAL RESOURCES

Biological resources within the Ocotillo Sol Project area would be susceptible to direct and indirect adverse impacts from surface disturbing activities, construction activities, and operation and maintenance. These impacts could lead to the disturbance, destruction, or loss of biological resources. Measures to minimize potential disturbance of biological resources as outlined below would avoid, minimize, or compensate for those impacts to prevent the reduction of habitats and special status species' populations to an unsustainable level.

This section is organized as follows: separate direct and indirect impact analyses are provided for vegetation (including noxious, invasive, non-native weeds) and wildlife resources (including jurisdictional waters); cumulative impacts analysis and mitigation measures for vegetation and wildlife resources follow the impact analysis by alternative; the section concludes with a discussion of irreversible and irretrievable commitment of resources for vegetation and wildlife resources.

4.6.1 VEGETATION RESOURCES

4.6.1.1 MANAGEMENT GOALS

4.6.1.1.1 Management Goals for Vegetation

The BLM management goals for vegetation from the CDCA Plan, as amended, are outlined below:

- Maintain the productivity of the vegetative resource while meeting the consumptive needs of wildlife, livestock, wild horses and burros, and man. Provide for such uses under principles of sustained yield.
- Manage plant species on the federal and state lists of threatened and endangered species and their habitats, so that the continued existence of each will not be jeopardized. Stabilize and, where possible, improve populations through management and recovery plans developed and implemented cooperatively with the USFWS and the CDFG.
- Manage plant species that BLM has officially designated as sensitive for California and their habitats, so that the potential for federal or state listing is minimized. Include consideration of sensitive species habitats in all decisions, so that impacts are avoided, mitigated, or compensated.
- Manage unusual plant assemblages, so that their continued existence is maintained. In all actions, include consideration of unusual plant assemblages, so that impacts are avoided, mitigated, or compensated.
- Manage wetland and riparian areas in the CDCA with the following specific objectives: a) avoid the long-term and short-term impacts associated with the destruction, loss, or degradation of wetland and riparian area; b) preserve and enhance the natural and beneficial values of wetland and riparian areas which may include constraining or excluding those uses that would cause significant long-term ecological damage; c) include practical measures to minimize harm in all actions causing adverse impacts on wetlands and riparian areas; and

d) retain all wetlands and riparian habitats presently under BLM administration wherever high resource values exist and adverse impacts cannot be mitigated.

- Accomplish the objectives of other resources by altering plant composition, density, and/or cover. Objectives include eliminating harmful or noxious plants, increasing livestock or wildlife forage production, and improving wildlife habitat characteristics. Diversified native plant communities are favored over monocultures or communities based on non-native species.

4.6.1.1.2 Management Goals for Noxious, Invasive, and Non-native Weeds

The primary management goal related to noxious, invasive, and non-native weeds is to eliminate these harmful species to increase livestock or wildlife forage production, and improve wildlife habitat characteristics. Diversified native plant communities are favored over monocultures or communities based on non-native species.

4.6.1.2 TYPICAL IMPACTS FROM SOLAR ENERGY DEVELOPMENT

4.6.1.2.1 Impacts to Vegetative Resources

Impacts from solar energy development could occur to terrestrial vegetation, priority plant species, and desired plant communities from the following: 1) direct loss of vegetative resource; 2) increase in non-native invasive species; and 3) change in cover species composition and structure, including density and vegetation.

Impacts on vegetation could include:

- A net loss in the functional habitat value of a sensitive biological habitat
- Disturbance of a substantial portion of a vegetation type within the local region to the point where natural or enhanced regeneration would not restore the resource to pre-disturbance conditions in at least three years
- The introduction of new (or contributing to the expanded range of existing) noxious, invasive, non-native weed species or soil pests, so that they substantially interfere with successful revegetation
- An adverse effect on a species, special status plant, natural community, or habitat that is recognized specifically as biologically significant in local, state, or federal policies, statutes, or regulations
- Adverse impacts to vegetation, riparian habitat, special status plants, or sensitive natural communities from the construction of building pads, grading activities, transmission lines, other generation or transmission facilities, and any temporary extra workspace. The impacts to vegetation from these activities would depend on the scale, intensity, duration, and permanence of construction activities. Potential adverse impacts could include direct mortality, loss of plant habitat, plant injury, alteration of plant community structure and community fragmentation, invasive species introduction, soil compaction and erosion, and dust, which could decrease plant photosynthesis.

4.6.1.2.2 Impacts Related to Noxious, Invasive, and Non-Native Weeds

The *Final Environmental Impact Report/Environmental Assessment for the Imperial Solar Energy Center South* (BLM and Imperial County 2011) describes the potential impacts due to the noxious, invasive, and non-native weeds occurring in and adjacent to their proposed solar facility. The spread of invasive and noxious weeds poses a threat to natural resources by displacing native plant species, increasing the threat of wildfires, supplanting natural food for wildlife, and altering the structure and ecological functions of natural habitats (BLM and Imperial County 2011). Construction activities and soil disturbance can facilitate the introduction and/or spread of invasive, noxious, and/or non-native plant species. New introductions may occur when seed is inadvertently brought into an area, most often in mulch, straw wattles, hay bales, and seed mixes used for erosion control. Seed may also be introduced into an area by transport on construction equipment or vehicle tires. Additionally, construction activities can result in the proliferation and spread of weed species that may already be present in the area because of grading and other site disturbances that alter the natural vegetation and disrupt the soils (BLM and Imperial County 2011).

The solar panels also have the potential to facilitate the growth and spread of weed species by altering the natural hot, dry conditions typical of the project area. Increased shading of the ground results in cooler moister areas that may favor colonization of weedy species (Smith 1984). Additionally, routine washing of the solar panels increases soil moisture availability.

4.6.1.3 IMPACTS BY ALTERNATIVE

4.6.1.3.1 Alternatives 1, 4, and 5

Under Alternative 1, the Ocotillo Sol Project would not be approved by the BLM and the CDCA Plan would not be amended. The Ocotillo Sol Project would not be constructed and the BLM would continue to manage the site consistent with the CDCA Plan (1980, as amended), Yuha Basin ACEC Management Plan (1981), Yuha Desert Wildlife Habitat Management Plan (1983), Yuha Desert Management Plan (1985), and the *Flat-tailed Horned Lizard Rangewide Management Strategy*.

Under Alternative 4, the Ocotillo Sol Project would not be approved and no ROW grant would be issued to the Applicant. The project area would remain in its existing condition, with no construction of structures or facilities resulting in ground disturbance, and no impacts associated with the Ocotillo Sol Project would occur. Under Alternative 4, the CDCA Plan would be amended to identify the Ocotillo Sol Project area as suitable for solar energy development. As a result, a project might be proposed in the future using the same or different solar energy technology on the project site, possibly resulting in impacts similar to the proposed Ocotillo Sol Project. The impacts of such a future project, however, are speculative at this time.

Under Alternative 5, the Ocotillo Sol Project would not be approved and no ROW grant would be issued to the Applicant. The project area would remain in its existing condition, with no construction of structures or facilities resulting in ground disturbance, and no impacts associated with the Ocotillo Sol Project would occur. Under Alternative 5, the CDCA Plan would be amended to identify the Ocotillo Sol Project area as unsuitable for solar energy development.

Vegetation Resources

Under Alternatives 1, 4, and 5, the project area would remain in its existing condition, with no construction of structures or facilities resulting in ground disturbance. No loss or disturbance of vegetation, riparian habitat, special status plants, or sensitive natural communities from construction, operation, or decommissioning of the Ocotillo Sol Project would occur. Under Alternatives 1, 2, and 5, no direct or indirect adverse impacts to vegetation would occur.

Noxious, Invasive, or Non-native Weeds

Under Alternatives 1, 4, and 5, no direct or indirect adverse impacts from noxious, invasive, or non-native weed species would be expected to occur. No Weed Management Plan would be required to offset the potential spread of noxious, invasive, non-native weed species under these alternatives.

4.6.1.3.2 Alternative 2

Vegetation Resources

Under Alternative 2, the Applicant's proposed Ocotillo Sol Project, the Applicant would construct, operate, maintain, and decommission a 100-acre solar PV facility on BLM-managed lands pursuant to a ROW grant (see Figure 2-3 in Appendix A). In addition, this alternative includes a 15-acre temporary ROW to be used as a laydown area during construction of the solar facility. Under Alternative 2, BLM would amend the CDCA Plan to identify all 115 acres as suitable for solar development and allow solar development on this land. Within the Ocotillo Sol Project area, the solar field, operation and maintenance building, laydown area, and the switchyard would occupy nearly the entire site. About 74 percent of the 115-acre ROW (86 acres) would be used for the solar panels, and the remaining acreage would be used for internal access roads, power lines, switchgear, an operation and maintenance building (together approximately 14 acres), and the temporary laydown area (15 acres).

Permanent impacts to the 100 acres of creosote bush–white burr sage scrub vegetation would occur. The area would remain un-vegetated after the facility is constructed and during its entire operation period. No other vegetation community would be disturbed or removed within the 100-acre construction area. The 100-acre solar field would be reclaimed after operations are terminated. The 15-acre temporary laydown area would be considered a temporary impact to creosote bush–white burr sage scrub vegetation, and the laydown area would be revegetated to repair impacts to the habitat after construction is complete.

Vegetation communities are also protected if they provide habitat for sensitive wildlife species. Although the creosote bush–white burr sage scrub is typically not considered a sensitive natural community, the vegetation within the Ocotillo Sol Project area is located within a flat-tailed horned lizard management area and has been determined to be occupied by the flat-tailed horned lizard. Impacts within the flat-tailed horned lizard management area are discouraged unless unavoidable impacts can be mitigated consistent with the *Flat-tailed Horned Lizard Rangewide Management Strategy* (see discussion below).

Removal of creosote bush–white burr sage scrub vegetation may affect flat-tailed horned lizard, burrowing owl, and other wildlife species that rely on the creosote bush–white burr sage scrub vegetation. Discussion of these impacts is discussed in Section 4.6.2 below.

In addition, soil disturbed due to grading during construction and continued use of the access road to the Ocotillo Sol Project area may result in the introduction or increased density of non-native invasive plant species. These species can undermine the habitat quality and integrity of the native plant communities. Alternative 2 would result in direct and indirect adverse impacts to vegetation resources and the creosote bush–white burr sage scrub sensitive natural community. Mitigation measures detailed in Section 4.6.4 below would be implemented to minimize or compensate for these impacts.

One target plant species, Thurber's pilostyles, was found within the 350-acre biological resource spring survey area but outside the 115-acre project footprint, as seen in Figure 4.6-1 (see Appendix A). Based on the level of disturbance within the survey area and the results of the focused rare plant surveys, no special status plant species are expected to occur within the 115-acre maximum project footprint. Thus, no impacts to special status plant species are anticipated under all alternatives, and no mitigation would be required.

Noxious, Invasive, or Non-native Weeds

Under Alternative 2, 100 acres of permanent and 15 acres of temporary impacts would occur that may result in the spread of noxious, invasive, or non-native weed species. Soil disturbed due to grading during construction and continued use of the Ocotillo Sol Project area could result in the introduction or increased density of non-native invasive plant species.

To reduce the potential for the introduction and spread of non-native invasive plant species under Alternative 2, a Weed Management Plan (see Section 4.6.4 and Appendix D) has been prepared and would be implemented during both the construction and general operation and maintenance phases of the project, within and adjacent to the solar field as a mitigation measure.

4.6.1.3.3 Alternative 3

Vegetation Resources

Alternative 3 would be the same as Alternative 2 except that it would be modified to reduce new impacts to the Yuha Desert. The temporary construction laydown area described under Alternative 2 would be reduced to 2 acres under Alternative 3. Alternative 3 would require the Applicant to manage laydown and staging within the 100-acre Ocotillo Sol Project area as construction activities progress. The 2-acre temporary laydown area would be used for construction workforce parking. Under Alternative 3, impacts to vegetation resources would be similar to, but slightly less than, those discussed under Alternative 2. As with Alternative 2, mitigation measures detailed in Section 4.6.4 below would be implemented to minimize or compensate for impacts under Alternative 3.

Noxious, Invasive, or Non-native Weeds

Under Alternative 3, 100 acres of permanent and 2 acres of temporary impacts would occur that may result in the spread of noxious, invasive, or non-native weed species. Soil disturbed due to grading during construction and continued use of the Ocotillo Sol Project area could result in the introduction or increased density of non-native invasive plant species.

To reduce the potential for the introduction and spread of non-native invasive plant species under Alternatives 2 and 3, a Weed Management Plan (see Section 4.6.4 and Appendix D) has been prepared and would be implemented during both the construction and general operation and maintenance phases of the project, within and adjacent to the solar field as a mitigation measure.

4.6.2 WILDLIFE RESOURCES

4.6.2.1 MANAGEMENT GOALS

Through the Wildlife Element of the CDCA Plan, the BLM has developed the following five goals for managing and promoting wildlife resources, as well as special status species and their habitats:

1. Avoid, mitigate, or compensate for impacts of conflicting uses on wildlife populations and habitats. Promote wildlife populations through habitat enhancement projects so balanced ecosystems are maintained and wildlife abundance provides for human enjoyment.
2. Develop and implement detailed plans to provide special management for: 1) areas that contain rare or unique habitat; 2) areas with habitat sensitive to conflicting uses; 3) areas with habitat especially rich in wildlife abundance or diversity; and 4) areas that are good representatives of common habitat types. Many areas falling into these categories contain listed species, which, as indicator species, may become the focus of management.
3. Manage wildlife species on the federal and state lists of threatened and endangered species and their habitats so their continued existence is not jeopardized. Stabilize and, where possible, improve populations through management and recovery plans developed and implemented cooperatively with the USFWS and the CDFG.
4. Manage wildlife species officially designated as sensitive by the BLM for California and their habitats so the potential for federal or state listing is minimized.
5. Include consideration of crucial habitats of sensitive species in all decisions so impacts are avoided, mitigated, or compensated.

4.6.2.2 TYPICAL IMPACTS FROM SOLAR ENERGY DEVELOPMENT TO WILDLIFE RESOURCES

Solar field construction activities could cause the following impacts to wildlife resources:

- Result in adverse impacts to special status species by direct mortality, disturbance, and habitat degradation or loss
- Increase in surrounding noise levels
- Change in wildlife migrating and wintering patterns

- Soil contamination
- Electrocution from exposed transmission lines
- Wildlife movement corridor loss or disruption
- Obstacles to collide with (e.g., pipelines and well drilling structures)

4.6.2.3 IMPACTS TO WILDLIFE RESOURCES BY ALTERNATIVE

4.6.2.3.1 Alternatives 1, 4, and 5

Under Alternative 1, the Ocotillo Sol Project would not be approved by the BLM and the CDCA Plan would not be amended. The Ocotillo Sol Project would not be constructed and the BLM would continue to manage the site consistent with the CDCA Plan (1980, as amended), Yuha Basin ACEC Management Plan (1981), Yuha Desert Wildlife Habitat Management Plan (1983), Yuha Desert Management Plan (1985), and the *Flat-tailed Horned Lizard Rangewide Management Strategy*.

Under Alternative 4, the Ocotillo Sol Project would not be approved and no ROW grant would be issued to the Applicant. The project area would remain in its existing condition, with no construction of structures or facilities resulting in ground disturbance, and no impacts associated with the Ocotillo Sol Project would occur. Under Alternative 4, the CDCA Plan would be amended to identify the Ocotillo Sol Project area as suitable for solar energy development. As a result, a project might be proposed in the future using the same or different solar energy technology on the project site, possibly resulting in impacts similar to the proposed Ocotillo Sol Project. The impacts of such a future project, however, are speculative at this time.

Under Alternative 5, the Ocotillo Sol Project would not be approved and no ROW grant would be issued to the Applicant. The project area would remain in its existing condition, with no construction of structures or facilities resulting in ground disturbance, and no impacts associated with the Ocotillo Sol Project would occur. Under Alternative 5, the CDCA Plan would be amended to identify the Ocotillo Sol Project area as unsuitable for solar energy development.

Under Alternatives 1, 4, and 5, no direct or indirect adverse impacts to wildlife or special status species would occur.

4.6.2.3.2 Alternative 2

Under Alternative 2, the Applicant would construct, operate, maintain, and decommission a 100-acre solar PV facility on BLM-managed lands under an authorized ROW. This alternative includes a 15-acre temporary ROW that would be used as a laydown area during construction of the solar facility. Construction of the Ocotillo Sol Project would include grading, foundation excavation, trenching, and fencing. Under Alternative 2, 100 acres of permanent and 15 acres of temporary impacts to wildlife habitat, including impact to habitat of the following special status species:

- Flat-tailed horned lizard (BLM Sensitive, California Species Special Concern)
- Burrowing owl (BLM Sensitive, California Species of Special Concern)
- Colorado Desert fringe-toed lizard (BLM Sensitive, California Species of Special Concern)
- Loggerhead shrike (California Species of Special Concern)

- Palm Springs pocket mouse (BLM Sensitive, California Species of Special Concern)
- Pallid San Diego pocket mouse (California Species of Special Concern)

Impacts by species and habitat are discussed below.

Impacts to Flat-tailed Horned Lizard

Construction Related Impacts

Direct impacts to flat-tailed horned lizard may occur during construction of the Ocotillo Sol Project. Construction activities such as the movement of construction vehicles or heavy equipment may result in the direct mortality, injury, or harassment of flat-tailed horned lizards.

The Ocotillo Sol Project area is within the Yuha Desert Flat-tailed Horned Lizard Management Area, as designated in the 2003 *Flat-tailed Horned Lizard Rangewide Management Strategy* (Interagency Coordinating Committee 2003; Attachment 1: Figure 5). The creosote bush–white burr sage scrub vegetation within and adjacent to the Management Area, including the entire Ocotillo Sol Project area, provides habitat for this species. Consistent with the *Flat-tailed Horned Lizard Rangewide Management Strategy*, the potential impacts to the Management Area would fall under the 1 percent disturbance cap and would be minimized. In accordance with the *Flat-tailed Horned Lizard Rangewide Management Strategy*, compensation for permanent impacts to flat-tailed horned lizard habitat within the Yuha Desert Management Area would be at a 6:1 ratio.

The Ocotillo Sol Project would use the existing primary access road for the Imperial Valley Substation, and would be placed immediately adjacent to the substation. Increased traffic during construction could result in road-related mortalities.

Extensive resource surveys have been conducted to facilitate the siting of the facility to ensure that it is located in a manner that is the least disturbing to resources.

For the potential temporary laydown area, any removal of vegetation would be in the form of trimming instead of root grubbing to allow shrubs to re-sprout readily. An alternative method would be to implement drive and crush method. Construction equipment would drive over and crush native plants to minimize impacts to the roots of native shrubs. The drive and crush method would be expected to reduce the recovery time of desert shrubs within the temporary laydown area.

Driving over sandy surfaces may compact the substrate in temporarily disturbed areas, eliminating cover for flat-tailed horned lizards in the future. Construction of fencing around the storage yard and the presence of large equipment may provide perches for avian predators, which could further impact flat-tailed horned lizard foraging outside the project footprint.

Disturbance of soil (Section 4.4) and vegetation (Section 4.6.1) would take place during construction, which can encourage invasive, exotic plant species to encroach into flat-tailed horned lizard habitat. In addition, construction vehicles and equipment can transport seeds and vegetation from other regions within their tires and other various parts under the vehicles.

Operation and Maintenance Impacts

General operation and maintenance activities that may be conducted within flat-tailed horned lizard or adjacent to habitat include equipment inspection and/or repairs, panel washing, maintenance or inspection vehicles driving within the solar facility, and weed abatement or habitat restoration activities. Flat-tailed horned lizard injury or mortality could potentially occur due to any of these activities.

Construction of fencing around the generation facility may provide perches for avian predators, which could further impact flat-tailed horned lizard foraging outside the project footprint.

Occasional maintenance and/or inspections may be required within the solar facility. Operation and maintenance vehicles and equipment can transport seeds and vegetation from other regions within their tires and other various parts under the vehicles.

Impact Determination

Alternative 2 would result in adverse impacts to flat-tailed horned lizard. Conservation and mitigation measures outlined in Section 4.6.4 below would be implemented to avoid, minimize, and/or compensate for impacts under this alternative. In accordance with the *Flat-tailed Horned Lizard Rangewide Management Strategy*, compensation for permanent impacts to flat-tailed horned lizard habitat within the Yuha Desert Wildlife Management Area would be at a 6:1 ratio.

Impacts to Burrowing Owl

In accordance with the 2012 CDFG's Staff Report on Burrowing Owl Mitigation, the following are examples of activities that have the potential to take burrowing owls, their nests or eggs, or destroy or degrade burrowing owl habitat: grading, disking, cultivation, earthmoving, burrow blockage, heavy equipment compacting and crushing burrow tunnels, levee maintenance, flooding, burning and mowing (if burrows are impacted), and operating wind turbine collisions. In addition, the following activities may have impacts to burrowing owl populations: eradication of host burrowers; changes in vegetation management (i.e. grazing); use of pesticides and rodenticides; destruction, conversion or degradation of nesting, foraging, over-wintering or other habitats; destruction of natural burrows and burrow surrogates; and disturbance which may result in harassment of owls at occupied burrows.

Construction Impacts

The creosote bush–white burr sage scrub vegetation within the Ocotillo Sol Project area provides habitat for burrowing owl. During the rare plant survey in late March 2010, one burrowing owl individual was observed near a burrow with owl sign near the center of the survey area.

Construction of the Ocotillo Sol Project is expected to last 8 to 11 months; therefore, some aspect of construction would occur during all or part of the burrowing owl breeding season. If burrowing owls are present within the project area prior to or during construction, direct impacts could potentially occur to burrowing owl individuals and/or active burrowing owl burrows during grading, vegetation clearing, and other construction activities. In addition, indirect impacts such as noise and vibrations from construction equipment may disturb or disrupt

burrowing owl nesting behavior if construction occurs within 500 meters of an active burrow during breeding season for the burrowing owl. To avoid, minimize, and compensate for potential construction impacts to burrowing owl, mitigation measures are outlined in Section 4.6.4.

Operation and Maintenance Impacts

After construction of the solar field is complete, burrowing owl are expected to persist along and outside the perimeter of the solar facility for foraging. The owls are also expected to use the solar field perimeter fence as a foraging perch. Raptors species, including burrowing owl predators, may also perch on the perimeter fence.

Direct impacts to burrowing owls may occur during operation and maintenance activities within the solar field. Vehicles driving on access roads where burrowing owls are foraging may result in the direct mortality, injury, or harassment of this species.

After the solar field is constructed, burrowing owls are unlikely to forage within the solar facility and other areas underneath the solar panels due to the lack of vegetation and gravel surface (that discourages burrowing owls and their arthropod prey base) that will be maintained. If foraging within the solar facility occurs, given the static and highly visible nature of the solar panels, burrowing owls are not expected to collide with the structures during daytime foraging activities when they may be hovering or flying in search for prey. When foraging at night, they are not expected to collide with facility structures given their walking/hopping manner of foraging (Coulombe 1971), coupled with the static and highly visible nature of the solar panels. No impacts to burrowing owl are anticipated due to collision with facility structures, and no mitigation would be required.

All permanent lighting within the solar field would be by low-profile fixtures that point inward toward the solar field with directional hoods or shades to reduce light from shining into the adjacent lands. In addition, any lighting not required daily for security purposes would have motion sensor or temporary use capabilities. No impacts due to lighting are expected to occur to this species.

No equipment or component of the solar field is expected to produce noise that would exceed ambient noise in the vicinity. No impacts due to noise are expected to occur to this species.

Impact Determination

Alternative 2 would result in adverse impacts to burrowing owl. Conservation and mitigation measures outlined in Section 4.6.4 below would be implemented to avoid, minimize, and/or compensate for impacts under this alternative.

Impacts to Raptors

Construction Impacts

The creosote bush–white burr sage scrub within the Ocotillo Sol Project area may provide foraging habitat for a variety of raptors. No direct impacts to tree nesting raptors, including

golden eagles, are expected to occur due to the lack of tall trees and structures within the Ocotillo Sol Project area. The transmission towers east of the Ocotillo Sol Project area do provide nesting and perching opportunities. If initial grading and construction occurs between February 1 and July 15, impacts to an active raptor nest may occur. Mitigation measures outlined in Section 4.6.4 would reduce impacts to raptors.

Operation and Maintenance Indirect Impacts

Electrocution

The Avian Powerline Interaction Committee's (APLIC) 1996 report on power line electrocution in the U.S. reports that avian electrocution risk is highest along distribution lines (generally less than 69 kV) where the distance between energized phases, ground wires, transformers, and other components of an electrical distribution system are less than the length or skin-to-skin contact distance of birds. The distance between energized components along transmission lines (>69 kV) is generally insufficient to present avian electrocution risk (APLIC 1996 as cited in California Energy Commission [CEC] 2002a).

No impacts to raptors, including golden eagles, are expected to occur due to electrocution within the solar field, and no mitigation would be required.

Collision

Potential indirect impacts to raptors and other avian species due to collision with the solar facility are discussed below under the Migratory Birds subsection.

Impacts to Migratory Birds

"Take" of a migratory bird species, which includes unintentionally killing adult birds or destroying active nests, would be considered a violation of the MBTA. Migratory bird species include special status species that may nest on-site such as loggerhead shrike.

Construction Impacts

Impacts in the form of direct mortality, disturbance of breeding activity, and loss of nesting areas may occur during construction activities during the breeding season for migratory birds. Mitigation in the form of avoidance and impacts minimization is discussed in Section 4.6.4 below.

Operation and Maintenance Impacts

All permanent lighting within the solar field would be low-profile fixtures that point inward toward the solar field with directional hoods or shades to reduce light from shining into the adjacent habitat. In addition, any lighting not required daily for security purposes would have motion sensor or temporary use capabilities. No impact due to lighting is expected to occur to migratory birds.

No equipment or components of the solar field are expected to produce noise that would exceed ambient noise in the vicinity. No impacts due to noise are expected to occur.

Collision with the terminal ground wire (or static wire) of transmission lines has been reported as a primary cause of avian fatality from power line strikes (Meyer 1978; James and Haak 1979; Beaulaurier 1981 as cited in CEC 2002b). Ground wires are installed on transmission lines to dissipate lightning strikes thereby preventing damage to transmission structures and equipment. Fatal strikes may also occur when birds collide with transmission and distribution wires, transmissions tower guy wires, and other structures associated primarily with electrical power transmission (CEC 2002b).

The Ocotillo Sol Project area is situated along the Pacific Coast Migratory Route (USGS 2012), which encounters migratory birds moving northwest from Mexico into California and the Pacific northwestern United States. The agricultural fields east of the Ocotillo Sol Project area, as well as the Westside Main Canal and other irrigation channels, are known to provide habitat for many of the migratory bird species moving through the area.

The Ocotillo Sol Project area is situated to the west of the agricultural complex that attracts many migratory birds, and is immediately south of the existing Imperial Valley Substation. The short segment of transmission line that would connect the solar facility to the Imperial Valley Substation would be placed underground, and therefore would not pose a threat for avian collision. Due to the proximity to existing highly visible structures such as the Substation, the likelihood of bird species colliding with the solar facilities is minimal.

Bird species have been known to enter fence post holes and become trapped. The Ocotillo Sol Project would require fence posts to support fencing surrounding the perimeter of the project site. All fence posts would be covered to avoid potential impacts to avian species from entrapment and no impacts to migratory birds are anticipated.

This minimal potential for indirect impacts to migratory birds, while considered adverse to individuals, would not be detrimental to the migratory populations.

Impact Determination

Alternative 2 could result in adverse impacts to migratory bird species. Conservation and mitigation measures outlined in Section 4.6.4 below would be implemented to avoid, minimize, and/or compensate for impacts under this alternative.

Impacts to Other Special Status Small Mammals and Reptiles

Construction Impacts

Direct impacts to special status small mammals and reptiles such as the Colorado Desert fringe-toed lizard, Palm Springs pocket mouse, and pallid San Diego pocket mouse may occur during construction of the Ocotillo Sol Project. Construction activities such as the movement of construction vehicles or heavy equipment may result in the direct mortality, injury, or harassment of these species.

Operation and Maintenance Impacts

General operation and maintenance activities include equipment inspection and/or repairs, panel washing, maintenance or inspection vehicles driving within the solar facility, and weed abatement or habitat restoration activities. Injury or mortality of special status small mammals or reptiles could potentially occur due to any of these activities.

Alternative 2 could result in adverse impacts to special status small mammals and reptiles. Conservation and mitigation measures outlined in Section 4.6.4 would be implemented to avoid, minimize, and/or compensate for impacts under this alternative.

Impacts to Wildlife Movement

Wildlife movement corridors are considered sensitive by resource and conservation agencies. Mitigation measures found in the *Flat-tailed Horned Lizard Rangewide Management Strategy* that require a minimization of habitat disturbance would ensure the continued ability of wildlife to move freely through the vicinity of the Ocotillo Sol Project area. These measures include use of existing roads, minimization of habitat disturbance, a Worker Environmental Awareness Program for all crew and personnel, and speed limits during construction and operation and maintenance activities.

A chain link fence with a 2-inch gap at the base would surround the solar field, allowing small mammals and reptiles to move freely through the site. Although medium- and large-sized mammals would not be able to move through the solar field, it should not inhibit their movement through the Yuha Basin. While many terrestrial species move through the area, the presence of the solar facility would not likely limit wildlife movement. Thus, impacts to wildlife movement are not anticipated to occur under Alternative 2.

Impacts to Jurisdictional Waters

No drainages, wetlands, or other topographical or hydrological features with potential to be subject to USACE, RWQCB, or CDFG jurisdiction were observed within the 115-acre Ocotillo Sol Project area. No evidence of streambed and banks as defined by CDFG was observed within the project area, nor were any defined channels that would be subject to agency jurisdiction. No impacts to USACE, RWQCB, or CDFG jurisdictional waters would occur under Alternative 2.

4.6.2.3.3 Alternative 3

Under Alternative 3, the Applicant would construct, operate, maintain, and decommission a 100-acre solar PV facility on BLM-managed lands under an authorized ROW. The 15-acre temporary ROW described under Alternative 2 would be reduced to 2 acres under Alternative 3. The 2-acre temporary ROW would provide for parking during construction of the Ocotillo Sol Project. Laydown and staging would occur within the 100 acres as construction activities progress. Construction under Alternative 3 would include grading, foundation excavation, trenching, and fencing. Impacts to wildlife and habitat for special status wildlife would occur under Alternative 3. These impacts would be similar to, but slightly less than, those discussed under Alternative 2 above. No impacts to USACE, RWQCB, or CDFG jurisdictional waters

would occur under Alternative 3. All mitigation measures identified under Alternative 2 would be applicable under Alternative 3.

4.6.3 CUMULATIVE IMPACTS

4.6.3.1 VEGETATION RESOURCES

4.6.3.1.1 Geographic Scope

The geographic scope for vegetation resource impacts is the Yuha Desert Wildlife Management Area (with approximately the same general boundary as the Yuha Basin ACEC). Due to the small size (115-acre disturbance area) of the Applicant's proposed Ocotillo Sol Project, only one vegetation community, creosote bush–white burr sage scrub, would be impacted. This vegetation community is not considered sensitive or regionally significant. This community is, however, important habitat for the flat-tailed horned lizard within the Yuha Desert Wildlife Management Area. The Yuha Basin ACEC was designated in part to protect sensitive cultural, natural, and biological resources of the region. The Yuha Desert Wildlife Management Area was designated for protection of sensitive biological resources, primarily for the flat-tailed horned lizard. Management of the area follows guidelines from the *Flat-tailed Horned Lizard Rangewide Management Strategy*.

Agricultural areas within approximately 1 mile of the Applicant's proposed Ocotillo Sol Project area have experienced long-term disturbance and loss of native vegetation communities. These areas do not contain sensitive vegetation or special status plant communities.

The existing conditions for vegetation resources, including sensitive natural communities, in the Ocotillo Sol Project area are described in Chapter 3, Section 3.6. Past, present, and reasonably foreseeable future projects are listed in Table 4.1-1. Projects within the Yuha Desert Wildlife Management Area are listed in Table 4.1-2. These projects include the following: BLM actions (within BLM-administered lands) include ongoing road maintenance and recreation designations. Other actions include: Imperial Valley Substation operation and maintenance, Imperial Valley Substation expansion for North Gila to Imperial Valley Substation #2 transmission line, Sunrise Powerlink, transmission and utility corridor maintenance, Interstate 8 and Highway 98, agricultural activities, recreational activity, North Gila to Imperial Valley Substation #2 transmission line, Dixieland Imperial Irrigation District transmission line and connection, sand and gravel mining, and Imperial Irrigation District canal and drain maintenance. Renewable energy projects that would impact the Yuha Desert Wildlife Management Area include the following:

Mount Signal Solar Farm
Imperial Solar Energy Center South Solar Farm
Centinela Solar Farm
Silverleaf Solar Farm
Campo Verde Solar Farm (and shared transmission line with Silverleaf Solar Farm)
Imperial Valley Solar West Solar Farm

The reasonably foreseeable future projects listed above would result in adverse impacts to vegetation resources, primarily during construction activities. Operation and maintenance

activities are anticipated to result in minimal, if any, impacts to vegetation resources. Decommissioning activities for renewable energy projects would likely result in beneficial cumulative impacts to vegetation resources in the form of habitat restoration and revegetation of developed areas. Vegetation resource mitigation measures will be required for all reasonably foreseeable future projects.

4.6.3.1.2 Alternatives 1, 4, and 5

Based on direct and indirect impact analysis presented in Section 4.6.2, it is expected that Alternatives 1, 4, and 5 would not result in impacts to vegetation resources. These alternatives, in combination with other reasonably foreseeable future projects, would not contribute to cumulative impacts to vegetation within the Yuha Desert Wildlife Management Area.

4.6.3.1.3 Alternatives 2 and 3

Past, approved, and proposed projects within the Yuha Desert Wildlife Management Area are shown in Table 4.6-1. This table also shows the number of acres these projects have impacted or would impact (pending approval) flat-tailed horned lizard habitat within the Yuha Desert Wildlife Management Area. As shown in Table 4.6-1, the cumulative impact to the 57,304-acre Yuha Desert Wildlife Management Area would be 374.6 acres of flat-tailed horned lizard habitat disturbance from impacts 1) that have occurred since the 1997 adoption of the *Flat-tailed Horned Lizard Rangewide Management Strategy*, 2) that could result from reasonably foreseeable projects, and 3) that would occur under Alternative 2 (or 361.6 under Alternative 3). These habitat disturbances would comprise about two-thirds of the 1 percent (1 percent of the 57,304-acre area is 573.04 acres) of habitat disturbance allowance within the Yuha Desert Wildlife Management Area.

TABLE 4.6-1
PAST, APPROVED, AND PROPOSED PROJECTS WITHIN THE YUHA DESERT WILDLIFE MANAGEMENT AREA

Project Name (Project Proponent)	Impacts to Yuha Desert Wildlife Management Area (acres)
Authorized Projects	
Existing disturbance, including Sunrise Powerlink and Imperial Valley Substation; 1997-2009	136.9
ISEC West (CSOLAR)	13.7
ISEC South (CSOLAR)	3.1
Centinela Solar Project	13.3
Proposed Projects	
Mount Signal Solar Farm-I (82LV 8ME, LLC)	10.0
Solar Reserve Imperial Valley	5.0
North Gila to Imperial Valley #2 (Southwest Transmission Partners) and Imperial Valley Substation expansion N. Gila	23.8
Dixieland Imperial Irrigation District Connection	34.6
Silverleaf/Campo Verde Transmission Line	5.2
Ocotillo Sol Solar Farm	***115.0***
Other Proposed Projects (Border Patrol)	14.0
Recreation Activities	Limited to routes
Total Disturbance	**374.6**
Yuha Desert Wildlife Management Area	**57,304**
Percent Disturbance	**0.06**

Short-term and long-term adverse impacts to vegetation resources would occur during construction, operation and maintenance, and decommissioning of the Applicant's proposed Ocotillo Sol Project under Alternatives 2 and 3. The proposed Ocotillo Sol Project would result in adverse impacts to creosote bush–white burr sage scrub vegetation and would require mitigation to offset impacts. Permanent impacts under Alternatives 2 and 3 would be limited to a 115-acre area. These impacts, combined with other approved and reasonably foreseeable future projects described above, would result in 374.6 acres of cumulative impacts to flat-tailed horned lizard habitat within the Yuha Desert Wildlife Management Area (see Table 4.6-1). Alternatives 2 and 3, along with the reasonably foreseeable future projects listed in Table 4.6-1, would also likely result in cumulative impacts related to the spread of noxious, invasive, and non-native weed species.

All projects within the area of cumulative impact analysis for vegetation resources that impact flat-tailed horned lizard habitat, such as loss of creosote bush–white burr sage scrub habitat, are required to implement mitigation to reduce adverse impacts. In accordance with the *Flat-tailed*

Horned Lizard Rangewide Management Strategy, compensation for permanent impacts to flat-tailed horned lizard habitat within the Yuha Desert Wildlife Management Area will be at a 6:1 ratio. All projects are also required to implement mitigation measures for weed management. As a result of implementing the mitigation measures identified below, Alternatives 2 and 3, when combined with other past, present, and reasonably foreseeable projects in the area, would not result in significant cumulative adverse impacts to vegetation resources.

4.6.3.2 WILDLIFE RESOURCES

4.6.3.2.1 Geographic Scope

The geographic scope for wildlife resource impacts is the Yuha Desert Wildlife Management Area, as described above for vegetation resources (Section 4.6.3.1.1). Agricultural areas located within approximately 1 mile of the Applicant's proposed Ocotillo Sol Project area have experienced long-term disturbance and loss of native vegetation communities. These areas have minimal habitat suitable for wildlife and special status species.

The existing conditions for wildlife, including special status species, in the Ocotillo Sol Project area are described in Chapter 3, Section 3.6. The reasonably foreseeable future projects listed above (Section 4.6.3.1.1) would result in adverse impacts to wildlife resources, primarily during construction activities. Operation and maintenance activities are anticipated to result in minimal impacts to wildlife resources. Decommissioning activities for renewable energy projects would likely result in short-term negligible impacts during disturbance activities as well as beneficial cumulative impacts to wildlife resources in the form of habitat restoration and revegetation of developed areas. Wildlife resource mitigation measures will be required for all reasonably foreseeable future projects.

4.6.3.2.2 Alternatives 1, 4, and 5

Based on direct and indirect impact analysis presented in Section 4.6.2, it is expected that Alternatives 1, 4, and 5 would not result in impacts to wildlife resources. These alternatives, in combination with other reasonably foreseeable future projects, would not contribute to cumulative impacts to wildlife within the Yuha Desert Wildlife Management Area.

4.6.3.2.3 Alternatives 2 and 3

Cumulative Impacts to Flat-Tailed Horned Lizard

As shown in Table 4.6-1, the cumulative impact to the 57,304-acre Yuha Desert Wildlife Management Area would be 374.6 acres of flat-tailed horned lizard habitat disturbance from impacts that have occurred since the 1997 adoption of the *Flat-tailed Horned Lizard Rangewide Management Strategy*, those that could result from reasonably foreseeable projects, and those under Alternative 2 (or 361.6 under Alternative 3). These habitat disturbances would comprise about two-thirds of the 1 percent (1 percent of the 57,304-acre area is 573.04 acres) of habitat disturbance allowance within the Yuha Desert Wildlife Management Area. Impacts from the Ocotillo Sol Project, along with those listed in Table 4.6-1, would be mitigated in accordance with the *Flat-tailed Horned Lizard Rangewide Management Strategy* (compensation for permanent impacts to flat-tailed horned lizard habitat will be at a 6:1 ratio), thereby reducing cumulative impacts to less than significant. Based on the USFWS determination not to list the flat-tailed horned lizard, the success of BLM's *Flat-tailed Horned Lizard Rangewide*

Management Strategy, and implementation of mitigation and mitigation measures outlined in Section 4.6.4, the Ocotillo Sol Project, when combined with the other reasonably foreseeable future projects, would not result in significant cumulative adverse impacts to flat-tailed horned lizards.

Cumulative Impacts to Burrowing Owl

There was an incidental sighting of one active burrow occupied by a single owl in the spring of 2010 within the 115-acre Ocotillo Sol Project area footprint. Burrowing owls are protected by the CDFG mitigation guidelines for burrowing owl (1995) and California Burrowing Owl Consortium guidance (1993), which require a suite of mitigation measures to ensure direct effects to burrowing owls during construction activities are avoided and indirect effects through burrow destruction and loss of foraging habitat are mitigated at prescribed ratios. BLM also considers burrowing owls a sensitive species, and generally follows CDFG recommendations for burrowing owl issues occurring under BLM jurisdiction.

Mitigation measures outlined in Section 4.6.4 provide for burrowing owl mitigation consistent with the CDFG guidelines for burrowing owls. A Burrowing Owl Mitigation Plan, prepared in consultation with and approved by CDFG, would be required prior to construction. The Applicant would mitigate for impacts to foraging habitat either through the National Fish and Wildlife Federation's Impact-Directed Environmental Accounts program or independent acquisition of like habitat. Exact mitigation acreages would be determined in consultation with CDFG and in accordance with the CDFG Staff Report Guidelines on Burrowing Owl Mitigation.

Past, present, and reasonably foreseeable projects in the area may impact burrowing owls through direct impacts to burrowing owls and their burrows or through direct contact. Burrowing owls are relatively widespread throughout the Imperial Valley and although habitat may be fragmented around urban sites, it is considered one metapopulation. Aggregations occur in association with such features as abandoned rodent burrows or agricultural culverts. Due to ephemeral burrow selection characteristics of burrowing owls, site-specific preconstruction surveys are required to determine to what extent a proposed project would have direct impacts on owls in burrows or to foraging habitat associated with burrows. As a result, it is not possible to provide a meaningful quantitative analysis of direct cumulative impacts to burrowing owls and their burrows.

It is anticipated that many of the cumulative projects would also have indirect impacts to burrowing owls through conversion of foraging habitat, such as creosote bush–white burr sage scrub vegetation and agricultural fields. Although the habitat value of native desert scrub and agricultural fields is not equal, it is anticipated that BLM policies to protect desert scrub land for flat-tailed horned lizard within the Yuha Desert Wildlife Management Area, agricultural practices, and county practices encouraging continued agricultural land use would protect a substantial portion of burrowing owl foraging habitat in the Imperial Valley.

With implementation of mitigation measures outlined in Section 4.6.4, the Ocotillo Sol Project, when combined with other past, present, and reasonably foreseeable projects in the area, would not result in a cumulatively adverse impact to burrowing owl.

Cumulative Impacts to Nesting Raptors and Migratory Birds

Past, present, and reasonably foreseeable projects in the area may impact nesting raptors and migratory birds through direct impacts to foraging and nesting habitat or through direct contact. Nesting raptors and migratory birds are widespread throughout the Yuha Desert Wildlife Management Area and it is not possible to provide a meaningful quantitative analysis of direct cumulative impacts to these species.

Alternatives 2 and 3, in combination with other reasonably foreseeable future projects, could result in impacts in the form of direct mortality, disturbance of breeding activity, and loss of nesting areas during construction activities during the breeding season for migratory birds. Impacts may also occur during operation and maintenance; however, these cumulative impacts would be minimal as compared to construction related impacts.

With implementation of mitigation measures outlined in Section 4.6.4 below, the Ocotillo Sol Project would not result in a cumulatively adverse impact to nesting raptors or migratory birds when combined with other past, present, and reasonably foreseeable projects in the area.

4.6.4 MITIGATION

4.6.4.1 MITIGATION FOR IMPACTS TO VEGETATION RESOURCES

Measure 1: In accordance with the *Flat-tailed Horned Lizard Rangewide Management Strategy*, mitigation would be required for permanent and temporary impacts to flat-tailed horned lizard habitat. Flat-tailed horned lizard is known to occur in the creosote bush–white burr sage scrub vegetation within the Ocotillo Sol Project area. In accordance with the *Flat-tailed Horned Lizard Rangewide Management Strategy*, compensation for permanent impacts to this habitat within the Management Area will be at a 6:1 ratio. Under Alternative 2, compensation would equal 690 acres for impacts to the 100 acres of permanent and 15 acres of temporary impacts to creosote bush–white burr sage scrub vegetation. Under Alternative 3, compensation would equal 602 acres for impacts to the 100 acres of permanent and 2 acres of temporary impacts to creosote bush–white burr sage scrub vegetation. This compensation would be in the form of acquisition of specific land parcels and/or depositing funds into the Renewable Energy Action Team Account established with the National Fish and Wildlife Foundation for mitigation land search, acquisition, and management.

Measure 2: Re-vegetation of temporary impacts is required to restore the habitat functions and values to their pre-construction state. A detailed Habitat Restoration Plan will be prepared and implemented to ensure the restoration of the temporarily impacted areas is successful. The Habitat Restoration Plan must be approved in writing prior to the initiation of any vegetation-disturbing activities. Restoration involves recontouring the land, replacing the topsoil (if it was collected), planting seed and/or container stock, and maintaining (e.g., weeding, replacement planting, supplemental watering) and monitoring the restored area for a period of 5 years (or less if the restoration meets all success criteria). Components of the Habitat Restoration Plan will include the incorporation of any BLM revegetation/restoration guidance measures. These measures generally include alleviating soil compaction, returning the surface to its original

contour, pitting or imprinting the surface to allow small areas where seeds and rain water can be captured, planting seedlings that have acquired the necessary root mass to survive without watering, planting seedlings in the spring with herbivory cages, broadcasting locally collected seed immediately prior to the rainy season, and covering the seeds with mulch.

Measure 3: To reduce the potential for the introduction and spread of noxious, invasive, and non-native weed species, a Weed Management Plan has been prepared for general operations and management within the solar field (see Appendix D).

Measure 4: Prior to project initiation, a Worker Environmental Awareness Program will be developed and implemented, and will be available in both English and Spanish. Wallet-sized cards summarizing this information will be provided to all construction, operation, and maintenance personnel. The education program will include the following aspects:

- biology and status of the flat-tailed horned lizard,
- protection measures designed to reduce potential impacts to the species,
- function of flagging designating authorized work areas,
- reporting procedures to be used if a flat-tailed horned lizard is encountered in the field, and
- driving procedures and techniques, for commuting, and driving on, to the project site, to reduce mortality of flat-tailed horned lizard on roads.

After construction is complete, and in order to prevent future unauthorized impacts to vegetation communities, the Worker Environmental Awareness Program will detail the authorized access roads and work areas, including speed limits for all access roads and internal work areas, and highlight biologically sensitive areas to be avoided during operations and management activities.

Measure 5: A brief Annual Report will be submitted to the relevant resource agencies documenting the implementation of all conservation measures such as habitat restoration, compensation, and avoidance and minimization measures.

4.6.4.1.1 Noxious, Invasive, and Non-Native Weeds

To minimize the introduction and spread of noxious, invasive, and non-native weed species, a Weed Management Plan (Measure 3 above) and a Habitat Restoration Plan (Measure 2 above) have been developed and would be implemented. The management plan for temporary disturbance construction sites will have the following objectives:

- Weed identification and risk assessment: identifying the presence, location, and abundance of weed species in the project areas, both existing conditions and conditions over time.
- Weed suppression: reducing or maintaining current infestation densities. The weeds present are widely distributed, higher density weeds for which eradication is not feasible. No weed control is being administered on adjacent properties and therefore there is a strong possibility that the project area will be continuously re-infested.
- Weed containment: preventing infestation expansion or spread because of the proposed project.

The Weed Management Plan and Habitat Restoration Plan include a discussion of specific weeds identified on-site that will be targeted for eradication or control as well as a variety of measures that will be undertaken to prevent the introduction and spread of new weed species as a result of the project.

General measures to prevent the spread of weeds include the following:

- Limiting disturbance areas during construction to the minimal required to perform work and limiting ingress and egress to defined routes.
- Maintaining vehicle wash and inspection stations, and closely monitoring the types of materials brought onto the site to minimize the potential for weed introduction.
- Use of certified weed free mulch, straw wattles, hay bales and seed mixes.
- Reestablishing native vegetation as quickly as practicable on disturbed sites as the most effective long-term strategy to avoid weed invasions.
- Monitoring and rapid implementation of control measures to ensure early detection and eradication for need weed invasions.

Weed control methods that may be used included both physical and chemical control. Physical control methods include manual hand pulling of weeds, or the use of hand and power tools to uproot, girdle, or cut plants. Herbicide applications are a widely used, effective control method for removing infestations of invasive weed species. Inadvertent application of herbicide to adjacent native plants must be avoided, which can often be challenging when weeds are interspersed with native cover. Before applying herbicide, contractors will be required to obtain any required permits from state and local authorities. Only a State of California and federally certified contractor will be permitted to perform herbicide applications. All herbicides will be applied in accordance with applicable laws, regulations, and permit stipulations. Only herbicides and adjuvants approved by the State of California and federal agency for use on public lands will be used within or adjacent to the project site. The Programmatic EIS Vegetation Treatments Using Herbicides on BLM Lands in 17 Western States lists 10 herbicides acceptable for use on BLM lands (2007). Guidelines for the use of chemical control of vegetation on BLM lands are presented in the Chemical Pest Control Manual (BLM n.d.). These guidelines require submittal of a pesticide use proposal and pesticide application records for the use of herbicides on BLM lands.

4.6.4.2 MITIGATION FOR IMPACTS TO WILDLIFE RESOURCES

4.6.4.2.1 Flat-tailed Horned Lizard

As noted in Measure 1 above, disturbance to flat-tailed horned lizard habitat would be mitigated at a 6:1 ratio through the compensatory mitigation requirements of the *Flat-tailed Horned Lizard Rangewide Management Strategy*.

Construction Avoidance, Minimization, and Compensation Measures

In accordance with the *Flat-tailed Horned Lizard Rangewide Management Strategy*, the measures below are designed to avoid, minimize, and/or compensate for potential direct and

indirect effects construction of the Ocotillo Sol Project may have on flat-tailed horned lizard. The following measures would be implemented.

Measure 6: Prior to ground-disturbing activities, an individual shall be designated and approved by the BLM as a Designated Biologist[1] (i.e., field contact representative). A Designated Biologist will be designated for the period during which on-going construction and post-construction monitoring and reporting by an approved biologist is required, such as annual reporting on habitat restoration. Each successive Designated Biologist will be approved by the BLM's Authorized Officer (i.e., BLM field manager, El Centro). The Designated Biologist will have the authority to ensure compliance with the conservation measures for the flat-tailed horned lizard and will be the primary agency contact for the implementation of these measures. The Designated Biologist will have the authority and responsibility to halt activities that are in violation of the conservation measures. A detailed list of responsibilities for the Designated Biologist is summarized below. To avoid and minimize impacts to biological resources, the Designated Biologist and/or Biological Monitor(s) will:

- Notify BLM's Authorizing Officer at least 14 calendar days before initiating ground-disturbing activities.
- Immediately notify BLM's Authorized Officer in writing, if the project proponent does not comply with any conservation measures, including but not limited to any actual or anticipated failure to implement conservation measures within the periods specified.
- Conduct compliance inspections at a minimum of once per month during on-going construction after clearing, grubbing, and grading are completed, and submit a monthly compliance report to BLM's Authorized Officer until construction is complete.

Measure 7: The boundaries of all areas to be disturbed (including staging areas, access roads, and sites for temporary placement of spoils) will be delineated with stakes and flagging prior to construction activities. Spoils will be stockpiled in disturbed areas lacking native vegetation or where habitat quality is poor. To the extent possible, disturbance of shrubs and surface soils due to stockpiling will be minimized. All disturbances, vehicles, and equipment will be confined to the flagged areas. To the extent possible, surface disturbance will be timed to minimize mortality to flat-tailed horned lizard (see flat-tailed horned lizard Measure 11 below).

Measure 8: Approved Biological Monitor(s) will assist the Designated Biologist in conducting pre-construction surveys and monitoring mobilization, ground disturbance, grading, construction, operation, closure, and restoration activities. The Biological Monitor(s) will have experience conducting flat-tailed horned lizard field monitoring, have sufficient education and field experience to understand flat-tailed horned lizard biology, be able to identify flat-tailed horned lizard scat, and be able to identify and follow flat-tailed horned lizard tracks. The Designated Biologist will submit a resume, at least three references, and contact information of the proposed

[1] A qualified Designated Biologist must have the following: 1) a Bachelor's degree with an emphasis in ecology, natural resource management, or related science; 2) 3 years of experience in field biology or a current certification of a nationally recognized biological society such as The Ecological Society of America or the Wildlife Society; 3) previous experience with applying terms and conditions of a biological opinion; and 4) an appropriate permit and/or training if conducting focused or protocol surveys for listed or proposed species.

Biological Monitors to the BLM for approval. To avoid and minimize impacts to biological resources, the Biological Monitors will assist the Designated Biologist with the following:

- Be present during construction (e.g., grubbing, grading, tower installation, wire stringing) activities that take place in flat-tailed horned lizard habitat to avoid or minimize take of flat-tailed horned lizard. Activities include, but are not limited to, ensuring compliance with all impact avoidance and minimization measures, monitoring for flat-tailed horned lizards and removing lizards from harm's way, and checking avoidance areas (e.g., washes) to ensure that signs, and stakes are intact and that human activities are restricted in these avoidance zones.
- At the end of each workday, inspect all potential wildlife pitfalls (trenches, bores and other excavations) for wildlife and then backfill. If backfilling is not feasible, all trenches, bores, and other excavations will be contoured at a 3:1 slope at the ends to provide wildlife escape ramps, or completely and securely covered to prevent wildlife access.
- During construction, examine areas of active surface disturbance periodically, at least hourly, when surface temperatures exceed 85°F for the presence of flat-tailed horned lizard.

Measure 9: Flat-tailed horned lizards will be removed from harm's way during all construction activities, per Measure 10 below. Flat-tailed horned lizard removal will be conducted by two or more Biological Monitors when construction activities are being conducted in suitable flat-tailed horned lizard habitat. To the extent feasible, methods to find flat-tailed horned lizards will be designed to achieve a maximal capture rate and will include, but not be limited to using strip transects, tracking, and raking around shrubs. During construction, the minimum survey effort will be 30 minutes per 0.40 hectare (30 minutes per 1 acre). Persons that handle flat-tailed horned lizards will first obtain all necessary permits and authorization from the CDFG. Flat-tailed horned lizard removal surveys will also include a Horned Lizard Observation Data Sheet and a Project Reporting Form, per Appendix 8 of the *Flat-tailed Horned Lizard Rangewide Management Strategy*. During construction, quarterly reports describing flat-tailed horned lizard removal activity, per the reporting requirements described in Measure 1 above, will be submitted to the BLM and CDFG.

Measure 10: The removal of flat-tailed horned lizards out of harm's way will include relocation to nearby suitable habitat in low-impact (e.g., away from roads and solar panels) areas of the Yuha Management Area. Relocated flat-tailed horned lizards will be placed in the shade of a large shrub in undisturbed habitat. If surface temperatures in the sun are less than 75°F or exceed 100°F, the Designated Biologist or Biological Monitor, if authorized, will hold the flat-tailed horned lizard for later release. Initially, captured flat-tailed horned lizards will be held in a cloth bag, cooler, or other appropriate clean, dry container from which the lizard cannot escape. Lizards will be held at temperatures between 75°F and 90°F and will not be exposed to direct sunlight. Release will occur as soon as possible after capture and during daylight hours. The Designated Biologist or Biological Monitor will be allowed some judgment and discretion when relocating lizards to maximize survival of flat-tailed horned lizards found in the project area.

Measure 11: To the maximum extent practicable, grading in flat-tailed horned lizard habitat will be conducted during the active season, which is defined as March 1 through September 30, or when ground temperatures are between 75°F and 100°F. If grading cannot be conducted

during this time, any flat-tailed horned lizards found will be removed to low-impact areas (see above) where suitable burrowing habitat exists, (e.g., sandy substrates and shrub cover).

Operation and Maintenance Avoidance, Minimization, and Compensation Measures

To reduce the potential impacts to flat-tailed horned lizard during operation and maintenance, the following would be implemented when conducting operation and maintenance:

Measure 12: No later than January 31 of every year that the Ocotillo Sol Project remains in operation, the Designated Biologist will provide the BLM's Authorized Officer, CDFG, and the Flat-tailed Horned Lizard Interagency Coordinating Committee an annual flat-tailed horned lizard Status Report, which will include the following, at a minimum:

- A general description of the status of the project site
- A copy of the table in the project biological monitoring report with notes showing the current implementation status of each conservation measure
- An assessment of the effectiveness of each completed or partially completed measure in avoiding and minimizing project impacts
- A completed Project Reporting Form from the *Flat-tailed Horned Lizard Rangewide Management Strategy*
- A summary of information regarding any flat-tailed horned lizard mortality in conjunction with the project's Wildlife Mortality Reporting Program
- Recommendations on how conservation measures might be changed to more effectively avoid, minimize, and offset future project impacts on the flat-tailed horned lizard

Measure 13: Adaptive Management for flat-tailed horned lizard; the Designated Biologist or Biological Monitor(s) will evaluate and implement the best measures to reduce flat-tailed horned lizard mortality along access roads, particularly during the flat-tailed horned lizard active season (March 1 through September 30). These measures will include the following:

- A speed limit of 15 miles per hour when driving the access road to the facility, and any roads within the facility. All vehicles required for operation and maintenance must remain on the designated access/maintenance roads.
- Operation and maintenance activities including weed abatement, or any other operation and maintenance activity that may result in ground disturbance will be conducted outside of the flat-tailed horned lizard active season whenever feasible.
- If any operation and maintenance activities must be conducted during the flat-tailed horned lizard active season that may result in ground disturbance, such as weed abatement or vehicles requiring access outside of a designated access road, a Biological Monitor will be present during activities to ensure that no flat-tailed horned lizards are impacted.

Implementation of these measures would be based on flat-tailed horned lizard activity levels, the best professional judgment of the Designated Biologist, and site-specific road utilization. Flat-tailed horned lizard found on access roads, if monitoring is required, will be relocated per Measure 11.

4.6.4.2.2 Burrowing Owl

Construction Avoidance, Minimization, and Compensation Measures

The following measures would avoid, minimize, or mitigate potential impacts to burrowing owl during construction activities.

Measure 14: Initial grading of the creosote bush–white burr sage scrub vegetation for the solar field will take place between September 1 and January 31 to avoid impacts to breeding burrowing owls (CDFG 2012). This measure is in conflict with mitigation for the flat-tailed horned lizard. If this conflict cannot be resolved, BLM may select Measure 15.

Measure 15: The avoidance and minimization Measures 16 through 20 below shall be implemented prior to construction to avoid impacts to nesting, migrating, or wintering burrowing owls. If construction is to begin during the breeding season, it is recommended that Measures 16 through 20 below be implemented *prior* to February 1 to discourage the nesting of burrowing owls within the area of impact. As construction continues, any area where owls are sighted shall be subject to frequent surveys for burrows before the breeding season begins, so that owls can be relocated before nesting occurs.

Measure 16: No less than 14 days prior to initiating ground-disturbance activities, an initial take avoidance survey shall be conducted using the recommended methods described in the Detection Surveys section of Appendix D of the *2012 CDFG Staff Report on Burrowing Owl Mitigation*. This survey shall be conducted to determine the presence or absence of the species within the construction area, because burrowing owls may not use the same burrow every year, and numbers and locations of burrowing owl burrows at the time of construction may differ from the data collected during previous focused surveys. The construction areas will need to be clearly demarcated in the field by engineers prior to the commencement of the pre-construction clearance survey. Implementation of further avoidance and minimization measures would be triggered by positive owl presence on the site where project activities will occur.

Once the initial take avoidance survey is conducted, burrowing owls may recolonize a site after only a few days. Time lapses between project activities trigger subsequent take avoidance surveys including, but not limited to, a final survey conducted within 24 hours prior to ground disturbance.

Measure 17: If burrowing owls are detected adjacent to the project footprint and can be protected in place, buffer zones, visual screens, or other measures may be used to protect the owls in place while project activities are occurring to minimize disturbance impacts. The guidelines for implementing buffers, as detailed on pages 9 and 10 of the *2012 CDFG Staff Report on Burrowing Owl Mitigation*, should be adjusted to address site-specific conditions. BLM and the Applicant shall consult with the CDFG and other burrowing owl experts for assistance in developing site-specific buffer zones or visual screens. One example of a visual screen used by a qualified biologist to shelter an owl in place is a stack of hay bales. If buffers or visual screens are employed, a monitoring program by a qualified biologist will be implemented to ensure that the burrowing owls are not detrimentally affected by the alternative approaches.

Measure 18: If active burrows are observed within the project footprint during the pre-construction take avoidance survey(s), the following mitigation measures shall be implemented. Passive relocation methods are to be used to move the owls out of the impact zone. Passive relocation shall only be done in the non-breeding season in accordance with the *2012 CDFG Staff Report on Burrowing Owl Mitigation*. A Burrowing Owl Exclusion Plan should be developed in accordance with Appendix E of the *2012 CDFG Staff Report on Burrowing Owl Mitigation* and approved by CDFG. This includes covering or excavating all burrows and installing one-way doors into occupied burrows. This will allow any animals inside to leave the burrow, but will exclude any animals from re-entering the burrow. One-way doors will be left in place for 48 hours if scoping indicates occupancy. Burrow will be scoped prior to excavation. Excavation will be done using hand tools and refilled to prevent reoccupation. After burrow is collapsed, contractor will immediately disk down area to prevent reoccupation. The destruction of the active burrows on-site requires construction of new burrows at a mitigation ratio of 2:1 approximately 50 to 75 meters from the impacted area and must be constructed as part of the above-described relocation efforts. The construction of new burrows will take place within open areas that allow for foraging. All passive relocation efforts will be documented with photographs, GPS coordinates of created burrows, and a description of relocation efforts, all of which are to be submitted to CDFG in report format.

Measure 19: As the construction schedule and details are finalized, an approved biologist shall prepare a Burrowing Owl Exclusion Plan that will detail the methodology proposed to minimize and mitigate impacts to this species. Passive relocation, destruction of burrows, and construction of artificial burrows can only be completed upon approval by CDFG.

Measure 20: In accordance with the *2012 CDFG Staff Report on Burrowing Owl Mitigation,* the entire project site is considered occupied, as burrowing owls have been recorded using the site on multiple years and during various seasons. The 15 acres of temporarily impacted land shall be restored to pre-project condition, including de-compacting the soil and re-vegetating with native species. The 100 acres of permanent impacts to burrowing owl habitat shall be mitigated at a 1:1 ratio by permanently protecting in-kind habitat off-site through a conservation easement in accordance with pages 11-13 (*Mitigating Impacts*) of the *2012 CDFG Staff Report on Burrowing Owl Mitigation*. As the habitat for this burrowing owl is creosote bush–white burr sage scrub, the same habitat requiring mitigation for impacts to flat-tailed horned lizards, the mitigation required for impacts to burrowing owl foraging habitat can be achieved in conjunction with the flat-tailed horned lizard mitigation if approved by CDFG.

Operation and Maintenance Avoidance and Minimization Measures

To reduce the potential impacts to burrowing owl during operation and maintenance, general mitigation measures discussed above such as speed limits and a Worker Environmental Awareness Program shall be implemented.

4.6.4.2.3 Raptors

Construction Avoidance, Minimization, and Compensation Measures

Raptors and active raptor nests are protected under California Fish and Game Code 3503.5, 3503, 3513, and the Bald and Golden Eagle Protection Act. In order to prevent direct and

indirect noise impacts to nesting raptors such as red-tailed hawk, the following measures shall be implemented:

Measure 21: Initial grading and construction within the Ocotillo Sol Project area shall take place outside raptor breeding season of February 1 to July 15.

Measure 22: If construction occurs between February 1 and July 15, a qualified biologist shall conduct a pre-construction clearance survey for nesting raptors in suitable nesting habitat (e.g., transmission towers) that occurs within 500 feet of the Ocotillo Sol Project area. If any in-active nests are identified within the adjacent transmission towers, the nests shall be removed by a qualified biologist, or by construction personnel with a qualified biologist immediately present to over-see the removal. If any active raptor nest is located, the nest area will be flagged, and a 500-foot buffer zone delineated, flagged, or otherwise marked. No work activity may occur within this buffer area, until a qualified biologist determines that the fledglings are independent of the nest.

Mitigation for impacts to potential raptor foraging habitat would be conducted in concert with the purchase/acquisition of mitigation for flat-tailed horned lizard habitat as detailed above. It is not anticipated that additional mitigation for impacts to raptors would be necessary.

4.6.4.2.4 Other Special Status Small Mammals and Reptiles

Construction Avoidance, Minimization, and Compensation Measures

The construction impact avoidance, minimization, and compensation measures detailed for flat-tailed horned lizard above provide adequate protection and compensation for these species and their habitats, given the similarity in their habitat requirements and behaviors.

Operation and Maintenance Avoidance, Minimization, and Compensation Measures

The operation and maintenance impact avoidance, minimization, and compensation measures detailed for flat-tailed horned lizard above provide adequate protection and compensation for these species and their habitats, given the similarity in their habitat requirements and behaviors.

4.6.5 IRREVERSIBLE AND IRRETRIEVABLE COMMITMENT OF RESOURCES

Construction, operation and maintenance, and decommissioning activities of the Ocotillo Sol Project would result in direct and indirect impacts to biological resources. The Ocotillo Sol Project would result in the loss of 100 acres of native vegetation and habitat, as well as 15 acres (2 acres under Alternative 3) of disturbed vegetation and habitat. These permanent and temporary losses of native vegetation would result in unavoidable adverse impacts to native vegetation and wildlife. Implementation of avoidance and mitigation measures would minimize adverse impacts. Compensation for permanent impacts to flat-tailed horned lizard habitat within the Yuha Desert Wildlife Management Area will be at a 6:1 ratio. Acquisition of compensation lands would occur within undisturbed habitat suitable for flat-tailed horned lizards. This mitigation would result in beneficial impacts to flat-tailed horned lizards, as well as other species

occurring within this habitat, due to an increase in undisturbed area and likely limitations on future disturbance within acquired lands.

With these measures, the Ocotillo Sol Project would not substantially alter or interfere with wildlife or plant populations in the project area. Adverse impacts would be negligible overall and would affect a small, localized area. The impacts to native vegetation and wildlife would not cause an irreversible and irretrievable commitment of the resources.

4.7 CULTURAL RESOURCES

Class III Inventory Ocotillo Sol Project prepared by LSA Associates, Inc. (December 2011) has been completed for this undertaking. In addition, to meet NEPA and NHPA requirements for tribal consultation, the BLM has invited tribes to consult on a government-to-government basis in the earliest stages of project planning. Initial Tribal consultation letters were sent in February 2010 to 15 tribes. Additional correspondence and communication has occurred since the initial letters were sent. Tribes were also invited to the August 2011 affected agency pre-application meeting. Consultation with Tribes will continue throughout the NEPA and Section 106 processes. See Section 5.2.1 for more information and a list of the participating tribes.

4.7.1 NEPA INDICATORS / METHODOLOGY

NATIONAL REGISTER OF HISTORIC PLACES

A resource must qualify under one or more criteria to be considered eligible for NRHP listing. The National Register Criteria for Evaluation (36 CFR 60.4) provides guidance in determining a property's eligibility for listing on the NRHP. These regulations state that 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, and that meet one or more of the following four established criteria (36 CFR §60.4):

A) is associated with events that have made a significant contribution to the broad patterns of our history; or
B) is associated with the lives of persons significant in our past; or,
C) embodies the distinctive characteristics of a type, period, or method of construction, or that represents the work of a master, or that possesses high artistic values, or that represents a significant and distinguishable entity whose components may lack individual distinction; or
D) has yielded, or may be likely to yield, information important in prehistory or history.

Additionally, unless the property possesses exceptional significance, it must be at least 50 years old to be eligible for the NRHP listing. The properties must also have integrity, which is defined as "the ability of a property to convey its significance" (DOI 1990). The NRHP recognizes seven qualities that, in various combinations, define integrity, including location, design, setting, materials, workmanship, feeling, and association. For Criteria A, B, and C, integrity means that the property must evoke the resource's period of significance to a non-historian or non-archaeologist. If site materials have been removed or vandalized to the extent that an ordinary citizen can no longer envision or grasp the historic activities that took place there, the property is said to lack integrity (National Park Service 1997). Archaeological sites usually qualify for listing in the NRHP under Criterion D, research potential; therefore, integrity in this case means that the deposits are intact and undisturbed to the point a meaningful data contribution to regional research issues can be made. Cultural isolates are not considered eligible for the listing

on the NRHP because they generally lack qualities that would qualify them. Isolates do not have research potential.

An archeological testing and evaluation phase investigation is needed to determine the eligibility of archaeological sites under Criterion D. This usually involves instrument mapping with a global positioning system unit and excavation and ancillary studies such as radiocarbon dating, pollen analysis, macrobotanical analysis, lithic analysis, faunal analysis, and so on. At the survey level, one can make provisional recommendations based on site attributes noted on the site surface. A formal testing and evaluation program would be necessary to definitively document the presence or absence of subsurface deposits and the specific research potential of each site.

Under Section 106 of the NHPA subsection 800.5 (Assessment of adverse effects) criteria for determining adverse effects are as follows:

- Physical destruction, damage or alteration to all or part of the historic property
- Isolation of the property or alteration of the character of the property's setting when that character contributes to the property's qualifications for the NRHP
- Introduction of visual, audible, or atmospheric elements that are out of character with the property or changes that may alter its setting
- Neglect of a property, resulting in its deterioration or destruction

  Transfer, lease, or sale of a property without adequate provisions to protect the property's historic integrity

4.7.2 TYPICAL IMPACTS FROM SOLAR ENERGY DEVELOPMENT

Direct impacts to cultural resources can occur wherever ground-disturbing activities occur. Impacts are most likely during construction activities. These activities can damage surface and subsurface artifacts; compromise the original spatial relationships of artifacts that archaeologists use to reconstruct prehistoric cultural patterns; destroy stratigraphic relationships of buried deposits; contaminate radiocarbon samples and paleo-ecological data; and damage the integrity of buried archaeological features such as hearths and cooking pits, house pits, fish traps, and cremation burials. Native American spiritual values and sensitivities can also be affected by disturbance of cultural resources.

4.7.3 IMPACTS BY ALTERNATIVE

4.7.3.1 ALTERNATIVES 1, 4, AND 5

Under Alternative 1, the Ocotillo Sol Project would not be approved by the BLM and the CDCA Plan would not be amended. The Ocotillo Sol Project would not be constructed and the BLM would continue to manage the site consistent with the CDCA Plan (1980, as amended), Yuha Basin ACEC Management Plan (1981), Yuha Desert Wildlife Habitat Management Plan (1983), Yuha Desert Management Plan (1985), and the *Flat-tailed Horned Lizard Rangewide Management Strategy*.

Under Alternative 4, the Ocotillo Sol Project would not be approved and no ROW grant would be issued to the Applicant. The project area would remain in its existing condition, with no construction of structures or facilities resulting in ground disturbance, and no impacts associated with the Ocotillo Sol Project would occur. Under Alternative 4, the CDCA Plan would be amended to identify the Ocotillo Sol Project area as suitable for solar energy development. As a result, a project might be proposed in the future using the same or different solar energy technology on the project site, possibly resulting in impacts similar to the proposed Ocotillo Sol Project. The impacts of such a future project, however, are speculative at this time.

Under Alternative 5, the Ocotillo Sol Project would not be approved and no ROW grant would be issued to the Applicant. The project area would remain in its existing condition, with no construction of structures or facilities resulting in ground disturbance, and no impacts associated with the Ocotillo Sol Project would occur. Under Alternative 5, the CDCA Plan would be amended to identify the Ocotillo Sol Project area as unsuitable for solar energy development.

There would be no direct or indirect impacts to cultural resources or historic properties under Alternatives 1, 4, and 5. No mitigation measures would be required under these alternatives.

4.7.3.2 ALTERNATIVE 2

Under Alternative 2, the Applicant's proposed project (Ocotillo Sol Project), the Applicant would construct, operate, maintain, and decommission a 100-acre solar PV facility on BLM-managed lands under an authorized ROW (see Figure 2-3 in Appendix A). In addition, this alternative includes a 15-acre temporary ROW to be used as a laydown area during construction of the solar facility. Construction of the Applicant's Ocotillo Sol Project would include grading, foundation excavation, trenching, and fencing. Under Alternative 2, BLM would amend the CDCA Plan to identify all 115 acres as suitable for solar development and allow solar development on this land.

The following discussion provides an analysis of potential effects to cultural resources that could occur in association with the construction, operation and maintenance, and decommissioning of the Ocotillo Sol Project under Alternative 2. One prehistoric site and twelve isolated artifacts were identified within the APE.

Direct impacts during construction would include grading, foundation excavation, trenching, and fencing. There are 12 isolates and one recorded archaeological site (CA-IMP-11741) within the Ocotillo Sol Project area. The 12 isolates and 1 recorded site would be destroyed during construction. The isolates that are within the APE have been determined to be ineligible for the NRHP and thus are not historic properties. The one archaeological site has been recommended not eligible for the NRHP (LSA 2011). This site appears to lack a subsurface component. By recording and completing Department of Parks and Recreation site forms, the archaeological information potential for this site has been exhausted. The site is not likely to yield additional research information. The site would be destroyed during construction, but effects to this resource would not be considered adverse. No historic properties would be impacted by construction under Alternative 2.

Subsurface excavation activities always have the potential to impact previously unknown subsurface archaeological resources. The potential for buried cultural resources is considered low in the APE (LSA 2011). Cultural Resources Mitigation Measure 1 (Section 4.7.6) has been incorporated as a project design feature in order to ensure that impacts do not result in an adverse effect.

There is a potential for indirect effects due to increased traffic during construction. It is also possible that grading within the construction area could increase the amount of sheet flow and water runoff during heavy rainfall events that could cause damage to cultural resources outside the construction area. There are 4 numbered sites (CA-IMP-11742, -11743, 11749, and -11752) within 100 feet of the direct effects; these sites may be indirectly affected by the proposed Ocotillo Sol Project under Alternative 2. Cultural Resources Mitigation Measure 2 (Section 4.7.6) has been incorporated as a project design feature in order to ensure that project impacts for the above mentioned four sites do not result in an adverse effect.

Under Alternative 2, construction would require grading, excavation, and trenching within the project site. While the project has been designed to avoid any known areas of potential human remains, subsurface activities always have some potential to impact previously unknown remains. Cultural Resources Mitigation Measure 3 would ensure that the potential impacts to previously unknown human remains do not result in adverse effects.

Under Alternative 2, no adverse impacts to historic properties are anticipated to occur during operation and maintenance activities. All operation and maintenance activities would occur within previously graded and developed areas.

4.7.3.3 ALTERNATIVE 3

Alternative 3 would be the same as Alternative 2 except it would be modified to reduce new impacts to 102 acres. The temporary construction laydown area described under Alternative 2 would be reduced to 2 acres under Alternative 3. Alternative 3 would require the Applicant to manage laydown and staging within the 100-acre Ocotillo Sol Project area as construction activities progress. The 2-acre temporary laydown area would be used for construction workforce parking. Under Alternative 3, BLM would amend the CDCA Plan to identify all 102 acres as suitable for solar development and allow solar development on this land.

Direct impacts during construction would include grading, foundation excavation, trenching, and fencing. There are nine isolates and one recorded archaeological site (CA-IMP-11741) within the Ocotillo Sol Project area under Alternative 3. The nine isolates and one recorded site would be destroyed during construction. The isolates that are within the APE have been determined to be ineligible for the NRHP and thus are not historic properties. As described above for Alternative 2, the one archaeological site has been recommended not eligible for the NRHP. No historic properties would be impacted by construction under Alternative 3.

Subsurface excavation activities always have the potential to impact previously unknown archaeological subsurface resources. The potential for buried cultural resources is considered low in the APE (LSA 2011). Cultural Resources Mitigation Measure 1 (Section 4.7.6) has been

incorporated as a project design feature in order to ensure that impacts do not result in an adverse effect.

There is a potential for indirect effects due to increased traffic during construction. It is also possible that grading within the construction area could increase the amount of sheet flow and water runoff during heavy rainfall events that could cause damage to cultural resources outside the construction area. There are 4 numbered sites (CA-IMP-11742, -11743, 11749, and -11752) within 100 feet of the direct effects; these sites may be indirectly affected by the proposed Ocotillo Sol Project under Alternative 3. Cultural Resources Mitigation Measure 2 has been incorporated as a project design feature in order to ensure that project impacts for the above mentioned four sites do not result in an adverse effect.

Under Alternative 3, construction would require grading, excavation, and trenching within the project site. While the project has been designed to avoid any known areas of potential human remains, subsurface activities always have some potential to impact previously unknown remains. Cultural Resources Mitigation Measure 3 would ensure that the potential impacts to previously unknown human remains do not result in adverse effects.

Under Alternative 3, no adverse impacts to historic properties are anticipated to occur during operation and maintenance activities. All operation and maintenance activities would occur within previously graded and developed areas.

4.7.4 CUMULATIVE IMPACTS

4.7.4.1 GEOGRAPHIC SCOPE

The cumulative analysis geographic scope for cultural resources is cultural sites, traditional use areas, and cultural landscapes within a 1-mile radius of the 40-foot contour of ancient Lake Cahuilla and an approximate 2-mile radius northwest and southeast of the Ocotillo Sol Project area along the shoreline of ancient Lake Cahuilla. The 40-foot contour of ancient Lake Cahuilla is the high water stand. This shoreline provided significant water sources to prehistoric peoples and is viewed as a primary economic attraction for regional hunter/gatherer and foragers during the Late Prehistoric Period (about 1,00 to 450 years ago). Whether the settlement pattern is based on small temporary camps as suggested by Weide (1976) or relatively permanent villages as argued by Wilke (1978), the cycles of infilling and drying of Lake Cahuilla appear to have been the major reason for shifts in land use patterns in southeastern California. The ancient shoreline has been associated with extensive prehistoric use and occupation.

A number of cultural resources studies have documented the potential for cultural resources along the 40-foot contour within this region. The area around the 40-foot contour can be identified as containing cultural resource sites of the similar types (such as lithic scatters, ceramic scatters, and a combination of lithic and ceramic scatters) and sites that were occupied within similar timeframes. Those sites located at or above the 40-foot contour were occupied during one of Lake Cahuilla's high water stands. Those located below the 40-foot contour were occupied during a time when the lake was receding and evaporating.

Past, present, and reasonably foreseeable future projects are listed in Table 4.1-1. Projects within the cumulative analysis impact area are listed in Table 4.1-2. Project or actions within the 1-mile and 2-mile radius include BLM actions (within BLM-administered lands) such as ongoing road maintenance and recreation designations. Other actions include the following: Imperial Valley Substation operation and maintenance, Imperial Valley Substation expansion for North Gila to Imperial Valley Substation #2 transmission line, Sunrise Powerlink, transmission and utility corridor maintenance, Interstate 8, Highway 98, agricultural activities, recreational activity, North Gila to Imperial Valley Substation #2 transmission line, Dixieland Imperial Irrigation District transmission line and connection, Geothermal Overlay, Rancho Los Lagos, Brookfield Specific Plan, Desert Springs Oasis, Alder 70, Mosaic Specific Plan, sand and gravel mining, and Imperial Irrigation District canal and drain maintenance. Renewable energy projects include the following:

Calexico Solar Farm II
Mount Signal Solar Farm
Calexico Solar Farm I
Imperial Solar Energy Center South Solar Farm
Centinela Solar Farm
Acorn Greenworks Solar Farm
Silverleaf Solar Farm
Campo Verde Solar Farm (and shared transmission line with Silverleaf Solar Farm)
Imperial Solar Energy Center West Solar Farm
Keystone Solar
Ocotillo Express Wind Farm

The existing condition for cultural resources and historic properties in the Ocotillo Sol Project area, which represents the aggregate effect of past and present actions impacting cultural resources, is described in Chapter 3, Section 3.7. The reasonably foreseeable future projects listed above would result in adverse cumulative impacts cultural resources, primarily during construction activities. Operation and maintenance activities are not anticipated to result in impacts to cultural resources. Cultural resource mitigation measures will be required for all reasonably foreseeable future projects.

4.7.4.2 ALTERNATIVES 1, 4, AND 5

Based on direct and indirect impact analysis presented in Section 4.7.4, it is expected that Alternatives 1, 4, and 5 would not result in impacts to historic properties. These alternatives, in combination with other reasonably foreseeable future projects, would not contribute to cumulative impacts to historic properties or landscapes in the area.

4.7.4.3 ALTERNATIVES 2 AND 3

Under Alternatives 2 and 3, grading, excavation, and trenching would occur during construction. These alternatives, combined with other reasonably foreseeable future projects, have the potential to affect known and previously unknown surface archaeological resources.

These alternatives, combined with other reasonably foreseeable future projects, also have the potential to result in indirect effects to sites due to increased traffic during construction. It is also possible that grading during construction could increase the amount of runoff water during heavy rainfall events.

Because federal agencies are required to identify potentially affected historic properties; assess effects to such properties; and seek ways to avoid, minimize, or mitigate any adverse effects on such properties under Section 106, projects within the cumulative analysis impact area will also have cultural resource mitigation measures in place to resolve adverse effects to historic properties.

Because historic properties within the cumulative analysis impact area are important for their potential contribution to knowledge of history (Criterion 4), mitigation measures to collect scientific value from archaeological historic properties include systematic data recovery programs and historic properties treatment plans. Based on mitigation and avoidance measures, Alternatives 2 and 3, in combination with reasonably foreseeable future projects, are not likely to result in significant cumulative impacts to historic properties within the 1-mile and 2-mile geographic extent for cultural resources. Therefore, no cumulative adverse effects to historic properties are expected under Alternatives 2 and 3 when combined with other reasonably foreseeable future projects.

4.7.5 MITIGATION

To mitigate impacts to any inadvertent discoveries of archaeological sites during construction, the following mitigation measures shall be implemented prior to the start of any ground-disturbing activities.

Cultural Resource Mitigation Measure 1: Sites within 100 feet of the direct impacts may be indirectly affected due to their proximity to construction areas (Section 4.7.4). These sites shall be designated as Environmentally Sensitive Areas. Temporary fencing around their perimeters will be required in order to identify them as Environmentally Sensitive Areas to ensure that these cultural resources are avoided by project personnel. An archaeologist shall monitor Environmentally Sensitive Areas during ground-disturbing activities. In addition, grading within the construction area shall be performed in a manner that incorporates sheet flow and water runoff diversion techniques to prevent surface water from damaging off-site cultural sites.

Cultural Resource Mitigation Measure 2: In the event that unknown historic or unique archaeological resources are encountered during construction or operational repairs, archaeological monitors will be authorized to temporarily divert construction work within 100 feet of the area of discovery until the significance and the appropriate mitigation measures are determined by a Registered Professional Archaeologist in consultation with BLM. Project redesign to avoid the cultural resources, or the implementation of a data recovery program, are two mitigation measures that may be used. The qualified archaeologist shall be familiar with the resources of the region. Applicant shall notify the BLM within 24 hours. Applicant shall provide contingency funding sufficient to allow for implementation of avoidance measures or appropriate mitigation.

Cultural Resource Mitigation Measure 3: If human remains are discovered, work will be halted in that area, and the procedures set forth in the Native American Graves Protection and Repatriation Act shall be followed, as applicable.

4.7.6 IRREVERSIBLE AND IRRETRIEVABLE COMMITMENT OF RESOURCES

Construction of the Ocotillo Sol Project would result in ground disturbance; however, the project area does not contain cultural resources or historic properties. No unavoidable adverse impacts to cultural resources or historic properties would occur from the Ocotillo Sol Project and no irreversible and irretrievable commitment of cultural resources would occur.

4.8 PALEONTOLOGICAL RESOURCES

Potential paleontological resources within the Ocotillo Sol Project area would be susceptible to impacts from surface disturbing activities, construction activities, and vegetation removal and treatments. These impacts could lead to the disturbance, destruction, or loss of paleontological resources.

4.8.1 MANAGEMENT GOALS

The CDCA Plan includes management goals for paleontological resources along with those for cultural resources. Planning and management actions for paleontological resources on BLM lands are implemented in accordance with the BLM Manual H-8270-1, General Procedural Guidance for Paleontological Resource Management (7/13/98); Management of Museum Collections (DM 411); FLMPA; NEPA; IM 2008-009; and other specific federal regulations outlined in BLM Manual H8270-1. BLM policy laid forth in these guidelines promotes the scientific, educational, and recreational uses of fossils on public lands, mitigates resource conflicts, and develops strategies to regularly monitor public lands where important paleontological localities have been identified. Additionally, the following CDCA management goals apply to the protection of paleontological resources:

- Ensure paleontological resources are given full consideration in land-use planning and management decisions
- Preserve and protect a representative sample of the full array of the CDCA's paleontological resources
- Ensure proper data recovery of significant paleontological resources where adverse impacts cannot be avoided or otherwise mitigated

In addition to the above requirements, in March 2009, OPLA–PRP was enacted. Title VI, Subtitle D sets forth the law pertaining to paleontological resources on all federally administered lands. OPLA–PRP codifies the BLM practice of requiring that rare and scientifically significant fossils be collected only by qualified researchers who obtain a permit, and is consistent with paleontological guidelines outlined in the Paleontology Resources Management Manual and Handbook H-8270-1. As a result of the enactment of OPLA–PRP, federal agencies will begin developing appropriate plans for the management of paleontological resources and the implementation of OPLA–PRP.

4.8.2 TYPICAL IMPACTS FROM SOLAR ENERGY DEVELOPMENT

Construction of the Applicant's Ocotillo Sol Project would include grading, foundation excavation, trenching, and fencing. These activities could result in damage, loss, and/or degradation of vertebrate fossils and scientifically significant invertebrate resources. These activities could also result in the discovery of an otherwise undetected paleontological resource.

Operation of the Ocotillo Sol Project would not result in additional risks to paleontological resources. After completion of construction activities, solar facility operation would not likely result in further affects to these resources.

Decommissioning of the Ocotillo Sol Project would not be expected to result in adverse impacts to paleontological resources as no additional subsurface grading beyond that conducted under construction activities would occur. Potential impacts to any resources found within the Ocotillo Sol Project area would occur during the ground-disturbing phase of project construction.

Indirect impacts include the potential for increased unauthorized collection of fossils and other paleontological resources resulting from increased numbers of people in the vicinity (i.e., personnel involved in construction and operation of facilities).

4.8.3 IMPACTS BY ALTERNATIVE

4.8.3.1 ALTERNATIVES 1, 4, AND 5

Under Alternative 1, the Ocotillo Sol Project would not be approved by the BLM and the CDCA Plan would not be amended. The Ocotillo Sol Project would not be constructed and the BLM would continue to manage the site consistent with the CDCA Plan (1980, as amended), Yuha Basin ACEC Management Plan (1981), Yuha Desert Wildlife Habitat Management Plan (1983), Yuha Desert Management Plan (1985), and the *Flat-tailed Horned Lizard Rangewide Management Strategy*.

Under Alternative 4, the Ocotillo Sol Project would not be approved and no ROW grant would be issued to the Applicant. The project area would remain in its existing condition, with no construction of structures or facilities resulting in ground disturbance, and no impacts associated with the Ocotillo Sol Project would occur. Under Alternative 4, the CDCA Plan would be amended to identify the Ocotillo Sol Project area as suitable for solar energy development. As a result, a project might be proposed in the future using the same or different solar energy technology on the project site, possibly resulting in impacts similar to the proposed Ocotillo Sol Project. The impacts of such a future project, however, are speculative at this time.

Under Alternative 5, the Ocotillo Sol Project would not be approved and no ROW grant would be issued to the Applicant. The project area would remain in its existing condition, with no construction of structures or facilities resulting in ground disturbance, and no impacts associated with the Ocotillo Sol Project would occur. Under Alternative 5, the CDCA Plan would be amended to identify the Ocotillo Sol Project area as unsuitable for solar energy development.

There would be no direct or indirect impacts to paleontological resources under Alternatives 1, 4, and 5.

4.8.3.2 ALTERNATIVE 2

Under Alternative 2, the Applicant would construct, operate, maintain, and decommission a 100-acre solar PV facility on BLM-managed lands under an authorized ROW. This alternative includes a 15-acre temporary ROW that would be used as a laydown are during construction of

the solar facility. Construction of the Ocotillo Sol Project would include grading, foundation excavation, trenching, and fencing. As noted in Section 4.8.3, these activities could result in damage, loss, and/or degradation of vertebrate fossils and scientifically significant invertebrate resources. Decommissioning of the Ocotillo Sol Project would not result in adverse impacts to paleontological resources.

As detailed in Chapter 3, Section 3.8, the Lake Cahuilla sediments within the Ocotillo Sol Project area are classified under PFYC Class 2 and the Plio-Pleistocene (more recent than circa 5 million years ago) sediments are classified under PFYC Class 3b. The potential for adverse impacts to vertebrate fossils or uncommon invertebrate or plant fossils is low within PFYC Class 2. No assessment or mitigation would be necessary for areas within this class. No direct or indirect impacts to paleontological resources would occur in Class 2 areas.

For portions of the 115-acre Ocotillo Sol Project area that fall within PFYC Class 3b, significant fossils could be present and actions under Alternative 2 could adversely impact paleontological resources. Southwest of the Ocotillo Sol Project area, sediments exhibit geologic features and preservational conditions suggesting significant fossils could be present, and may be the source of the mineralized bone and wood fragments found on the surface within the Ocotillo Sol Project area. Potential adverse impacts to paleontological resource may occur within Class 3b areas.

Mitigation measures as outlined below in Section 4.8.6 would be implemented to avoid and minimize potential adverse impacts to paleontological resource within Class 3b areas. There would be negligible, if any, direct or indirect impacts to paleontological resources under Alternative 2.

4.8.3.3 ALTERNATIVE 3

Under Alternative 3, the Applicant would construct, operate, maintain, and decommission a 100-acre solar PV facility on BLM-managed lands under an authorized ROW. The 15-acre temporary ROW described under Alternative 2 would be reduced to 2 acres under Alternative 3. The 2-acre temporary ROW would provide for parking during construction of the Ocotillo Sol Project. Laydown and staging would occur within the 100-acre Ocotillo Sol Project area as construction activities progress.

Construction of the Ocotillo Sol Project under Alternative 3 would include grading, foundation excavation, trenching, fencing, and laydown area. Adverse impacts described for Alternative 2 would also occur under Alternative 3, with the exception of the reduction in temporary ROW acreage. Mitigation measures as outlined below in Section 4.8.6 would be implemented to avoid and minimize potential adverse impacts to paleontological resources within Class 3b areas. There would be negligible, if any, direct or indirect impacts to paleontological resources under Alternative 3.

4.8.4 CUMULATIVE IMPACTS

4.8.4.1 GEOGRAPHIC SCOPE

The cumulative analysis impact area for paleontological resources is the Ocotillo Sol Project area and projects within approximately 1-mile, similar to soil resources. Potential impacts to paleontological resources related to construction, operation and maintenance, and decommissioning activities from to the Applicant's proposed Ocotillo Sol Project would be site specific and would only occur within the proposed project boundaries. The geographic scope of analysis for cumulative impacts includes a 1-mile area surrounding the project site to incorporate projects in the vicinity that may affect soil sediments and geology.

Past, present, and reasonably foreseeable future projects are listed in Table 4.1-1. Projects within the cumulative analysis impact area are listed in Table 4.1-2. Projects or actions within the 1-mile radius include BLM actions (within BLM-administered lands) such as ongoing road maintenance and recreation designations. Other actions include Imperial Valley Substation operation and maintenance, Sunrise Powerlink, transmission and utility corridor maintenance, recreational activity, and agricultural activities.

The existing condition for paleontological resources in the Ocotillo Sol Project area, which represents the aggregate effect of past and present actions impacting paleontological resources, is described in Chapter 3, Section 3.8. The reasonably foreseeable future projects listed above could result in adverse impacts to paleontological resources, primarily during construction and decommissioning activities. The combination of these projects could deteriorate paleontological resources in the area, but few, if any, paleontological resources are known to occur in the area. Operation and maintenance activities are not anticipated to result cumulative impacts to paleontological resources. Paleontological resource mitigation measures may be required for reasonably foreseeable future projects, depending on the potential for these resources to occur.

4.8.4.2 ALTERNATIVES 1, 4, AND 5

Based on direct and indirect impact analysis presented in Section 4.8.3, it is expected that Alternatives 1, 4, and 5 would not result in impacts to paleontological resources. These alternatives, in combination with other reasonably foreseeable future projects, would not contribute to paleontological resource cumulative impacts in the area.

4.8.4.3 ALTERNATIVES 2 AND 3

Alternatives 2 and 3 would not likely result in adverse impacts to paleontological resources. Activities occurring on lands within a 1-mile radius of the Ocotillo Sol Project area (e.g., recreation, transmission line development and maintenance, and agricultural activities) have had minimal, if any, impacts to paleontological resources within the Ocotillo Sol Project area, and these ongoing activities would likely continue to have minimal, if any, impacts to paleontological resources. Alternatives 2 and 3, when combined with reasonably foreseeable future projects in the area, would not likely result in significant cumulative impacts to paleontological resources in the area.

In order to avoid unknown and undiscovered paleontological resources, a Paleontological Monitoring and Recovery Plan would be written to address potential paleontological discoveries, as described below under mitigation measures.

4.8.5 MITIGATION

A project-specific paleontological resources impact mitigation program, including excavation monitoring and fossil salvage by qualified paleontologists, is recommended if, after the project design is finalized, any excavations would extend below Holocene (circa 12,000 years ago to present) sediments. Paleontological monitoring shall be conducted during excavation to mitigate potential adverse impacts to significant nonrenewable paleontological resources, if there are no further geotechnical reports for the Ocotillo Sol Project area. Additional geotechnical information on subsurface geology may provide sufficient information to reduce the need for monitoring during excavation.

4.8.5.1 PALEONTOLOGICAL RESOURCES IMPACT MITIGATION PROGRAM

A qualified paleontologist will develop a paleontological resources impact mitigation program prior to construction to mitigate adverse impacts on paleontological resources if excavations will extend below Holocene sediments. The plan will include the following measures to be followed in the event that fossil materials are encountered during construction:

The monitoring and mitigation plan shall include a schedule and plan for monitoring earth-moving activities, and a provision that monitoring personnel have the authority to temporarily halt or divert excavation activities to allow removal of fossil specimens and recording of information on the location, orientation, etc. associated with the collected specimen.

Worker awareness training will be implemented to ensure that the construction personnel understand the potential for fossil remains being uncovered and/or disturbed by earth-moving activities; where such remains are most likely to be encountered during earth moving; and requirements and procedures to be followed in the event of suspected fossil discoveries. The awareness training may be given along with other sensitivity trainings (e.g., for biological resources) or incorporated into tailgate safety meetings.

The Applicant will have a paleontology monitor on site during construction when there are ground-disturbing activities in areas of identified moderate to high paleontological sensitivity.

Recovered fossils will be curated with a museum or other curation facility approved by the BLM.

Emergency stop work and notification procedures in the case of encountering significant paleontological resources.

4.8.6 IRREVERSIBLE OR IRRETRIEVABLE COMMITMENT OF RESOURCES

Construction and decommissioning of the Ocotillo Sol Project would not likely result in adverse impacts to paleontological resources. Mitigation measures would be implemented to avoid and minimize potential adverse impacts to undiscovered paleontological resources within Class 3b

areas. No unavoidable adverse impacts to paleontological resources are likely to occur and no irreversible or irretrievable commitment of paleontological resources would likely occur.

4.9 FIRE AND FUELS

4.9.1 MANAGEMENT GOALS

The Ocotillo Sol Project area falls within the San Diego Fire Management Unit. Planning and management actions for fire and fuels on BLM lands are implemented under the Fire and Aviation Directorate as well as the fuels management program.

4.9.2 TYPICAL IMPACTS FROM SOLAR ENERGY DEVELOPMENT

Primary impacts to wildland fire ecology can be characterized as those actions that limit or enhance the ability to suppress fire. Wildland fires are typically infrequent in desert areas, but can be more common within riparian zones. Areas leased for ROWs, or other land use authorizations may inadvertently create fuel breaks that provide access routes for wildfire suppression. Any development within ROWs or other land use authorizations may also result in wildland fire hazards by promoting the spread of noxious weeds.

4.9.3 IMPACTS BY ALTERNATIVE

4.9.3.1 ALTERNATIVES 1, 4, AND 5

Under Alternative 1, the Ocotillo Sol Project would not be approved by the BLM and the CDCA Plan would not be amended. The Ocotillo Sol Project would not be constructed and the BLM would continue to manage the site consistent with the CDCA Plan (1980, as amended), Yuha Basin ACEC Management Plan (1981), Yuha Desert Wildlife Habitat Management Plan (1983), Yuha Desert Management Plan (1985), and the *Flat-tailed Horned Lizard Rangewide Management Strategy*.

Under Alternative 4, the Ocotillo Sol Project would not be approved and no ROW grant would be issued to the Applicant. The project area would remain in its existing condition, with no construction of structures or facilities resulting in ground disturbance, and no impacts associated with the Ocotillo Sol Project would occur. Under Alternative 4, the CDCA Plan would be amended to identify the Ocotillo Sol Project area as suitable for solar energy development. As a result, a project might be proposed in the future using the same or different solar energy technology on the project site, possibly resulting in impacts similar to the proposed Ocotillo Sol Project. The impacts of such a future project, however, are speculative at this time.

Under Alternative 5, the Ocotillo Sol Project would not be approved and no ROW grant would be issued to the Applicant. The project area would remain in its existing condition, with no construction of structures or facilities resulting in ground disturbance, and no impacts associated with the Ocotillo Sol Project would occur. Under Alternative 5, the CDCA Plan would be amended to identify the Ocotillo Sol Project area as unsuitable for solar energy development.

No wildland fire-related direct or indirect adverse impacts would occur under Alternatives 1, 4, and 5.

4.9.3.2 ALTERNATIVE 2

Under Alternative 2, the Applicant would construct, operate, maintain, and decommission a 100-acre solar PV facility on BLM-managed lands under an authorized ROW. This alternative includes a 15-acre temporary ROW that would be used as a laydown area during construction of the solar facility. Construction of the Applicant's Ocotillo Sol Project would include grading, foundation excavation, trenching, and fencing. Construction of the project would result in the removal of vegetation within the 115-acre ROW. Vegetation removal would reduce the already low fire risk within the project area and would not change the fire risk near the project. Grading of the area as well as disturbance to native vegetation could lead to increased noxious, invasive weed species, which may increase wildland fire potential within and surrounding the project area. A Weed Management Plan (as outlined in Section 4.9.5) as well as construction, operation and maintenance, and decommissioning BMPs would be implemented to reduce the invasion and spread of noxious and invasive weed species and reduce the potential for wildland fire.

Under Alternative 2, potential wildland fire related negligible adverse impacts may occur. These impacts would be avoided by implementing a Weed Management Plan and BMPs, as previously described.

4.9.3.3 ALTERNATIVE 3

Under Alternative 3, the Applicant would construct, operate, maintain, and decommission a 100-acre solar PV facility on BLM-managed lands under an authorized ROW. The 15-acre temporary ROW described under Alternative 2 would be reduced to 2 acres under Alternative 3. The 2-acre temporary ROW would provide for parking during construction of the Ocotillo Sol Project. Laydown and staging would occur within the 100-acre ROW as construction activities progress.

Construction under Alternative 3 would include grading, foundation excavation, trenching, and fencing. As with Alternative 2, construction of the project would result in the removal of vegetation within the approved ROW (102 acres under Alternative 3). Vegetation removal would reduce the already low fire risk within the project area and would not change the fire risk near the project. The potential for wildland fire from the spread of noxious, invasive weed species would be similar as described under Alternative 2. A Weed Management Plan (as outlined in Section 4.9.5) in addition to construction, operation and maintenance, and decommissioning BMPs would be implemented to reduce the invasion and spread of noxious, invasive weed species and reduce the potential for wildland fire.

Under Alternative 3, potential wildland fire related negligible adverse impacts may occur. These impacts would be avoided by implementing a Weed Management Plan and BMPs, as previously described.

4.9.4 CUMULATIVE IMPACTS

4.9.4.1 GEOGRAPHIC SCOPE

The cumulative analysis impact area for wildland fire is an approximate 1-mile radius around the Ocotillo Sol Project area. The vegetation community surrounding the Ocotillo Sol Project area (creosote bush–white burr sage scrub vegetation) is not known to be highly flammable or burn at high heat. Fire is not likely to spread at a rapid rate within this sparse vegetation community. Projects in the vicinity would also not likely result in a fire that would spread at a rapid rate. Any fire would be detected by remote surveillance of the project site or adjacent Imperial Valley Substation security detection system.

Past, present, and reasonably foreseeable future projects are listed in Table 4.1-1. Projects within the cumulative analysis impact area are listed in Table 4.1-2. Projects or actions within the 1-mile radius include BLM actions (within BLM-administered lands) such as ongoing road maintenance and recreation designations. Other actions include Imperial Valley Substation operation and maintenance; Sunrise Powerlink; transmission and utility corridor maintenance; recreational activity; and agricultural activities.

The existing condition for fire and fuels in the Ocotillo Sol Project area, which represents the aggregate effect of past and present actions resulting in fire risk, is described in Chapter 3, Section 3.9. Reasonably foreseeable future projects could result in adverse impacts related to fire and fuels, primarily during construction and decommissioning activities. The combination of these projects could result in increased fire danger due to the spread of weed species or ignition sources (e.g., construction vehicles or increased traffic). No fires have occurred historically in the area, however, and little fuel for the spread of fire exists within the area. Operation and maintenance activities are not anticipated to result cumulative impacts related to fire and fuels. Fire and fuels BMPs and mitigation measures would be required for reasonably foreseeable future projects.

4.9.4.2 ALTERNATIVES 1, 4, AND 5

Based on direct and indirect impact analysis presented in Section 4.9.3, it is expected that Alternatives 1, 4, and 5 would not result in fire related impacts. These alternatives, in combination with other reasonably foreseeable future projects, would not contribute to wildland fire cumulative impacts in the area.

4.9.4.3 ALTERNATIVES 2 AND 3

Alternatives 2 and 3, as well as other reasonably foreseeable future projects, may result in fire related adverse impacts. Activities occurring on lands within a 1-mile radius of the Ocotillo Sol Project area (e.g., recreation, transmission line development and maintenance, and agricultural activities) have not resulted in wildland fires, and these ongoing activities would likely continue to have minimal, if any, impacts related to fire potential. The Imperial Valley Substation, immediately adjacent to the Ocotillo Sol Project area, has a water tank to combat fires. In addition, fire extinguishers would be placed within the Ocotillo Sol Project site, once developed. These resources would be available to combat wildfires.

With implementation of mitigation measures outlined in Section 4.9.5 below, as well as BMPs during construction, operation and maintenance, and decommissioning, Alternatives 2 and 3 would not likely result in a cumulatively adverse impacts related to wildland fire when combined with other past, present, and reasonably foreseeable projects in the area.

4.9.5 MITIGATION

A Weed Management Plan, described in Section 4.6.4, would be implemented to reduce the invasion and spread of noxious, non-native weed species that could increase wildland fire risk. BMPs during construction, operation and maintenance, and decommissioning to avoid fire risk would also be implemented.

4.9.6 IRREVERSIBLE AND IRRETRIEVABLE COMMITMENT OF RESOURCES

Construction, operation and maintenance, and decommissioning of the Ocotillo Sol Project could result in negligible adverse impacts related to fire and fuels hazards. Mitigation measures would be implemented to avoid impacts related to fire and fuels hazards, as detailed above. No unavoidable adverse impacts related to fire and fuels hazards are likely to occur and no irreversible and irretrievable commitment of resources would occur.

4.10 LANDS AND REALTY

4.10.1 MANAGEMENT GOALS

The CDCA Plan does not have any formal management goals for the lands and realty program.

4.10.2 TYPICAL IMPACTS FROM SOLAR ENERGY DEVELOPMENT

Impacts to lands and realty could occur during construction of solar fields by interrupting routes of travel through additional traffic from construction vehicles, equipment haul vehicles (possibly oversized), and workers. Solar facilities may conflict with other land use activities such as recreation. Solar facilities could also eliminate all other potential uses of an area.

4.10.3 IMPACTS BY ALTERNATIVE

4.10.3.1 ALTERNATIVES 1, 4, AND 5

Under Alternative 1, the Ocotillo Sol Project would not be approved by the BLM and the CDCA Plan would not be amended. The Ocotillo Sol Project would not be constructed and the BLM would continue to manage the site consistent with the CDCA Plan (1980, as amended), Yuha Basin ACEC Management Plan (1981), Yuha Desert Wildlife Habitat Management Plan (1983), Yuha Desert Management Plan (1985), and the *Flat-tailed Horned Lizard Rangewide Management Strategy*.

Under Alternative 4, the Ocotillo Sol Project would not be approved and no ROW grant would be issued to the Applicant. The project area would remain in its existing condition, with no construction of structures or facilities resulting in ground disturbance, and no impacts associated with the Ocotillo Sol Project would occur. Under Alternative 4, the CDCA Plan would be amended to identify the Ocotillo Sol Project area as suitable for solar energy development. As a result, a project might be proposed in the future using the same or different solar energy technology on the project site, possibly resulting in impacts similar to the proposed Ocotillo Sol Project. The impacts of such a future project, however, are speculative at this time.

Under Alternative 5, the Ocotillo Sol Project would not be approved and no ROW grant would be issued to the Applicant. The project area would remain in its existing condition, with no construction of structures or facilities resulting in ground disturbance, and no impacts associated with the Ocotillo Sol Project would occur. Under Alternative 5, the CDCA Plan would be amended to identify the Ocotillo Sol Project area as unsuitable for solar energy development.

There would be no direct or indirect adverse impacts to lands and realty under Alternatives 1, 4, and 5.

4.10.3.2 ALTERNATIVE 2

Under Alternative 2, the Applicant would construct, operate, maintain, and decommission a 100-acre solar PV facility on BLM-managed lands under an authorized ROW. This alternative includes a 15-acre temporary ROW that would be used as a laydown area during construction of the solar facility. Under Alternative 2, the CDCA Plan would be amended to identify the Ocotillo Sol Project area as suitable for solar energy development. The CDCA Plan amendment would result in the possibility of development of the same or different solar energy technology in the project area after decommissioning of the Ocotillo Sol Project.

Solar energy development within the Ocotillo Sol Project area would occur within the designated Utility Corridor N and would not conflict with the CDCA Plan. The Ocotillo Sol Project would not conflict with existing BLM land use authorizations or existing realty agreements. With implementation of mitigation measures previously outlined for biological resource impacts (Section 4.6.4), the Ocotillo Sol Project would be compatible with the Yuha Basin ACEC Plan, the Yuha Desert Wildlife Management Area plan, and *Flat-tailed Horned Lizard Rangewide Management Strategy*.

Alternative 2 would not result in direct or indirect adverse impacts to lands and realty.

4.10.3.3 ALTERNATIVE 3

Under Alternative 3, the Applicant would construct, operate, maintain, and decommission a 100-acre solar PV facility on BLM-managed lands under an authorized ROW. The 15-acre temporary ROW described under Alternative 2 would be reduced to 2 acres under Alternative 3. The 2-acre temporary ROW would provide for parking during construction of the Ocotillo Sol Project. Laydown and staging would occur within the 100-acre ROW as construction activities progress.

Under Alternative 3, the CDCA Plan would be amended to identify the Ocotillo Sol Project area as suitable for solar energy development. The CDCA Plan amendment would result in the possibility of development of the same or different solar energy technology in the project area after decommissioning of the Ocotillo Sol Project.

As described under Alternative 2, under Alternative 3 the Ocotillo Sol Project area would occur within the designated Utility Corridor N, would not conflict with the CDCA Plan, or conflict with existing BLM land use authorizations or existing realty agreements. With implementation of mitigation measures previously outlined for biological resource impacts (Section 4.6.4), the Ocotillo Sol Project would be compatible with the Yuha Basin ACEC Management Plan and *Flat-tailed Horned Lizard Rangewide Management Strategy*.

Alternative 3 would not result in direct or indirect adverse impacts to lands and realty.

4.10.4 CUMULATIVE IMPACTS

4.10.4.1 GEOGRAPHIC SCOPE

The cumulative analysis impact area for lands and realty is the Imperial County area in the region surrounding the Ocotillo Sol Project. Cumulative impacts to lands and realty could result from conflicts with any applicable land use plans, policies, or regulations adopted for the purpose of avoiding or mitigating environmental impacts. Cumulative analysis includes the renewable energy projects and other actions within approximately 20 miles of the Ocotillo Sol Project area which may incur impacts to the existing on-site land uses or need to undergo a similar consistency analysis for plans, policies, and regulations.

Past, present, and reasonably foreseeable future projects are listed in Table 4.1-1. Projects within the cumulative analysis impact area are listed in Table 4.1-2. Project or actions include BLM actions (within BLM-administered lands) such as ongoing road maintenance and recreation designations. Other actions include the following: Imperial Valley Substation operation and maintenance, Imperial Valley Substation expansion for North Gila to Imperial Valley Substation #2 transmission line, Sunrise Powerlink, transmission and utility corridor maintenance, Interstate 8 and Highway 98, agricultural activities, recreational activity, North Gila to Imperial Valley Substation #2 transmission line, Dixieland Imperial Irrigation District transmission line and connection, Geothermal Overlay, Rancho Los Lagos, Brookfield Specific Plan, Desert Springs Oasis, Alder 70, Mosaic Specific Plan, sand and gravel mining, and Imperial Irrigation District canal and drain maintenance. Renewable energy projects include the following:

Calexico Solar Farm II
Mount Signal Solar Farm
Calexico Solar Farm I
Imperial Solar Energy Center South Solar Farm
Centinela Solar Farm
Acorn Greenworks Solar Farm
Silverleaf Solar Farm
Campo Verde Solar Farm (and shared transmission line with Silverleaf Solar Farm)
Imperial Solar Energy Center West Solar Farm
Keystone Solar
Ocotillo Express Wind Farm

The existing condition for lands and realty in the Ocotillo Sol Project area, which represents the aggregate effect of past and present actions impacting lands and realty, is described in Chapter 3, Section 3.10. The reasonably foreseeable future projects listed above could result in conflicts with existing land uses, conflict with applicable plans, policies, or regulations. Renewable energy projects in the area, however, would occur primarily on undeveloped lands or areas of rural development. In addition, these projects would not create a physical division of established communities. Mitigation measures related to decommissioning would result in restoration of sites to pre-construction conditions as much as possible.

4.10.4.2 ALTERNATIVES 1, 4, AND 5

Based on direct and indirect impact analysis presented in Section 4.10.3, it is expected that Alternatives 1, 4, and 5 would not result in impacts to lands and realty. These alternatives would be consistent with applicable plans, policies, and regulations and would not interfere with existing land uses. These alternatives, in combination with other reasonably foreseeable future projects, would not contribute to cumulative impacts to lands and realty.

4.10.4.3 ALTERNATIVES 2 AND 3

Alternatives 2 and 3 would not result in adverse impacts to lands and realty. Renewable energy projects and other activities within approximately 20 miles of the Ocotillo Sol Project area have been consistent with applicable plans, policies, and regulations in the region. Alternatives 2 and 3 would also be consistent with applicable plans, policies, and regulations and would not interfere with existing land uses. Alternatives 2 and 3, in combination with other reasonably foreseeable future projects, would not contribute to cumulative impacts to lands and realty.

4.10.5 MITIGATION

No mitigation measures for lands and realty would be required.

4.10.6 IRREVERSIBLE AND IRRETRIEVABLE COMMITMENT OF RESOURCES

No direct or indirect impacts to lands and realty would occur due to the Ocotillo Sol Project. The footprint of the Ocotillo Sol Project would limit future use of 100 acres of BLM-administered land for other uses for the life of the project and would result in irreversible and irretrievable commitment of the resource. The Ocotillo Sol Project, however, would not interfere with existing land uses such as recreation, and would not conflict with current plans, policies, and regulations.

4.11 SPECIAL DESIGNATIONS

4.11.1 MANAGEMENT GOALS

BLM Wilderness Area management goals are as follows:

- Until Congressional release or designation as wilderness, provide protection of wilderness values so those values are not degraded to a point that significantly constrains the recommendation with respect to an area's suitability or non-suitability for preservation as wilderness
- Provide a wilderness system possessing a variety of opportunities for primitive and unconfined types of recreation, involving a diversity of ecosystems and landforms, geographically distributed throughout the desert.
- Manage a wilderness system in an unimpaired state, preserving wilderness values and primitive recreation opportunities while providing for acceptable use.

For ACECs and Special Areas, the CDCA Plan provides the following management goals:

- Identify and protect the significant natural and cultural resources requiring special management attention found in BLM-administered lands in the CDCA.
- Provide for other uses in the designated areas, compatible with the protection and enhancement of the significant natural and cultural resources.
- Systematically monitor the preservation of the significant natural and cultural resources on BLM-administered lands, and the compatibility of other allowable uses with these resources.

National Historic Trails are managed to protect historic routes, historic remnants, and artifacts for public use and enjoyment.

4.11.2 TYPICAL IMPACTS FROM SOLAR ENERGY DEVELOPMENT

Impacts to special designations could occur from the loss or disturbance of significant features within these areas, such as the degradation of wilderness values or the loss or degradation of significant natural and cultural resources. Impacts could occur to National Historic Trails from construction of facilities by diminishing scenic quality or affecting access to trails.

4.11.3 IMPACTS BY ALTERNATIVE

4.11.3.1 ALTERNATIVES 1, 4, AND 5

Under Alternative 1, the Ocotillo Sol Project would not be approved by the BLM and the CDCA Plan would not be amended. The Ocotillo Sol Project would not be constructed and the BLM

would continue to manage the site consistent with the CDCA Plan (1980, as amended), Yuha Basin ACEC Management Plan (1981), Yuha Desert Wildlife Habitat Management Plan (1983), Yuha Desert Management Plan (1985), and the *Flat-tailed Horned Lizard Rangewide Management Strategy*.

Under Alternative 4, the Ocotillo Sol Project would not be approved and no ROW grant would be issued to the Applicant. The project area would remain in its existing condition, with no construction of structures or facilities resulting in ground disturbance, and no impacts associated with the Ocotillo Sol Project would occur. Under Alternative 4, the CDCA Plan would be amended to identify the Ocotillo Sol Project area as suitable for solar energy development. As a result, a project might be proposed in the future using the same or different solar energy technology on the project site, possibly resulting in impacts similar to the proposed Ocotillo Sol Project. The impacts of such a future project, however, are speculative at this time.

Under Alternative 5, the Ocotillo Sol Project would not be approved and no ROW grant would be issued to the Applicant. The project area would remain in its existing condition, with no construction of structures or facilities resulting in ground disturbance, and no impacts associated with the Ocotillo Sol Project would occur. Under Alternative 5, the CDCA Plan would be amended to identify the Ocotillo Sol Project area as unsuitable for solar energy development.

There would be no direct or indirect impacts to special designations under Alternatives 1, 4, and 5.

4.11.3.2 ALTERNATIVE 2

Under Alternative 2, the Applicant would construct, operate, maintain, and decommission a 100-acre solar PV facility on BLM-managed lands under an authorized ROW. This alternative includes a 15-acre temporary ROW that would be used as a laydown area during construction of the solar facility. Under Alternative 2, the CDCA Plan would be amended to identify the Ocotillo Sol Project area as suitable for solar energy development. The CDCA Plan amendment would result in the possibility of development of the same or different solar energy technology in the project area after decommissioning of the Ocotillo Sol Project.

Solar energy development within the Ocotillo Sol Project area would occur within the designated Utility Corridor N and would not conflict with the CDCA Plan. With implementation of mitigation measures outlined for biological resources (Section 4.6.4), the Ocotillo Sol Project would be compatible with the Yuha Basin ACEC Plan, the Yuha Desert Wildlife Management Area plan, and *Flat-tailed Horned Lizard Rangewide Management Strategy*.

The Ocotillo Sol Project area lies 11.6 miles to the northeast of the Jacumba Mountain Wilderness. The solar facility may be visible from a small portion of the wilderness area (see Visual Resources analysis in Section 4.13). The Ocotillo Sol Project area is approximately 4.5 miles northeast of the nearest portion of the Juan Bautista de Anza National Historic Trail. Views of the solar facility would be minimal, if visible at all (see Visual Resource analysis in Section 4.13). Construction, operation and maintenance, and decommissioning related activities for the Ocotillo Sol Project would not impact these areas or affect access.

Under Alternative 2, no direct or indirect impacts would occur to special designation areas.

4.11.3.3 ALTERNATIVE 3

Under Alternative 3, the Applicant would construct, operate, maintain, and decommission a 100-acre solar PV facility on BLM-managed lands under an authorized ROW. The 15-acre temporary ROW described under Alternative 2 would be reduced to 2 acres under Alternative 3. The 2-acre temporary ROW would provide for parking during construction of the Ocotillo Sol Project. Laydown and staging would occur within the 100-acre ROW as construction activities progress.

Impacts to special designation areas would be the same under Alternative 3 as discussed above for Alternative 2. Implementation mitigation measures outlined for biological resources (Section 4.6.7) would also occur under Alternative 3. Alternative 3 would not conflict with the CDCA Plan and would be compatible with the Yuha Basin ACEC Management Plan and *Flat-tailed Horned Lizard Rangewide Management Strategy*.

Construction, operation and maintenance, and decommissioning related activities for the Ocotillo Sol Project would not impact the Jacumba Mountains Wilderness or Juan Bautista de Anza National Historic Trail, nor affect access to these areas.

Under Alternative 3, no direct or indirect impacts would occur to special designation areas.

4.11.4 CUMULATIVE IMPACTS

4.11.4.1 GEOGRAPHIC SCOPE

The cumulative analysis impact area for special designations is similar to that analyzed for lands and realty, which is the Imperial County area in the region surrounding the Ocotillo Sol Project area. Cumulative impacts to special designations could result from conflicts with any applicable land use plans, policies, or regulations adopted for the purpose of avoiding or mitigating environmental impacts within these areas. Cumulative analysis includes the renewable energy projects and other actions within approximately 20 miles of the Ocotillo Sol Project area that may incur impacts to special designation areas and require an analysis for consistency with applicable plans or policies.

Past, present, and reasonably foreseeable future projects are listed in Table 4.1-1. Projects within the cumulative analysis impact area are listed in Table 4.1-2. Project or actions include BLM actions (within BLM-administered lands) such as ongoing road maintenance and recreation designations. Other actions include the following: Imperial Valley Substation operation and maintenance, Imperial Valley Substation expansion for North Gila to Imperial Valley Substation #2 transmission line, Sunrise Powerlink; transmission and utility corridor maintenance, Interstate 8 and Highway 98, agricultural activities, recreational activity, North Gila to Imperial Valley Substation #2 transmission line, Dixieland Imperial Irrigation District transmission line and connection, Geothermal Overlay, Rancho Los Lagos, Brookfield Specific Plan, Desert Springs Oasis, Alder 70, Mosaic Specific Plan, sand and gravel mining, and Imperial Irrigation District canal and drain maintenance. Renewable energy projects include the following:

Calexico Solar Farm II
Mount Signal Solar Farm
Calexico Solar Farm I
Imperial Solar Energy Center South Solar Farm
Centinela Solar Farm
Acorn Greenworks Solar Farm
Silverleaf Solar Farm
Campo Verde Solar Farm (and shared transmission line with Silverleaf Solar Farm)
Imperial Solar Energy Center West Solar Farm
Keystone Solar
Ocotillo Express Wind Farm

The existing condition for special designations in the Ocotillo Sol Project area, which represents the aggregate effect of past and present actions impacting lands and realty, is described in Chapter 3, Section 3.11. The reasonably foreseeable future projects listed above could result in minor adverse impacts to special designation areas in the region. The combination of these industrial development projects could deteriorate the scenic quality of an area and create emissions and noise. Reasonably foreseeable future projects would occur outside of special designation areas and primarily within fallow agricultural fields or adjacent to existing industrial development or structures (e.g., along existing utility corridors or adjacent to the Imperial Valley Substation). Cumulative impacts to special designation areas from reasonably foreseeable future development are anticipated to be negligible overall.

4.11.4.2 ALTERNATIVES 1, 4, AND 5

Based on direct and indirect impact analysis presented in Section 4.11.3, it is expected that Alternatives 1, 4, and 5 would not result in impacts to special designations. These alternatives would be consistent with applicable plans, policies, and regulations for these areas and would not interfere with management. These alternatives, in combination with other reasonably foreseeable future projects, would not contribute to cumulative impacts to special designation areas.

4.11.4.3 ALTERNATIVES 2 AND 3

Alternatives 2 and 3 would not result in adverse impacts to special designation areas. Renewable energy projects and other activities within approximately 20 miles of the Ocotillo Sol Project area have been consistent with applicable plans, policies, and regulations for these special designation areas. Alternatives 2 and 3 would also be consistent with applicable plans, policies, and regulations for special designation areas and would not interfere with management. Alternatives 2 and 3, when combined with other reasonably foreseeable future projects, would not contribute to cumulative impacts to special designation areas.

4.11.5 MITIGATION

No mitigation measures for special designations would be required.

4.11.6 IRREVERSIBLE AND IRRETRIEVABLE COMMITMENT OF RESOURCES

No direct or indirect impacts to special designations would occur due to the Ocotillo Sol Project and no irreversible and irretrievable commitment of these resources would occur. No unavoidable adverse impacts to special designations are expected to occur.

4.12 RECREATION

4.12.1 MANAGEMENT GOALS

The CDCA Plan provides overall management direction for all public lands in the CDCA. The CDCA Plan lists the following management goals:

- Provide for a wide range of quality recreation opportunities and experiences emphasizing dispersed undeveloped use
- Provide minimum use recreation facilities. These facilities should emphasize resource protection and visitor safety
- Manage recreation use to minimize user conflicts, provide a safe recreation environment, and protect desert resources
- Emphasize the use of public information and education techniques to increase public awareness, enjoyment, and sensitivity to desert resources
- Adjust management approach to accommodate changing visitor use patterns and preferences
- Encourage the use and enjoyment of desert recreation opportunities by special populations, and provide facilities to meet the needs of these groups

4.12.2 TYPICAL IMPACTS FROM SOLAR ENERGY DEVELOPMENT

Solar development could result in a short-term reduction in the land available for recreational use and in diminished experiences for recreational users on lands that remain open for recreation. Visual impacts, intermittent noise associated with construction, and the temporary loss of access for recreational use affecting the recreational experience could also result during the construction of solar facilities.

4.12.3 IMPACTS BY ALTERNATIVE

4.12.3.1 ALTERNATIVES 1, 4, AND 5

Under Alternative 1, the Ocotillo Sol Project would not be approved by the BLM and the CDCA Plan would not be amended. The Ocotillo Sol Project would not be constructed and the BLM would continue to manage the site consistent with the CDCA Plan (1980, as amended), Yuha Basin ACEC Management Plan (1981), Yuha Desert Wildlife Habitat Management Plan (1983), Yuha Desert Management Plan (1985), and the *Flat-tailed Horned Lizard Rangewide Management Strategy*.

Under Alternative 4, the Ocotillo Sol Project would not be approved and no ROW grant would be issued to the Applicant. The project area would remain in its existing condition, with no construction of structures or facilities resulting in ground disturbance, and no impacts associated with the Ocotillo Sol Project would occur. Under Alternative 4, the CDCA Plan would be amended to identify the Ocotillo Sol Project area as suitable for solar energy development. As a

result, a project might be proposed in the future using the same or different solar energy technology on the project site, possibly resulting in impacts similar to the proposed Ocotillo Sol Project. The impacts of such a future project, however, are speculative at this time.

Under Alternative 5, the Ocotillo Sol Project would not be approved and no ROW grant would be issued to the Applicant. The project area would remain in its existing condition, with no construction of structures or facilities resulting in ground disturbance, and no impacts associated with the Ocotillo Sol Project would occur. Under Alternative 5, the CDCA Plan would be amended to identify the Ocotillo Sol Project area as unsuitable for solar energy development.

There would be no impacts to recreation under Alternatives 1, 4, and 5.

4.12.3.2 ALTERNATIVE 2

Under Alternative 2, the Applicant would construct, operate, maintain, and decommission a 100-acre solar PV facility on BLM-managed lands under an authorized ROW. This alternative includes a 15-acre temporary ROW that would be used as a laydown area during construction of the solar facility. Construction of the Applicant's Ocotillo Sol Project would include grading, foundation excavation, trenching, and fencing. Construction of the project would result in the removal of vegetation within the 115-acre ROW. Construction-related activities would result in dust emissions and equipment noise.

Recreational use near the Ocotillo Sol Project area is primarily vehicle (street legal) travel along BLM designated routes. Overall, recreational use of the area is minimal. The Ocotillo Sol Project would result in a change to the natural area aesthetic. Construction-related noise, vibration, dust, and changes in the aesthetics could disrupt recreationists' enjoyment of the area. Views of the solar facility could also disrupt recreational enjoyment of the area. The Ocotillo Sol Project area vicinity has several transmission-related facilities, including the Imperial Valley Substation and transmission lines. The Ocotillo Sol Project would be consistent with these facilities and have a negligible impact on aesthetics of the area.

Overall, due to minimal recreational use of the area, existing aesthetics, and existing land uses, the Ocotillo Sol Project would have negligible adverse impacts on recreation under Alternative 2.

4.12.3.3 ALTERNATIVE 3

Under Alternative 3, the Applicant would construct, operate, maintain, and decommission a 100-acre solar PV facility on BLM-managed lands under an authorized ROW. The 15-acre temporary ROW described under Alternative 2 would be reduced to 2 acres under Alternative 3. The 2-acre temporary ROW would provide for parking during construction of the Ocotillo Sol Project. Laydown and staging would occur within the 100-acre ROW as construction activities progress. Construction under Alternative 3 would include grading, foundation excavation, trenching, and fencing.

As described Alternative 2, construction activities would result in dust emissions, equipment noise, vibration, and changes in the aesthetics, which could disrupt recreationists' enjoyment of

the area. The Ocotillo Sol Project would be consistent with existing transmission facilities and would have a minimal impact on aesthetics of the area.

Overall, due to minimal recreational use of the area, existing aesthetics, and existing land uses, the Ocotillo Sol Project would have negligible adverse impacts on recreation under Alternative 3.

4.12.4 CUMULATIVE IMPACTS

4.12.4.1 GEOGRAPHIC SCOPE

The cumulative analysis impact area for recreation is an approximate 2-mile radius around the Ocotillo Sol Project area. Minimal recreation occurs near the Ocotillo Sol Project area and any potential disruption (noise, dust, vibration, views) of recreational enjoyment would dissipate within approximately 1 to 2 miles (1 mile for dust emissions and about 2 miles for views).

Past, present, and reasonably foreseeable future projects are listed in Table 4.1-1. Projects within the cumulative analysis impact area are listed in Table 4.1-2. Projects or actions within the 2-mile radius include BLM actions (within BLM-administered lands) such as ongoing road maintenance and recreation designations. Other actions include Imperial Valley Substation operation and maintenance, Imperial Valley Substation expansion for North Gila to Imperial Valley Substation #2 transmission line, Sunrise Powerlink, transmission and utility corridor maintenance, Interstate 8 and Highway 98, agricultural activities, recreational activity; North Gila to Imperial Valley Substation #2 transmission line, Dixieland Imperial Irrigation District transmission line and connection, and Imperial Irrigation District canal and drain maintenance. Renewable energy projects (and associated transmission lines) include the following:

Calexico Solar Farm II
Mount Signal solar farm
Calexico Solar Farm I
Imperial Solar Energy Center South solar farm
Centinela Solar farm
Acorn Greenworks solar farm
Silverleaf Solar Farm
Campo Verde solar farm (and shared transmission line with Silverleaf solar farm)
Imperial Solar Energy Center West solar farm

The existing condition for recreation in the Ocotillo Sol Project area, which represents the aggregate effect of past and present actions, is described in Chapter 3, Section 3.12. The reasonably foreseeable future projects listed above could result in adverse impacts to recreation in the area. The combination of these industrial development projects could deteriorate the scenic quality of an area as well as create emissions, noise, and construction traffic that could cause recreationists to avoid the area. Reasonably foreseeable future projects are primarily planned within fallow agricultural fields or adjacent to existing industrial development or structures (e.g., along existing utility corridors or adjacent to the Imperial Valley Substation). Cumulative impacts to recreation from reasonably foreseeable future development are anticipated to be negligible overall.

4.12.4.2 ALTERNATIVES 1, 4, AND 5

Based on direct and indirect impact analysis presented in Section 4.12.3, it is expected that Alternatives 1, 4, and 5 would not result in impacts to recreation. These alternatives would be consistent with recreational use of the area. These alternatives, in combination with other reasonably foreseeable future projects, would not contribute to cumulative impacts to recreation.

4.12.4.3 ALTERNATIVES 2 AND 3

Alternatives 2 and 3, in combination with other reasonably foreseeable future projects, would result in negligible adverse impacts to recreational users of the area. Impacts would be negligible overall due to minimal recreational use of the area. Renewable energy projects and other activities within approximately 2 miles of the Ocotillo Sol Project area have been consistent with recreational use of the area. The Ocotillo Sol Project, when combined with other past, present, and reasonably foreseeable future projects in the area, would not result in a cumulatively adverse impact to recreation.

4.12.5 MITIGATION

No mitigation measures for recreation would be required.

4.12.6 IRREVERSIBLE AND IRRETRIEVABLE COMMITMENT OF RESOURCES

Construction, operation and maintenance, and decommissioning of the Ocotillo Sol Project would have negligible adverse impacts on recreation. Overall, due to minimal recreational use of the area, existing aesthetics, and existing land uses, the Ocotillo Sol Project would have no unavoidable adverse impacts to recreation and no irreversible and irretrievable commitment of resources related to recreation would occur.

4.13 VISUAL RESOURCES

4.13.1 MANAGEMENT GOALS

The overarching management goals for visual resources in the project area are established by the California Desert Conservation Area Plan (BLM 1999), as follows:

> The CDCA has a superb variety of scenic values. The public considers these scenic values a significant resource. The Bureau recognizes these values as a definable resource and an important recreation experience. These visual resources will receive consideration in Bureau of Land Management resource management decisions. Many management activities involve alteration of the natural character of the landscape to some degree; the Bureau will take the following actions to effectively manage for these activities:
>
> 1) The appropriate levels of management, protection, and rehabilitation on all public lands in the CDCA will be identified, commensurate with visual resource management objectives in the multiple-use class guidelines.
>
> 2) Proposed activities will be evaluated to determine the extent of change created in any given landscape and to specify appropriate design or mitigation measures using the Bureau's contrast rating process.

The CDCA Multiple Use Class that applies to the study area is Class L (Limited Use). The CDCA Plan prescribes management for Class L as follows: "These lands are managed to protect sensitive, natural, scenic, ecological, and cultural resource values. They provide for generally lower-intensity, carefully controlled multiple uses that do not significantly diminish resource values" (BLM 1999).

The CDCA Plan guidelines for electrical generation facilities are stated as follows: "Electrical generation plants may be allowed" (BLM 1999). More specifically, the CDCA Plan provides for solar generation facilities on Class L lands after NEPA requirements are met.

BLM has established visual management objectives for each of four VRM Classes. As discussed in Section 3.14, VRM Classes have not been designated by the CDCA or other resource management plan covering the Ocotillo Sol Project area. In the absence of VRM Class designations in the CDCA, BLM identifies an Interim VRM Class for a project area that reflects maximum protection of the visual values, and that supports and does not conflict with the decisions within the CDCA.

An analysis of scenic quality, viewer sensitivity and distance zones in the most recent VRI for the project area concluded that the inventory class is VRI III (see Sections 3.14.1-5 for a complete discussion of VRI). The CDCA Plan allocation for the Ocotillo Sol Project area is Multiple Use Class L, which may allow for solar energy facilities after NEPA requirements are met. Specific projects must be evaluated through a plan amendment to ensure consistency with all goals and objectives for this Multiple Use Class.

Mitigation measures (described in Section 4.13.5 below) would be implemented to minimize potential visual impacts of the proposed project, even though the level of contrast with the surrounding landscape would be low when viewed from a variety of KOPs. This practice would mitigate visual contrast from other areas the proposed project may be seen from, but that were not included as, critical KOPs.

Taking into consideration the inventory class, recent developments that have been undertaken and/or approved in the Ocotillo Sol Project area, the implementation of mitigation measures, and the project's consistency with the Multiple Use Class, the BLM proposes establishment of an Interim VRM Class III for the area. The BLM proposes this Interim VRM Class because of the demonstrated ability to construct the project and maintain conformance with VRM Class III objective. The objective of VRM Class III is to partially retain the existing character of the landscape. Under VRM Class III, the level of change to the characteristic landscape should be moderate, and management activities may attract attention, but should not dominate the view 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.

The ability to construct the Ocotillo Sol Project and maintain conformance with the Class III VRM objective is discussed below, under Section 4.13.3, Impacts by Alternative.

4.13.2 TYPICAL IMPACTS FROM SOLAR ENERGY DEVELOPMENT

Visual resources are susceptible to impacts from surface disturbing activities, vegetation removal, construction activities, and the subsequent presence of solar panels, transformer boxes, fencing, and ancillary buildings associated with solar energy development. These impacts contribute to visual contrast, considered by BLM to be the leading indicator of visual impact-between the project facilities and the adjacent landscape.

Related visual impact considerations include the extent to which views from designated scenic highways, National Historic Trails, Wilderness areas, or culturally sensitive landscapes are affected. Excessive dust generated by construction or operation activities is considered to be a visual quality impact.

4.13.3 IMPACTS BY ALTERNATIVE

4.13.3.1 ALTERNATIVES 1, 4, AND 5

Under Alternative 1, the Ocotillo Sol Project would not be approved by the BLM and the CDCA Plan would not be amended. The Ocotillo Sol Project would not be constructed and the BLM would continue to manage the site consistent with the CDCA Plan (1980, as amended), Yuha Basin ACEC Management Plan (1981), Yuha Desert Wildlife Habitat Management Plan (1983), Yuha Desert Management Plan (1985), and the *Flat-tailed Horned Lizard Rangewide Management Strategy*.

Under Alternative 4, the Ocotillo Sol Project would not be approved and no ROW grant would be issued to the Applicant. The project area would remain in its existing condition, with no

construction of structures or facilities resulting in ground disturbance, and no impacts associated with the Ocotillo Sol Project would occur. Under Alternative 4, the CDCA Plan would be amended to identify the Ocotillo Sol Project area as suitable for solar energy development. As a result, a project might be proposed in the future using the same or different solar energy technology on the project site, possibly resulting in impacts similar to the proposed Ocotillo Sol Project. The impacts of such a future project, however, are speculative at this time.

Under Alternative 5, the Ocotillo Sol Project would not be approved and no ROW grant would be issued to the Applicant. The project area would remain in its existing condition, with no construction of structures or facilities resulting in ground disturbance, and no impacts associated with the Ocotillo Sol Project would occur. Under Alternative 5, the CDCA Plan would be amended to identify the Ocotillo Sol Project area as unsuitable for solar energy development.

There would be no direct or indirect adverse impacts to visual resources under Alternatives 1, 4, and 5.

4.13.3.2 ALTERNATIVE 2

Under Alternative 2, the Applicant would construct, operate, maintain, and decommission a 100-acre solar PV facility on BLM-managed lands under an authorized ROW. This alternative includes a 15-acre temporary ROW that would be used as a laydown area during construction of the solar facility. Construction of the Ocotillo Sol Project would include grading, excavation, trenching, fencing, installation of solar panels, and construction of buildings.

4.13.3.2.1 Visual Contrast Rating and VRM Objectives

BLM's Visual Contrast Rating System is a systematic process used to analyze potential visual impacts of proposed projects and activities. The underlying assumption is that the degree of visual impact depends on the visual contrast created by a project. Visual contrast is analyzed from the KOPs. To evaluate the potential visual contrast between the constructed project and the surrounding landscape, a Visual Contrast Rating form was prepared for each of three KOPs (see Appendix L). The KOP contrast ratings were then compared with the objectives for the recommended Interim VRM Class to determine the extent to which the contrast would meet the objectives and be compatible with the VRM Class.

The description of views of the Ocotillo Sol Project area from the KOP locations, and the potential effects on those views are summarized below and discussed in detail in the Visual Contrast Forms in Appendix L, which includes representative photographs taken from the KOPs and visual simulations of the proposed project.

KOP 1. *Location*: On Interstate 8 at Dunaway Interchange, 5.6 miles northwest of the Ocotillo Sol Project area.

Description of View of Project Area from KOP: From this and similar locations along Interstate 8, views of the Ocotillo Sol Project would be indistinguishable due to the low angle of view and intervening line-of-sight obstructions between the KOP and the project area—vegetation, topography, and existing structures at the existing Imperial Valley Substation (the Imperial Valley Substation itself is

indiscernible at this distance and blocks most views of the project area from locations along Interstate 8).

Other environmental factors that diminish the visibility and would reduce the visual contrast of the Ocotillo Sol Project from this KOP include the following:

- Length of time the project area is in view: viewers traveling along Interstate 8 have only brief glimpses of the project area due to intervening obstructions described above and their movement along the highway.
- Spatial relationship: compared to the visible panoramic landscape of the Yuha Basin, the project area is relatively obscured and not visually prominent.
- Relative size and scale: compared to the visible expanse of the landscape setting, the project area is relatively insignificant in size and scale.
- Atmospheric conditions: visibility of the project area is affected by natural haze and particulate matter, which diminish clarity and visual contrast.

In summary, the Ocotillo Sol Project would not dominate the view or draw the attention of observers in vehicles traveling eastbound or westbound along Interstate 8.

Degree of visual contrast from this KOP: none-to-weak.

Level of potential effect: No visual impact.

KOP 2. *Location*: On Highway 98, Imperial Highway at the Imperial Valley Substation access road, 3.6 miles southwest of the Ocotillo Sol Project area.

Description of View of Project Area from KOP: From this location along Highway 98, views of the Ocotillo Sol Project area would be indistinguishable due to the low angle of view and intervening line-of-sight obstructions between the KOP and the project area—primarily vegetation and topography (the Imperial Valley Substation itself is indiscernible at this distance). Other environmental factors that affect visibility and would reduce the visual contrast of the project from this KOP include those described above for KOP 1.

In summary, the Ocotillo Sol Project would not dominate the view or draw the attention of viewers in vehicles traveling eastbound or westbound along Highway 98.

Degree of visual contrast from this KOP: none-to-weak.

Level of potential effect: No visual impact.

KOP 3. *Location*: On Highway98, Imperial Highway at the Mount Signal Road approximately 2.5 miles southeast of the Ocotillo Sol Project area, at approximately the same elevation.

Description of View of Project Area from KOP: From this location along Highway 98, views of the Ocotillo Sol Project area would be nearly indistinguishable due to the low angle of view and intervening line-of-sight obstructions between the KOP and the project area—primarily vegetation and topography (the Imperial Valley Substation and transmission line towers are barely discernible in the distance). Other environmental factors that affect visibility and would reduce the visual contrast of the project from this KOP include those described above for KOP 1.

The Ocotillo Sol Project would not dominate the view or draw the attention of viewers in vehicles traveling eastbound or westbound along Highway 98.

Degree of visual contrast from this KOP: none-to-weak. From certain locations, the project may be seen and could attract attention of viewers, but it would not dominate the view of the casual observer.

Level of potential effect: Minor effect; low level of visual impact.

For all KOPs, the expected degree of visual contrast of the Ocotillo Sol Project would meet and be compatible with the VRM Objective of Class III: to partially retain the existing character of the landscape. The level of change to the 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 (BLM 1984).

An Interim VRM Class III assignment for the Ocotillo Sol Project area is consistent with the CDCA prescriptions and the inventory class (VRI Class III). The project would be constructed and maintained in conformance with the VRM Class III objective, and would not result in adverse visual impacts under Alternative 2.

4.13.3.2.2 Visual Inventory Values

In addition to determining consistency with VRM objectives, BLM analyzes potential impacts to the underlying Visual Inventory Values, which include scenic quality, visual sensitivity, and distance zones. As described in Section 3.14, the Ocotillo Sol Project area lies within a landscape setting that was inventoried to have the following visual values:

Scenic Quality: As with the majority (71 percent) of lands within the Yuha Basin, the Ocotillo Sol Project area was rated C (low), a featureless area having relatively low scenic quality. The area is not unique, and has little visual diversity.

Sensitivity Level: The overall rating of the Yuha Basin was high (Maintenance of Visual Quality has High Value). Contributing to this is the presence of the Juan Bautista de Anza National Historic Trail. The site-specific inventory of sensitivity for the Ocotillo Sol Project area considered this area to be less sensitive than other areas within the Yuha Basin due in part to its location immediately adjacent to the Imperial Valley Substation, near the far eastern boundary of the Yuha Basin, and near cultivated agricultural lands.

Distance Zone: The Ocotillo Sol Project area was identified as being within the foreground–middleground zone (area that can be seen from a travel route for a distance of 3 to 5 miles).

These values resulted in the assignment of VRI Class III. The BLM's proposed Interim VRM Class III and its management objective are consistent with and would support VRI Class III visual inventory values. Visual Inventory Values would not be diminished by the assignment of Interim VRM Class III or the proposed Ocotillo Sol Project.

4.13.3.2.3 Other Considerations

Dust control measures would be included as BMPs to help reduce potential air quality concerns associated with the construction and operational phases of the Ocotillo Sol Project. Dust control of the Ocotillo Sol Project area, lay down areas, and the access road during construction would be accomplished by using water applied by trucks or other palliative means deemed acceptable by BLM. Impacts to visual resources from dust emissions would be temporary and negligible under Alternative 2.

Decommissioning of the Ocotillo Sol Project would include removal of all equipment, buildings, fencing, and other facilities, and preparation of the site for reclamation. The Applicant would develop and implement a detailed decommissioning plan that includes specific procedures to visually restore the site to predevelopment conditions, including restorative grading, erosion control, and revegetation. This plan would also require monitoring of the site for a five-year period and evaluating the conformance using the VRM Contrast Rating procedures. The Applicant would submit an annual report to the BLM documenting the status, and the BLM would determine if corrective actions were necessary. A separate NEPA document would be completed to analyze the potential effects of the alternatives for decommissioning and reclamation. A bond would be required from the Applicant to ensure that decommission and reclamation is completed.

The revegetation required to restore the site's visual appearance to pre-construction state (i.e., creosote bush–white burr sage scrub vegetation) would be detailed in a Restoration Plan to be prepared and implemented to ensure the restoration of the decommissioned site is successful. Decommissioning of the solar facility and habitat restoration would result in beneficial long-term impacts to visual resources of the area. Review and approval of this Restoration Plan by BLM VRM staff would be required as part of the project approval and permitting process.

The Ocotillo Sol Project area is either not visible or is seldom seen from most locations within the Jacumba Mountains Wilderness over 12 miles to the west/southwest. Certain locations at higher elevations and on east facing slopes within the Jacumba Mountains Wilderness have a line of sight to the Ocotillo Sol Project area, but from these distances, the project would be within distant background views and would not dominate nor detract from the viewshed. The project would not visually dominate views from these locations due to the small size and scale within the overall viewshed, visual collocation with the existing substation, and the background agricultural development.

Views of the Ocotillo Sol Project area from the Juan Bautista de Anza National Historic Trail, at its nearest 4.5 miles to the south and southwest, would also be obstructed or indistinguishable

due to intervening vegetation and topography. The Ocotillo Sol Project area would not be visible from the Vista de Anza Kiosk and viewpoint, due to the 10.5-mile distance of intervening vegetation, and topography.

Views of the Ocotillo Sol Project from Mount Signal, a potentially sensitive cultural landscape feature in Mexico, and over 4 miles to the south, would be limited to locations at higher elevations and north-facing slopes with a direct line-of-sight to the project. The Ocotillo Sol Project would not visually dominate views from these locations due to the relative small size and scale of the project within the overall viewshed, visual collocation with the existing substation, the background agricultural development, and other environmental factors discussed above.

Construction, operation and maintenance, and decommissioning activities for the Ocotillo Sol Project would not impact these areas under Alternative 2.

There are no federally, state-, or county-designated scenic highways within 15 miles or within viewing distance of the Ocotillo Sol Project area. No visual impacts to these areas would occur under Alternative 2.

4.13.3.2.3 Light and Glare

The Ocotillo Sol Project would require lighting to achieve nighttime safety and security objectives. Lighting fixtures would be minimized, and would be shielded and directed downward to minimize overthrow and spillover. The Ocotillo Sol Project would not result in adverse visual impacts to nighttime views in the area. The PV modules and other project materials are non-reflective and would not create a source of glare during daytime hours. No adverse visual impacts from glare are anticipated under Alternative 2.

4.13.3.3 ALTERNATIVE 3

Under Alternative 3, the Applicant would construct, operate, maintain, and decommission a 100-acre solar PV facility on BLM-managed lands under an authorized ROW. The 15-acre temporary ROW described under Alternative 2 would be reduced to 2 acres under Alternative 3. The 2-acre temporary ROW would provide for parking during construction of the Ocotillo Sol Project. Laydown and staging would occur within the 100-acre ROW as construction activities progress.

Impacts to visual resources under Alternative 3 would be similar to those described for Alternative 2, except the project footprint would be 102 acres under Alternative 3. Under Alternative 3, the expected level of visual contrast is compatible with the VRM objectives for Class III. Construction, operation and maintenance, and decommissioning related activities for the Ocotillo Sol Project would not impact views from the Jacumba Mountains Wilderness, Juan Bautista de Anza National Historic Trail, or Mount Signal under Alternative 3. No adverse visual impacts from glare are anticipated under Alternative 3.

4.13.4 CUMULATIVE IMPACTS

4.13.4.1 GEOGRAPHIC SCOPE

The cumulative analysis impact area for visual resources is an approximately 15-mile radius around the Ocotillo Sol Project area. This area encompasses the immediate project viewshed as well as residential areas, the Yuha Basin ACEC, the Juan Bautista de Anza National Historic Trail, the Interstate 8 and Highway 98 corridors, and the eastern portion of the Jacumba Mountains Wilderness.

Past, present, and reasonably foreseeable future projects are listed in Table 4.1-1. Projects within the cumulative analysis impact area are listed in Table 4.1-2. Project or actions include BLM actions (within BLM-administered lands) such as ongoing road maintenance and recreation designations. Other actions include the following: Imperial Valley Substation operation and maintenance, Imperial Valley Substation expansion for North Gila to Imperial Valley Substation #2 transmission line, Sunrise Powerlink, transmission and utility corridor maintenance, Interstate 8 and Highway 98, agricultural activities, recreational activity, North Gila to Imperial Valley Substation #2 transmission line, Dixieland Imperial Irrigation District transmission line and connection, Geothermal Overlay, Rancho Los Lagos, Brookfield Specific Plan, Desert Springs Oasis, Alder 70, Mosaic Specific Plan, sand and gravel mining, and Imperial Irrigation District canal and drain maintenance. Renewable energy projects include the following:

Calexico Solar Farm II
Mount Signal Solar Farm
Calexico Solar Farm I
Imperial Solar Energy Center South Solar Farm
Centinela Solar Farm
Acorn Greenworks Solar Farm
Silverleaf Solar Farm
Campo Verde Solar Farm (and shared transmission line with Silverleaf Solar Farm)
Imperial Solar Energy Center West Solar Farm
Keystone Solar
Ocotillo Express Wind Farm

The existing condition for visual resources in the Ocotillo Sol Project area, which represents the aggregate effect of past and present actions, is described in Chapter 3, Section 3.14. The reasonably foreseeable future projects listed above would result in adverse impacts to visual resources in the area. The combination of these industrial development projects could deteriorate the scenic quality of an area and create emissions that cause visual impacts. Reasonably foreseeable future projects would occur outside of special designation areas and primarily within fallow agricultural fields or adjacent to existing industrial development or structures (e.g., along existing utility corridors or adjacent to the Imperial Valley Substation). Cumulative impacts to visual resources from reasonably foreseeable future development are anticipated to be negligible overall.

4.13.4.2 ALTERNATIVES 1, 4, AND 5

Based on direct and indirect impact analysis presented in Section 4.13.3, it is expected that Alternatives 1, 4, and 5 would not result in adverse impacts to visual resources. These alternatives, in combination with other reasonably foreseeable future projects, would not contribute to cumulative adverse impacts to visual resources within the 15-mile geographic extent.

4.13.4.3 ALTERNATIVES 2 AND 3

Alternatives 2 and 3, when combined with other reasonably foreseeable future projects, could dominate the views in the area and be the major focus of viewer attention, depending on viewer distance to the projects. This expected level of visual contrast is compatible with the VRM objectives for the area.

Alternatives 2 and 3, in combination with other reasonably foreseeable future projects, would result in dust emissions primarily during construction. Dust control measures would be implemented for all projects to minimize emissions. Habitat Restoration Plans for most reasonably foreseeable future projects as well as for Alternatives 2 and 3 would be implemented to restore disturbed areas upon decommissioning. With these measures, potential cumulative impacts to visual resources would be negligible.

Construction, operation and maintenance, and decommissioning related activities for the Ocotillo Sol Project, in combination with other reasonably foreseeable future projects would not likely result in cumulative impacts the Jacumba Mountains Wilderness, Juan Bautista de Anza National Historic Trail, or Mount Signal. No cumulative impacts to visual resources are anticipated under Alternatives 2 and 3 in combination with other reasonably foreseeable future projects in the area.

4.13.5 MITIGATION

The overall goal of the VRM system is to minimize visual impacts. The BLM requires mitigation of visual contrast that can reduce visual impacts, even for projects such as the Ocotillo Sol Project that would meet visual objectives and would have no adverse effects on visual resources. This requirement gives consideration to the ability to view the project from locations other than KOPs.

Mitigation measures outlined under the air section (dust control; Section 4.2.6) and biology section (restoration; Section 4.6.4) would also mitigate visual contrast. Dust control measures implemented as part of BMPs would also reduce potential visual resource impacts.

Additional mitigation should include surface treatment and color selection, as follows:

Coloration of the inverter boxes, buildings and other structural support facilities should be gray or other earth tones as approved by BLM.

The chain link fence, PV panel brackets, and other exposed support structures and other metal surfaces should also be color treated (polyvinyl coated or acid-etched) to reduce galvanized surface reflectivity.

4.13.6 IRREVERSIBLE AND IRRETRIEVABLE COMMITMENT OF RESOURCES

Impacts to visual resources from dust emissions would be temporary and with the implementation of duct control measures would be minimized. This impact would not be avoidable; however, mitigation measures as well as the short duration of the impact would result in minimal, if any, changes in viewshed. No direct or indirect impacts to visual resources would occur due to the Ocotillo Sol Project and no irreversible and irretrievable commitment of visual resources would occur.

4.14 TRANSPORTATION AND ACCESS

4.14.1 MANAGEMENT GOALS

Although the CDCA Plan does not have any formal management goals for transportation, the Motorized Vehicle Access Element states, "Based on implementation priorities, BLM will, with assistance from the public, determine which routes in [multiple use] Class L and M areas need to be closed or limited in some other way. Route approval will be based on these considerations" (BLM 1999).

4.14.2 TYPICAL IMPACTS FROM SOLAR ENERGY DEVELOPMENT

Impacts to transportation and access could be caused by increased vehicle access to the area related to construction and operations of solar facilities. An increased number of vehicles, including large hauling vehicles with equipment, could cause traffic delays, degrade roadways, or block access routes.

The amount of vehicle traffic would be directly proportional to the number of vehicles needed during the construction period. Table 2-3 details the construction labor force by month for the Ocotillo Sol Project, construction is estimated to last approximately 11 months. The number of personnel would range from 10 to a peak of 270 (occurring one month during the peak of construction, approximately the eighth month). The short-term (11 months) construction period would have the highest intensity of vehicle trips and the operation and maintenance period would have significantly fewer vehicle trips.

4.14.3 IMPACTS BY ALTERNATIVE

4.14.3.1 ALTERNATIVES 1, 4, AND 5

Under Alternative 1, the Ocotillo Sol Project would not be approved by the BLM and the CDCA Plan would not be amended. The Ocotillo Sol Project would not be constructed and the BLM would continue to manage the site consistent with the CDCA Plan (1980, as amended), Yuha Basin ACEC Management Plan (1981), Yuha Desert Wildlife Habitat Management Plan (1983), Yuha Desert Management Plan (1985), and the *Flat-tailed Horned Lizard Rangewide Management Strategy*.

Under Alternative 4, the Ocotillo Sol Project would not be approved and no ROW grant would be issued to the Applicant. The project area would remain in its existing condition, with no construction of structures or facilities resulting in ground disturbance, and no impacts associated with the Ocotillo Sol Project would occur. Under Alternative 4, the CDCA Plan would be amended to identify the Ocotillo Sol Project area as suitable for solar energy development. As a result, a project might be proposed in the future using the same or different solar energy technology on the project site, possibly resulting in impacts similar to the proposed Ocotillo Sol Project. The impacts of such a future project, however, are speculative at this time.

Under Alternative 5, the Ocotillo Sol Project would not be approved and no ROW grant would be issued to the Applicant. The project area would remain in its existing condition, with no construction of structures or facilities resulting in ground disturbance, and no impacts associated with the Ocotillo Sol Project would occur. Under Alternative 5, the CDCA Plan would be amended to identify the Ocotillo Sol Project area as unsuitable for solar energy development.

No changes in traffic or access would occur under these alternatives. Alternatives 1, 4, and 5 would not result in direct or indirect impacts to transportation and access in the project area.

4.14.3.2 ALTERNATIVE 2

Under Alternative 2, the Applicant would construct, operate, maintain, and decommission a 100-acre solar PV facility on BLM-managed lands under an authorized ROW. This alternative includes a 15-acre temporary ROW that would be used as a laydown area during construction of the solar facility.

Under Alternative 2, during the estimated 11-month construction period, the workforce would reach a peak of approximately 270 workers with hours generally between 7:00 A.M. and 7:00 P.M. Equipment delivery and construction vehicles would also travel to the Ocotillo Sol Project area during the construction period (see Table 2-3). Minimal vehicle travel related to workforce or equipment would occur during operation and maintenance or decommissioning.

According to a traffic analysis conducted for a neighboring project, all intersections within the vicinity of the Ocotillo Sol Project area currently operate at LOS C or better during peak hours (LOS Engineering as cited in BLM 2010). Additionally, all freeway segments operate at LOS B or better and all roadway segments operate at LOS A within the vicinity of the Ocotillo Sol Project area (LOS Engineering as cited in BLM 2010). Based on these current intersection and freeway LOSs, the Ocotillo Sol Project would not cause a significant increase in traffic during the peak construction period. Under Alternative 2, construction, operation and maintenance, and decommissioning would not result in direct or indirect impacts to traffic conditions in the project area. Access to the project area would not be affected by actions under this alternative. Adequate parking for the workforce and equipment has been planned.

4.14.3.3 ALTERNATIVE 3

Under Alternative 3, the Applicant would construct, operate, maintain, and decommission a 100-acre solar PV facility on BLM-managed lands under an authorized ROW. The 15-acre temporary ROW described under Alternative 2 would be reduced to 2 acres under Alternative 3. The 2-acre temporary ROW would provide for parking during construction of the Ocotillo Sol Project. Laydown and staging would occur within the 100-acre ROW as construction activities progress.

Impacts under Alternative 3 would be the same as those described above under Alternative 2. The workforce needed for construction, operation and maintenance, and decommissioning would be the same as Alternative 2. Under Alternative 3, construction, operation and maintenance, and decommissioning would not result in direct or indirect impacts to traffic conditions in the project

area. Access to the project area would not be affected by actions under this alternative. Adequate parking for the workforce and equipment has been planned.

4.14.4 CUMULATIVE IMPACTS

4.14.4.1 GEOGRAPHIC SCOPE

The cumulative analysis impact area for transportation and access is an approximate 2-mile radius surrounding the Ocotillo Sol Project area. This area includes all projects that could create an increase in traffic volumes at the same intersections and street segments as the Ocotillo Sol Project. The traffic volumes during construction would not be large and no changes in traffic volumes would occur during the operation and maintenance period. Therefore, intersections and street segments in the immediate vicinity (2-mile radius) are sufficient for cumulative analysis.

Past, present, and reasonably foreseeable future projects are listed in Table 4.1-1. Projects within the cumulative analysis impact area are listed in Table 4.1-2. Projects or actions within the 2-mile radius include BLM actions (within BLM-administered lands) such as ongoing road maintenance and recreation designations. Other actions include Imperial Valley Substation operation and maintenance, Imperial Valley Substation expansion for North Gila to Imperial Valley Substation #2 transmission line, Sunrise Powerlink, transmission and utility corridor maintenance, agricultural activities, recreational activity, North Gila to Imperial Valley Substation #2 transmission line, Dixieland Imperial Irrigation District transmission line and connection, and Imperial Irrigation District canal and drain maintenance. Renewable energy projects (and associated transmission lines) include the following:

Calexico Solar Farm II
Mount Signal Solar farm
Calexico Solar Farm I
Imperial Solar Energy Center South solar farm
Centinela Solar farm
Acorn Greenworks Solar farm
Silverleaf Solar Farm
Campo Verde Solar farm (and shared transmission line with Silverleaf solar farm)
Imperial Solar Energy Center West solar farm

The existing condition for transportation and access in the Ocotillo Sol Project area, which represents the aggregate effect of past and present actions, is described in Chapter 3, Section 3.15. The reasonably foreseeable future projects listed above could result in short-term adverse impacts to transportation and access, primarily during construction and decommissioning activities. The combination of these projects could result in increased traffic in the area. Operation and maintenance activities are anticipated to result in minimal, if any, significant changes in traffic or access.

4.14.4.2 ALTERNATIVES 1, 4, AND 5

Based on direct and indirect impact analysis presented in Section 4.14.3, it is expected that Alternatives 1, 4, and 5 would not result in impacts to transportation and access. These

alternatives would not increase traffic volumes or disrupt access. These alternatives, in combination with other reasonably foreseeable future projects, would not contribute to cumulative impacts to transportation and access.

4.12.4.3 ALTERNATIVES 2 AND 3

Under Alternatives 2 and 3, no adverse impacts to transportation and access would occur. Approved renewable energy projects or those pending approval are not expected to be under peak construction concurrent with the proposed Ocotillo Sol Project (cumulative peak construction would not likely coincide with construction activities described under Alternatives 2 and 3) and would not result in significant increases in traffic from multiple ongoing projects. These alternatives, in combination with other reasonably foreseeable future projects, would not result in an increase of traffic volumes or disrupt access. Renewable energy projects in the vicinity would not likely have the same construction schedule and would not result in a significant increase in traffic volumes. Alternatives 2 and 3, when combined with other reasonably foreseeable future projects, are not expected to result in cumulative impacts to transportation and access.

4.14.5 MITIGATION

No mitigation measures for transportation and access would be required.

4.14.6 IRREVERSIBLE AND IRRETRIEVABLE COMMITMENT OF RESOURCES

No direct or indirect impacts to transportation and access would occur due to the Ocotillo Sol Project and no irreversible and irretrievable commitment of these resources would occur. No unavoidable adverse impacts to transportation and access are expected to occur.

4.15 NOISE AND VIBRATION

4.15.1 MANAGEMENT GOALS

Although the CDCA Plan does not have any formal management goals for noise, the Motorized Vehicle Access Element states:

- Based on implementation priorities, BLM, with assistance from the public, will determine which routes in [multiple use] Class L and M areas need to be closed or limited in some other way. Route approval will be based on these considerations (from 43 CFR 8342.1).
- Areas and trails shall be located to minimize conflicts between off-road vehicle use and other existing or proposed recreational uses of the same or neighboring public lands, and to ensure the compatibility of such uses with existing conditions in populated areas, taking into account noise and other factors.

4.15.2 TYPICAL IMPACTS FROM SOLAR ENERGY DEVELOPMENT

Solar energy development would generate noise but would not expose noise-sensitive land uses to new noise sources. Noise impacts would be associated with the use of construction equipment during development primarily as solar field operation would produce little if any noise. The principal noise sources during construction would be construction equipment. New noise sources during operations would be vehicles that would access solar field and maintenance related activities.

4.15.3 IMPACTS BY ALTERNATIVE

4.15.3.1 ALTERNATIVES 1, 4, AND 5

Under Alternative 1, the Ocotillo Sol Project would not be approved by the BLM and the CDCA Plan would not be amended. The Ocotillo Sol Project would not be constructed and the BLM would continue to manage the site consistent with the CDCA Plan (1980, as amended), Yuha Basin ACEC Management Plan (1981), Yuha Desert Wildlife Habitat Management Plan (1983), Yuha Desert Management Plan (1985), and the *Flat-tailed Horned Lizard Rangewide Management Strategy*.

Under Alternative 4, the Ocotillo Sol Project would not be approved and no ROW grant would be issued to the Applicant. The project area would remain in its existing condition, with no construction of structures or facilities resulting in ground disturbance, and no impacts associated with the Ocotillo Sol Project would occur. Under Alternative 4, the CDCA Plan would be amended to identify the Ocotillo Sol Project area as suitable for solar energy development. As a result, a project might be proposed in the future using the same or different solar energy technology on the project site, possibly resulting in impacts similar to the proposed Ocotillo Sol Project. The impacts of such a future project, however, are speculative at this time.

Under Alternative 5, the Ocotillo Sol Project would not be approved and no ROW grant would be issued to the Applicant. The project area would remain in its existing condition, with no construction of structures or facilities resulting in ground disturbance, and no impacts associated with the Ocotillo Sol Project would occur. Under Alternative 5, the CDCA Plan would be amended to identify the Ocotillo Sol Project area as unsuitable for solar energy development.

There would be no direct or indirect noise related impacts under Alternatives 1, 4, and 5.

4.15.3.2 ALTERNATIVE 2

Under Alternative 2, the Applicant would construct, operate, maintain, and decommission a 100-acre solar PV facility on BLM-managed lands under an authorized ROW. This alternative includes a 15-acre temporary ROW that would be used as a laydown area during construction of the solar facility. Construction of the Ocotillo Sol Project would include grading, foundation excavation, trenching, and fencing.

4.15.3.2.1 Construction

Construction equipment noise levels vary widely with the equipment used and activity level or duty cycle. In a typical construction project, the loudest short-term noise levels last for a few minutes during each cycle. The nature of construction projects, with equipment moving from one point to another, work breaks, and idle time, is such that long-term noise averages are less than short-term noise levels.

Construction noise generally can be treated as a point source and would attenuate at a rate of 6 dBA for every doubling of distance over hard site conditions (e.g., a noise level of 90 dBA at 50 feet will be 84 dBA at 100 feet, 78 dBA at 200 feet, and 72 dBA at 390 feet). The equation for this calculation is as follows:

$$\Delta \text{ dBA} = 20 \log (D_o \backslash D)$$

where

Δ dBA = change in noise level due to distance
D = distance from source
D_o = reference distance from source

For noise levels expressed as decibels, the change amounts to 6 dBA for each doubling of distance.

This calculated attenuation was then subtracted from the reference value to determine the noise level at the desired distance. The equation for this calculation is as follows:

$$L_{eq} = L_{max} - \Delta \text{ dBA}$$

where

L_{max} = A-weighted maximum sound level, measured at a distance of 50 feet from the construction equipment.

The Ocotillo Sol Project construction period is estimated to last anticipated 11 months, as discussed in Section 4.2 (Air Quality). The project's overall construction schedule is outlined in

Table 4.2-3. Construction equipment parameters (e.g., types, hours of operation) were provided by the applicant and are summarized in Table 4.2.4 for each phase.

Construction noise levels were analyzed for each individual phase of construction and per month of construction. Depending on the construction month, one to four different phases could occur simultaneously (Table 4.15.1).

TABLE 4.15.1
CONSTRUCTION PHASES BY MONTH

Construction Month	Phase(s)
1	Site Preparation/Access Roads
2	Module Rack Supports
3	Module Rack Supports
	Security Fencing
	Underground Electrical
4	Module Rack Supports
	Underground Electrical
	Rack Installation
5	Underground Electrical
	Rack Installation
	Module Installation
6	Rack Installation
	Module Installation
7	Rack Installation
	Module Installation
	Above Ground Electrical
8	Module Installation
	Above Ground Electrical
	Power Conversion Stations
	Maintenance Building
9	Module Installation
	Power Conversion Stations
	Maintenance Building
10	Maintenance Building
	Combining Switchgear
11	Maintenance Building
	Commissioning

As seen in Table 4.2-4, the duration (number of days) each piece of equipment would be used per phase varies. As a worst-case scenario, all equipment was assumed to be in use simultaneously.

As seen in Table 4.15-2, noise levels for each phase of construction range from 93.9 to 97.0 dBA at a distance of 50 feet from the source. The projected noise levels would be loudest during the Maintenance Building phase.

As seen in Table 4.15-3, noise levels for each month of construction range from 94.3 to 101.9 dBA a distance of 50 feet from the source. The projected noise levels would be loudest during construction month 8 when the Module Installation, Above Ground Electrical, Power Conversion Stations, and Maintenance Building phases could occur simultaneously.

TABLE 4.15-2
CONSTRUCTION NOISE LEVEL BY PHASE (dBA)

Phase	Equipment	Quantity	Typical Sound Pressure Level at 50 feet from Source (dBA)	Hours Per Day	Usage Factor	Noise Level for 1 Unit (dBA)	Total Noise Level (dBA)	Total Noise Level per Phase (dBA)
Site Preparation/ Access Roads	ATV	10	79	4	50.00%	76.0	86.0	96.4
Site Preparation/ Access Roads	Backhoe/trencher	2	85	8	100.00%	85.0	88.0	96.4
Site Preparation/ Access Roads	Dump Truck	2	88	8	100.00%	88.0	91.0	96.4
Site Preparation/ Access Roads	Front End Loader	1	85	8	100.00%	85.0	85.0	96.4
Site Preparation/ Access Roads	Generators/Compressors	1	81	8	100.00%	81.0	81.0	96.4
Site Preparation/ Access Roads	Grader	1	85	8	100.00%	85.0	85.0	96.4
Site Preparation/ Access Roads	Personal cars	20	74	2	25.00%	68.0	81.0	96.4
Site Preparation/ Access Roads	Roller/Compactor	1	74	8	100.00%	74.0	74.0	96.4
Site Preparation/ Access Roads	Scraper/Dozer	1	85	8	100.00%	85.0	85.0	96.4
Site Preparation/ Access Roads	Semi	1	86	4	50.00%	83.0	83.0	96.4
Site Preparation/ Access Roads	Water Truck	2	88	4	50.00%	85.0	88.0	96.4
Module Rack Supports	ATV	10	79	8	100.00%	79.0	89.0	94.3
Module Rack Supports	Crew Delivery Bus	3	80	2	25.00%	74.0	78.8	94.3
Module Rack Supports	Flat-bed truck	2	88	2	25.00%	82.0	85.0	94.3
Module Rack Supports	Personal cars	20	74	1	12.50%	65.0	78.0	94.3
Module Rack Supports	Semi	1	86	4	50.00%	83.0	83.0	94.3
Module Rack Supports	Vibratory Post Driver	2	85	8	100.00%	85.0	88.0	94.3

TABLE 4.15-2
CONSTRUCTION NOISE LEVEL BY PHASE (dBA)

Phase	Equipment	Quantity	Typical Sound Pressure Level at 50 feet from Source (dBA)	Hours Per Day	Usage Factor	Noise Level for 1 Unit (dBA)	Total Noise Level (dBA)	Total Noise Level per Phase (dBA)
Module Rack Supports	Water Truck	2	88	4	50.00%	85.0	88.0	94.3
Security Fencing	ATV	10	79	4	50.00%	76.0	86.0	95.1
Security Fencing	Backhoe/trencher	2	85	8	100.00%	85.0	88.0	95.1
Security Fencing	Concrete Truck	1	88	8	100.00%	88.0	88.0	95.1
Security Fencing	Flat-bed truck	2	88	4	50.00%	85.0	88.0	95.1
Security Fencing	Forklift	2	83	8	100.00%	83.0	86.0	95.1
Security Fencing	Hand-held Vibrator	2	82	8	100.00%	82.0	85.0	95.1
Security Fencing	Personal cars	20	74	1	12.50%	65.0	78.0	95.1
Security Fencing	Semi	1	86	4	50.00%	83.0	83.0	95.1
Underground Electrical	ATV	10	79	8	100.00%	79.0	89.0	95.1
Underground Electrical	Backhoe/trencher	2	85	8	100.00%	85.0	88.0	95.1
Underground Electrical	Crew Delivery Bus	3	80	2	25.00%	74.0	78.8	95.1
Underground Electrical	Flat-bed truck	2	88	2	25.00%	82.0	85.0	95.1
Underground Electrical	Forklift	2	83	4	50.00%	80.0	83.0	95.1
Underground Electrical	Hand Held Vibrator	2	82	8	100.00%	82.0	85.0	95.1
Underground Electrical	Personal cars	20	74	1	12.50%	65.0	78.0	95.1
Underground Electrical	Roller/Compactor	1	74	8	100.00%	74.0	74.0	95.1
Underground Electrical	Semi	1	86	4	50.00%	83.0	83.0	95.1
Underground Electrical	Water Truck	2	88	4	50.00%	85.0	88.0	95.1
Rack Installation	ATV	10	79	8	100.00%	79.0	89.0	93.9
Rack Installation	Cranes/Lifts	1	83	8	100.00%	83.0	83.0	93.9
Rack Installation	Crew Delivery Bus	3	80	2	25.00%	74.0	78.8	93.9
Rack Installation	Flat-bed truck	2	88	2	25.00%	82.0	85.0	93.9
Rack Installation	Forklift	2	83	4	50.00%	80.0	83.0	93.9
Rack Installation	Personal cars	20	74	1	12.50%	65.0	78.0	93.9
Rack Installation	Semi	1	86	4	50.00%	83.0	83.0	93.9
Rack Installation	Water Truck	2	88	4	50.00%	85.0	88.0	93.9

TABLE 4.15-2
CONSTRUCTION NOISE LEVEL BY PHASE (dBA)

Phase	Equipment	Quantity	Typical Sound Pressure Level at 50 feet from Source (dBA)	Hours Per Day	Usage Factor	Noise Level for 1 Unit (dBA)	Total Noise Level (dBA)	Total Noise Level per Phase (dBA)
Module Installation	ATV	10	79	8	100.00%	79.0	89.0	93.9
Module Installation	Crew Delivery Bus	3	80	2	25.00%	74.0	78.8	93.9
Module Installation	Flat-bed truck	2	88	2	25.00%	82.0	85.0	93.9
Module Installation	Forklift	2	83	8	100.00%	83.0	86.0	93.9
Module Installation	Personal cars	20	74	1	12.50%	65.0	78.0	93.9
Module Installation	Semi	1	86	4	50.00%	83.0	83.0	93.9
Module Installation	Water Truck	2	88	4	50.00%	85.0	88.0	93.9
Aboveground Electrical	ATV	10	79	8	100.00%	79.0	89.0	95.7
Aboveground Electrical	Concrete Truck	1	88	8	100.00%	88.0	88.0	95.7
Aboveground Electrical	Cranes/Lifts	1	83	8	100.00%	83.0	83.0	95.7
Aboveground Electrical	Crew Delivery Bus	3	80	2	25.00%	74.0	78.8	95.7
Aboveground Electrical	Flat-bed truck	2	88	2	25.00%	82.0	85.0	95.7
Aboveground Electrical	Forklift	2	83	4	50.00%	80.0	83.0	95.7
Aboveground Electrical	Personal cars	20	74	1	12.50%	65.0	78.0	95.7
Aboveground Electrical	Semi	1	86	4	50.00%	83.0	83.0	95.7
Aboveground Electrical	Water Truck	2	88	8	100.00%	88.0	91.0	95.7
Power Conversion Stations	ATV	10	79	8	100.00%	79.0	89.0	96.2
Power Conversion Stations	Backhoe/trencher	2	85	8	100.00%	85.0	88.0	96.2
Power Conversion Stations	Concrete Truck	1	88	8	100.00%	88.0	88.0	96.2
Power Conversion Stations	Cranes/Lifts	1	83	8	100.00%	83.0	83.0	96.2
Power Conversion Stations	Crew Delivery Bus	3	80	2	25.00%	74.0	78.8	96.2
Power Conversion Stations	Flat-bed truck	2	88	2	25.00%	82.0	85.0	96.2
Power Conversion Stations	Forklift	2	83	4	50.00%	80.0	83.0	96.2
Power Conversion Stations	Generators/Compressors	1	81	8	100.00%	81.0	81.0	96.2
Power Conversion Stations	Hand Held Vibrator	2	82	8	100.00%	82.0	85.0	96.2
Power Conversion Stations	Personal cars	20	74	1	12.50%	65.0	78.0	96.2
Power Conversion Stations	Roller/Compactor	1	74	8	100.00%	74.0	74.0	96.2
Power Conversion Stations	Semi	1	86	4	50.00%	83.0	83.0	96.2

TABLE 4.15-2
CONSTRUCTION NOISE LEVEL BY PHASE (dBA)

Phase	Equipment	Quantity	Typical Sound Pressure Level at 50 feet from Source (dBA)	Hours Per Day	Usage Factor	Noise Level for 1 Unit (dBA)	Total Noise Level (dBA)	Total Noise Level per Phase (dBA)
Power Conversion Stations	Water Truck	2	88	4	50.00%	85.0	88.0	96.2
Maintenance Building	ATV	10	79	8	100.00%	79.0	89.0	97.0
Maintenance Building	Backhoe/trencher	2	85	8	100.00%	85.0	88.0	97.0
Maintenance Building	Concrete Truck	1	88	8	100.00%	88.0	88.0	97.0
Maintenance Building	Cranes/Lifts	1	83	8	100.00%	83.0	83.0	97.0
Maintenance Building	Crew Delivery Bus	3	80	2	25.00%	74.0	78.8	97.0
Maintenance Building	Forklift	2	83	4	50.00%	80.0	83.0	97.0
Maintenance Building	Front End Loader	1	85	8	100.00%	85.0	85.0	97.0
Maintenance Building	Grader	1	85	8	100.00%	85.0	85.0	97.0
Maintenance Building	Personal cars	20	74	1	12.50%	65.0	78.0	97.0
Maintenance Building	Roller/Compactor	1	74	8	100.00%	74.0	74.0	97.0
Maintenance Building	Scraper/Dozer	1	85	8	100.00%	85.0	85.0	97.0
Maintenance Building	Semi	1	86	4	50.00%	83.0	83.0	97.0
Maintenance Building	Water Truck	2	88	8	100.00%	88.0	91.0	97.0
Combining Switchgear	ATV	10	79	8	100.00%	79.0	89.0	96.4
Combining Switchgear	Backhoe/trencher	2	85	8	100.00%	85.0	88.0	96.4
Combining Switchgear	Concrete Truck	1	88	8	100.00%	88.0	88.0	96.4
Combining Switchgear	Cranes/Lifts	1	83	8	100.00%	83.0	83.0	96.4
Combining Switchgear	Crew Delivery Bus	3	80	2	25.00%	74.0	78.8	96.4
Combining Switchgear	Flat-bed truck	2	88	2	25.00%	82.0	85.0	96.4
Combining Switchgear	Forklift	2	83	4	50.00%	80.0	83.0	96.4
Combining Switchgear	Personal cars	20	74	1	12.50%	65.0	78.0	96.4
Combining Switchgear	Semi	1	86	4	50.00%	83.0	83.0	96.4
Combining Switchgear	Water Truck	2	88	8	100.00%	88.0	91.0	96.4
Commissioning	ATV	10	79	8	100.00%	79.0	89.0	94.4
Commissioning	Cranes/Lifts	1	83	8	100.00%	83.0	83.0	94.4
Commissioning	Crew Delivery Bus	3	80	2	25.00%	74.0	78.8	94.4
Commissioning	Flat-bed truck	2	88	1	12.50%	79.0	82.0	94.4

TABLE 4.15-2
CONSTRUCTION NOISE LEVEL BY PHASE (dBA)

Phase	Equipment	Quantity	Typical Sound Pressure Level at 50 feet from Source (dBA)	Hours Per Day	Usage Factor	Noise Level for 1 Unit (dBA)	Total Noise Level (dBA)	Total Noise Level per Phase (dBA)
Commissioning	Forklift	2	83	2	25.00%	77.0	80.0	94.4
Commissioning	Generators/Compressors	1	81	8	100.00%	81.0	81.0	94.4
Commissioning	Personal cars	20	74	0.5	6.25%	62.0	75.0	94.4
Commissioning	Water Truck	2	88	8	100.00%	88.0	91.0	94.4

ATV = All-terrain vehicle

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TABLE 4.15-3
CONSTRUCTION NOISE LEVEL BY MONTH (dBA)

Construction Month	Phase(s) Occurring During Construction Month	Equipment	Quantity	Typical Sound Pressure Level at 50 feet from Source (dBA)	Hours Per Day	Usage Factor	Noise Level for 1 Unit (dBA)	Total Noise Level (dBA)	Total Noise Level per Month at 50 feet from Source (dBA)
1	Site Preparation / Access Roads	Grader	1	85	8	100.00%	85.0	85.0	96.4
1	Site Preparation / Access Roads	Scraper / Dozer	1	85	8	100.00%	85.0	85.0	96.4
1	Site Preparation / Access Roads	Front End Loader	1	85	8	100.00%	85.0	85.0	96.4
1	Site Preparation / Access Roads	Roller / Compactor	1	74	8	100.00%	74.0	74.0	96.4
1	Site Preparation / Access Roads	Dump Truck	2	88	8	100.00%	88.0	91.0	96.4
1	Site Preparation / Access Roads	Backhoe/trencher	2	85	8	100.00%	85.0	88.0	96.4
1	Site Preparation / Access Roads	Generators / Compressors	1	81	8	100.00%	81.0	81.0	96.4
1	Site Preparation / Access Roads	Water Truck	2	88	4	50.00%	85.0	88.0	96.4
1	Site Preparation / Access Roads	ATV	10	79	4	50.00%	76.0	86.0	96.4
1	Site Preparation / Access Roads	Semi	1	86	4	50.00%	83.0	83.0	96.4
1	Site Preparation / Access Roads	Personal cars	20	74	2	25.00%	68.0	81.0	96.4
2	Module Rack Supports	Vibratory Post Driver	2	85	8	100.00%	85.0	88.0	94.3
2	Module Rack Supports	Flat-bed truck	2	88	2	25.00%	82.0	85.0	94.3
2	Module Rack Supports	Water Truck	2	88	4	50.00%	85.0	88.0	94.3
2	Module Rack Supports	ATV	10	79	8	100.00%	79.0	89.0	94.3
2	Module Rack Supports	Crew Delivery Bus	3	80	2	25.00%	74.0	78.8	94.3
2	Module Rack Supports	Semi	1	86	4	50.00%	83.0	83.0	94.3
2	Module Rack Supports	Personal cars	20	74	1	12.50%	65.0	78.0	94.3
3	Module Rack Supports, Security Fencing, and Underground Electrical	ATV	20	79	8	100.00%	79.0	92.0	99.7
3	Module Rack Supports, Security Fencing, and Underground Electrical	ATV	10	79	4	50.00%	76.0	86.0	99.7
3	Module Rack Supports, Security Fencing, and Underground Electrical	Backhoe/trencher	4	85	8	100.00%	85.0	91.0	99.7
3	Module Rack Supports, Security Fencing, and Underground Electrical	Concrete Truck	1	88	8	100.00%	88.0	88.0	99.7
3	Module Rack Supports, Security Fencing, and Underground Electrical	Crew Delivery Bus	6	80	2	25.00%	74.0	81.8	99.7
3	Module Rack Supports, Security Fencing, and Underground Electrical	Flat-bed truck	4	88	2	25.00%	82.0	88.0	99.7
3	Module Rack Supports, Security Fencing, and Underground Electrical	Flat-bed truck	2	88	4	50.00%	85.0	88.0	99.7

TABLE 4.15-3
CONSTRUCTION NOISE LEVEL BY MONTH (dBA)

Construction Month	Phase(s) Occurring During Construction Month	Equipment	Quantity	Typical Sound Pressure Level at 50 feet from Source (dBA)	Hours Per Day	Usage Factor	Noise Level for 1 Unit (dBA)	Total Noise Level (dBA)	Total Noise Level per Month at 50 feet from Source (dBA)
3	Module Rack Supports, Security Fencing, and Underground Electrical	Forklift	2	83	8	100.00%	83.0	86.0	99.7
3	Module Rack Supports, Security Fencing, and Underground Electrical	Forklift	2	83	4	50.00%	80.0	83.0	99.7
3	Module Rack Supports, Security Fencing, and Underground Electrical	Hand Held Vibrator	4	82	8	100.00%	82.0	88.0	99.7
3	Module Rack Supports, Security Fencing, and Underground Electrical	Personal cars	60	74	1	12.50%	65.0	82.8	99.7
3	Module Rack Supports, Security Fencing, and Underground Electrical	Roller/Compactor	1	74	8	100.00%	74.0	74.0	99.7
3	Module Rack Supports, Security Fencing, and Underground Electrical	Semi	3	86	4	50.00%	83.0	87.8	99.7
3	Module Rack Supports, Security Fencing, and Underground Electrical	Vibratory Post Driver	2	85	8	100.00%	85.0	88.0	99.7
3	Module Rack Supports, Security Fencing, and Underground Electrical	Water Truck	4	88	4	50.00%	85.0	91.0	99.7
4	Module Rack Supports, Underground Electrical, and Rack Installation	ATV	30	79	8	100.00%	79.0	93.8	99.3
4	Module Rack Supports, Underground Electrical, and Rack Installation	Backhoe/trencher	2	85	8	100.00%	85.0	88.0	99.3
4	Module Rack Supports, Underground Electrical, and Rack Installation	Cranes/Lifts	1	83	8	100.00%	83.0	83.0	99.3
4	Module Rack Supports, Underground Electrical, and Rack Installation	Crew Delivery Bus	9	80	2	25.00%	74.0	83.5	99.3
4	Module Rack Supports, Underground Electrical, and Rack Installation	Flat-bed truck	6	88	2	25.00%	82.0	89.8	99.3
4	Module Rack Supports, Underground Electrical, and Rack Installation	Forklift	4	83	4	50.00%	80.0	86.0	99.3

TABLE 4.15-3
CONSTRUCTION NOISE LEVEL BY MONTH (dBA)

Construction Month	Phase(s) Occurring During Construction Month	Equipment	Quantity	Typical Sound Pressure Level at 50 feet from Source (dBA)	Hours Per Day	Usage Factor	Noise Level for 1 Unit (dBA)	Total Noise Level (dBA)	Total Noise Level per Month at 50 feet from Source (dBA)
4	Module Rack Supports, Underground Electrical, and Rack Installation	Hand Held Vibrator	2	82	8	100.00%	82.0	85.0	99.3
4	Module Rack Supports, Underground Electrical, and Rack Installation	Personal cars	60	74	1	12.50%	65.0	82.8	99.3
4	Module Rack Supports, Underground Electrical, and Rack Installation	Roller/Compactor	1	74	8	100.00%	74.0	74.0	99.3
4	Module Rack Supports, Underground Electrical, and Rack Installation	Semi	3	86	4	50.00%	83.0	87.8	99.3
4	Module Rack Supports, Underground Electrical, and Rack Installation	Water Truck	6	88	4	50.00%	85.0	92.8	99.3
4	Module Rack Supports, Underground Electrical, and Rack Installation	Vibratory Post Driver	2	85	8	100.00%	85.0	88.0	99.3
5	Underground Electrical, Rack Installation, and Module Installation	ATV	30	79	8	100.00%	79.0	93.8	99.1
5	Underground Electrical, Rack Installation, and Module Installation	Backhoe/trencher	2	85	8	100.00%	85.0	88.0	99.1
5	Underground Electrical, Rack Installation, and Module Installation	Cranes/Lifts	1	83	8	100.00%	83.0	83.0	99.1
5	Underground Electrical, Rack Installation, and Module Installation	Crew Delivery Bus	9	80	2	25.00%	74.0	83.5	99.1
5	Underground Electrical, Rack Installation, and Module Installation	Flat-bed truck	6	88	2	25.00%	82.0	89.8	99.1
5	Underground Electrical, Rack Installation, and Module Installation	Forklift	4	83	4	50.00%	80.0	86.0	99.1
5	Underground Electrical, Rack Installation, and Module Installation	Forklift	2	83	8	100.00%	83.0	86.0	99.1
5	Underground Electrical, Rack Installation, and Module Installation	Hand Held Vibrator	2	82	8	100.00%	82.0	85.0	99.1

TABLE 4.15-3
CONSTRUCTION NOISE LEVEL BY MONTH (dBA)

Construction Month	Phase(s) Occurring During Construction Month	Equipment	Quantity	Typical Sound Pressure Level at 50 feet from Source (dBA)	Hours Per Day	Usage Factor	Noise Level for 1 Unit (dBA)	Total Noise Level (dBA)	Total Noise Level per Month at 50 feet from Source (dBA)
5	Underground Electrical, Rack Installation, and Module Installation	Personal cars	60	74	1	12.50%	65.0	82.8	99.1
5	Underground Electrical, Rack Installation, and Module Installation	Roller/Compactor	1	74	8	100.00%	74.0	74.0	99.1
5	Underground Electrical, Rack Installation, and Module Installation	Semi	3	86	4	50.00%	83.0	87.8	99.1
5	Underground Electrical, Rack Installation, and Module Installation	Water Truck	6	88	4	50.00%	85.0	92.8	99.1
6	Rack Installation and Module Installation	ATV	20	79	8	100.00%	79.0	92.0	96.9
6	Rack Installation and Module Installation	Cranes/Lifts	1	83	8	100.00%	83.0	83.0	96.9
6	Rack Installation and Module Installation	Crew Delivery Bus	6	80	2	25.00%	74.0	81.8	96.9
6	Rack Installation and Module Installation	Flat-bed truck	4	88	2	25.00%	82.0	88.0	96.9
6	Rack Installation and Module Installation	Forklift	2	83	4	50.00%	80.0	83.0	96.9
6	Rack Installation and Module Installation	Forklift	2	83	8	100.00%	83.0	86.0	96.9
6	Rack Installation and Module Installation	Personal cars	40	74	1	12.50%	65.0	81.0	96.9
6	Rack Installation and Module Installation	Semi	2	86	4	50.00%	83.0	86.0	96.9
6	Rack Installation and Module Installation	Water Truck	4	88	4	50.00%	85.0	91.0	96.9
7	Rack Installation, Module Installation, and Above Ground Electrical	ATV	30	79	8	100.00%	79.0	93.8	99.4
7	Rack Installation, Module Installation, and Above Ground Electrical	Concrete Truck	1	88	8	100.00%	88.0	88.0	99.4
7	Rack Installation, Module Installation, and Above Ground Electrical	Cranes/Lifts	2	83	8	100.00%	83.0	86.0	99.4
7	Rack Installation, Module Installation, and Above Ground Electrical	Crew Delivery Bus	9	80	2	25.00%	74.0	83.5	99.4

TABLE 4.15-3
CONSTRUCTION NOISE LEVEL BY MONTH (dBA)

Construction Month	Phase(s) Occurring During Construction Month	Equipment	Quantity	Typical Sound Pressure Level at 50 feet from Source (dBA)	Hours Per Day	Usage Factor	Noise Level for 1 Unit (dBA)	Total Noise Level (dBA)	Total Noise Level per Month at 50 feet from Source (dBA)
7	Rack Installation, Module Installation, and Above Ground Electrical	Flat-bed truck	6	88	2	25.00%	82.0	89.8	99.4
7	Rack Installation, Module Installation, and Above Ground Electrical	Forklift	4	83	4	50.00%	80.0	86.0	99.4
7	Rack Installation, Module Installation, and Above Ground Electrical	Forklift	2	83	8	100.00%	83.0	86.0	99.4
7	Rack Installation, Module Installation, and Above Ground Electrical	Personal cars	60	74	1	12.50%	65.0	82.8	99.4
7	Rack Installation, Module Installation, and Above Ground Electrical	Semi	3	86	4	50.00%	83.0	87.8	99.4
7	Rack Installation, Module Installation, and Above Ground Electrical	Water Truck	4	88	4	50.00%	85.0	91.0	99.4
7	Rack Installation, Module Installation, and Above Ground Electrical	Water Truck	2	88	8	100.00%	88.0	91.0	99.4
8	Module Installation, Above Ground Electrical, Power Conversion Stations, and Maintenance Building	ATV	40	79	8	100.00%	79.0	95.0	101.9
8	Module Installation, Above Ground Electrical, Power Conversion Stations, and Maintenance Building	Backhoe/trencher	4	85	8	100.00%	85.0	91.0	101.9
8	Module Installation, Above Ground Electrical, Power Conversion Stations, and Maintenance Building	Concrete Truck	3	88	8	100.00%	88.0	92.8	101.9
8	Module Installation, Above Ground Electrical, Power Conversion Stations, and Maintenance Building	Cranes/Lifts	3	83	8	100.00%	83.0	87.8	101.9
8	Module Installation, Above Ground Electrical, Power Conversion Stations, and Maintenance Building	Crew Delivery Bus	12	80	2	25.00%	74.0	84.8	101.9

TABLE 4.15-3
CONSTRUCTION NOISE LEVEL BY MONTH (dBA)

Construction Month	Phase(s) Occurring During Construction Month	Equipment	Quantity	Typical Sound Pressure Level at 50 feet from Source (dBA)	Hours Per Day	Usage Factor	Noise Level for 1 Unit (dBA)	Total Noise Level (dBA)	Total Noise Level per Month at 50 feet from Source (dBA)
8	Module Installation, Above Ground Electrical, Power Conversion Stations, and Maintenance Building	Flat-bed truck	6	88	2	25.00%	82.0	89.8	101.9
8	Module Installation, Above Ground Electrical, Power Conversion Stations, and Maintenance Building	Forklift	2	83	8	100.00%	83.0	86.0	101.9
8	Module Installation, Above Ground Electrical, Power Conversion Stations, and Maintenance Building	Forklift	6	83	4	50.00%	80.0	87.8	101.9
8	Module Installation, Above Ground Electrical, Power Conversion Stations, and Maintenance Building	Front End Loader	1	85	8	100.00%	85.0	85.0	101.9
8	Module Installation, Above Ground Electrical, Power Conversion Stations, and Maintenance Building	Generators/ Compressors	1	81	8	100.00%	81.0	81.0	101.9
8	Module Installation, Above Ground Electrical, Power Conversion Stations, and Maintenance Building	Grader	1	85	8	100.00%	85.0	85.0	101.9
8	Module Installation, Above Ground Electrical, Power Conversion Stations, and Maintenance Building	Hand Held Vibrator	2	82	8	100.00%	82.0	85.0	101.9
8	Module Installation, Above Ground Electrical, Power Conversion Stations, and Maintenance Building	Personal cars	80	74	1	12.50%	65.0	84.0	101.9
8	Module Installation, Above Ground Electrical, Power Conversion Stations, and Maintenance Building	Roller/Compactor	2	74	8	100.00%	74.0	77.0	101.9
8	Module Installation, Above Ground Electrical, Power Conversion Stations, and Maintenance Building	Scraper/Dozer	1	85	8	100.00%	85.0	85.0	101.9

TABLE 4.15-3
CONSTRUCTION NOISE LEVEL BY MONTH (dBA)

Construction Month	Phase(s) Occurring During Construction Month	Equipment	Quantity	Typical Sound Pressure Level at 50 feet from Source (dBA)	Hours Per Day	Usage Factor	Noise Level for 1 Unit (dBA)	Total Noise Level (dBA)	Total Noise Level per Month at 50 feet from Source (dBA)
8	Module Installation, Above Ground Electrical, Power Conversion Stations, and Maintenance Building	Semi	4	86	4	50.00%	83.0	89.0	101.9
8	Module Installation, Above Ground Electrical, Power Conversion Stations, and Maintenance Building	Water Truck	4	88	4	50.00%	85.0	91.0	101.9
8	Module Installation, Above Ground Electrical, Power Conversion Stations, and Maintenance Building	Water Truck	4	88	8	100.00%	88.0	94.0	101.9
9	Module Installation, Power Conversion Stations, and Maintenance Building	ATV	30	79	8	100.00%	79.0	93.8	100.7
9	Module Installation, Power Conversion Stations, and Maintenance Building	Backhoe/trencher	4	85	8	100.00%	85.0	91.0	100.7
9	Module Installation, Power Conversion Stations, and Maintenance Building	Concrete Truck	2	88	8	100.00%	88.0	91.0	100.7
9	Module Installation, Power Conversion Stations, and Maintenance Building	Cranes/Lifts	2	83	8	100.00%	83.0	86.0	100.7
9	Module Installation, Power Conversion Stations, and Maintenance Building	Crew Delivery Bus	9	80	2	25.00%	74.0	83.5	100.7
9	Module Installation, Power Conversion Stations, and Maintenance Building	Flat-bed truck	4	88	2	25.00%	82.0	88.0	100.7
9	Module Installation, Power Conversion Stations, and Maintenance Building	Forklift	2	83	8	100.00%	83.0	86.0	100.7
9	Module Installation, Power Conversion Stations, and Maintenance Building	Forklift	4	83	4	50.00%	80.0	86.0	100.7
9	Module Installation, Power Conversion Stations, and Maintenance Building	Front End Loader	1	85	8	100.00%	85.0	85.0	100.7
9	Module Installation, Power Conversion Stations, and Maintenance Building	Generators/ Compressors	1	81	8	100.00%	81.0	81.0	100.7

TABLE 4.15-3
CONSTRUCTION NOISE LEVEL BY MONTH (dBA)

Construction Month	Phase(s) Occurring During Construction Month	Equipment	Quantity	Typical Sound Pressure Level at 50 feet from Source (dBA)	Hours Per Day	Usage Factor	Noise Level for 1 Unit (dBA)	Total Noise Level (dBA)	Total Noise Level per Month at 50 feet from Source (dBA)
9	Module Installation, Power Conversion Stations, and Maintenance Building	Grader	1	85	8	100.00%	85.0	85.0	100.7
9	Module Installation, Power Conversion Stations, and Maintenance Building	Hand Held Vibrator	2	82	8	100.00%	82.0	85.0	100.7
9	Module Installation, Power Conversion Stations, and Maintenance Building	Personal cars	60	74	1	12.50%	65.0	82.8	100.7
9	Module Installation, Power Conversion Stations, and Maintenance Building	Roller/Compactor	2	74	8	100.00%	74.0	77.0	100.7
9	Module Installation, Power Conversion Stations, and Maintenance Building	Scraper/Dozer	1	85	8	100.00%	85.0	85.0	100.7
9	Module Installation, Power Conversion Stations, and Maintenance Building	Semi	3	86	4	50.00%	83.0	87.8	100.7
9	Module Installation, Power Conversion Stations, and Maintenance Building	Water Truck	4	88	4	50.00%	85.0	91.0	100.7
9	Module Installation, Power Conversion Stations, and Maintenance Building	Water Truck	2	88	8	100.00%	88.0	91.0	100.7
10	Maintenance Building and Combining Switchgear	ATV	20	79	8	100.00%	79.0	92.0	99.7
10	Maintenance Building and Combining Switchgear	Backhoe/trencher	4	85	8	100.00%	85.0	91.0	99.7
10	Maintenance Building and Combining Switchgear	Concrete Truck	2	88	8	100.00%	88.0	91.0	99.7
10	Maintenance Building and Combining Switchgear	Cranes/Lifts	2	83	8	100.00%	83.0	86.0	99.7
10	Maintenance Building and Combining Switchgear	Crew Delivery Bus	6	80	2	25.00%	74.0	81.8	99.7
10	Maintenance Building and Combining Switchgear	Flat-bed truck	2	88	2	25.00%	82.0	85.0	99.7
10	Maintenance Building and Combining Switchgear	Forklift	4	83	4	50.00%	80.0	86.0	99.7
10	Maintenance Building and Combining Switchgear	Front End Loader	1	85	8	100.00%	85.0	85.0	99.7
10	Maintenance Building and Combining Switchgear	Grader	1	85	8	100.00%	85.0	85.0	99.7

TABLE 4.15-3
CONSTRUCTION NOISE LEVEL BY MONTH (dBA)

Construction Month	Phase(s) Occurring During Construction Month	Equipment	Quantity	Typical Sound Pressure Level at 50 feet from Source (dBA)	Hours Per Day	Usage Factor	Noise Level for 1 Unit (dBA)	Total Noise Level (dBA)	Total Noise Level per Month at 50 feet from Source (dBA)
10	Maintenance Building and Combining Switchgear	Personal cars	40	74	1	12.50%	65.0	81.0	99.7
10	Maintenance Building and Combining Switchgear	Roller/Compactor	1	74	8	100.00%	74.0	74.0	99.7
10	Maintenance Building and Combining Switchgear	Scraper/Dozer	1	85	8	100.00%	85.0	85.0	99.7
10	Maintenance Building and Combining Switchgear	Semi	2	86	4	50.00%	83.0	86.0	99.7
10	Maintenance Building and Combining Switchgear	Water Truck	4	88	8	100.00%	88.0	94.0	99.7
11	Maintenance Building and Commissioning	ATV	20	79	8	100.00%	79.0	92.0	98.9
11	Maintenance Building and Commissioning	Backhoe/trencher	2	85	8	100.00%	85.0	88.0	98.9
11	Maintenance Building and Commissioning	Concrete Truck	1	88	8	100.00%	88.0	88.0	98.9
11	Maintenance Building and Commissioning	Cranes/Lifts	2	83	8	100.00%	83.0	86.0	98.9
11	Maintenance Building and Commissioning	Crew Delivery Bus	6	80	2	25.00%	74.0	81.8	98.9
11	Maintenance Building and Commissioning	Flat-bed truck	2	88	1	12.50%	79.0	82.0	98.9
11	Maintenance Building and Commissioning	Forklift	2	83	4	50.00%	80.0	83.0	98.9
11	Maintenance Building and Commissioning	Forklift	2	83	2	25.00%	77.0	80.0	98.9
11	Maintenance Building and Commissioning	Front End Loader	1	85	8	100.00%	85.0	85.0	98.9
11	Maintenance Building and Commissioning	Generators/ Compressors	1	81	8	100.00%	81.0	81.0	98.9
11	Maintenance Building and Commissioning	Grader	1	85	8	100.00%	85.0	85.0	98.9
11	Maintenance Building and Commissioning	Personal cars	20	74	1	12.50%	65.0	78.0	98.9
11	Maintenance Building and Commissioning	Personal cars	20	74	0.5	6.25%	62.0	75.0	98.9
11	Maintenance Building and Commissioning	Roller/Compactor	1	74	8	100.00%	74.0	74.0	98.9
11	Maintenance Building and Commissioning	Scraper/Dozer	1	85	8	100.00%	85.0	85.0	98.9
11	Maintenance Building and Commissioning	Semi	1	86	4	50.00%	83.0	83.0	98.9

TABLE 4.15-3
CONSTRUCTION NOISE LEVEL BY MONTH (dBA)

Construction Month	Phase(s) Occurring During Construction Month	Equipment	Quantity	Typical Sound Pressure Level at 50 feet from Source (dBA)	Hours Per Day	Usage Factor	Noise Level for 1 Unit (dBA)	Total Noise Level (dBA)	Total Noise Level per Month at 50 feet from Source (dBA)
11	Maintenance Building and Commissioning	Water Truck	4	88	8	100.00%	88.0	94.0	98.9

ATV = All-terrain vehicle

4.15.3.2.2 Operation

Worker vehicle travel to and from the Ocotillo Sol Project area is detailed in Section 4.2 and outlined in Table 4.2-7. Operational noise would be due primarily to worker vehicle travel to and from the site, as well as on-site noise associated with maintenance activity. Table 4.15-4 summarizes the modeled operational source noise level.

It is anticipated that project operations would result in an occasional trip by facility operators and an occasional truck delivery. This low level of vehicle traffic would result in a negligible increase in traffic noise on surrounding roadways and impacts would be negligible.

TABLE 4.15-4
MODELED OPERATONAL SOURCE NOISE LEVEL (dBA)

Equipment	Quantity	Typical Sound Pressure Level (dBA) at 50 feet from Source	Total Annual Operation & Maintenance Hours Per Equipment Category	Usage Factor	Noise Level for 1 (dBA)	Total Noise Level (dBA)	Total Operational Noise Level at 50 feet from Source (dBA)
ATV	10	79	720	100%	79.0	89.0	96.8
Cranes/Lifts	1	83	40	100%	83.0	83.0	96.8
Flat-bed truck	2	88	120	100%	88.0	91.0	96.8
Forklift	2	83	360	100%	83.0	86.0	96.8
Personal cars	20	74	720	100%	74.0	87.0	96.8
Semi	1	86	20	100%	86.0	86.0	96.8
Water Truck	2	88	20	100%	88.0	91.0	96.8

4.15.3.2.3 Sensitive Receptors

The nearest sensitive human receptors to the Ocotillo Sol Project area construction are single-family rural residences approximately 1 mile to the north, 1.75 miles to the east, and over 2 miles to the southeast.

Construction

Construction noise levels at the nearest sensitive residential receptor during each construction month are outlined in Table 4.15-5.

As seen in Table 4.15-5, construction noise is not anticipated to exceed the noise level limit of 75 dB L_{eq} at the nearest residential receptor.

Operation

Operational noise levels at the nearest sensitive residential receptor during each construction month are outlined in Table 4.15-6.

TABLE 4.15-5
CONSTRUCTION NOISE BY MONTH AT THE NEAREST RESIDENTIAL RECEPTOR (dBA)

Construction Month	Phase(s) Occurring during Construction Month	Total Noise Level per Month at 50 feet from Source (dBA)	Noise at Nearest (1 mile) Residential Receptor (dBA)
1	Site Preparation/Access Roads	96.4	55.9
2	Module Rack Supports	94.3	53.9
3	Module Rack Supports, Security Fencing, and Underground Electrical	99.7	59.2
4	Module Rack Supports, Underground Electrical, and Rack Installation	99.3	58.8
5	Underground Electrical, Rack Installation, and Module Installation	99.1	58.7
6	Rack Installation and Module Installation	96.9	56.5
7	Rack Installation, Module Installation, and Above Ground Electrical	99.4	58.9
8	Module Installation, Above Ground Electrical, Power Conversion Stations, and Maintenance Building	101.9	61.4
9	Module Installation, Power Conversion Stations, and Maintenance Building	100.7	60.2
10	Maintenance Building and Combining Switchgear	99.7	59.3
11	Maintenance Building and Commissioning	98.9	58.4

TABLE 4.15-6
OPERATIONAL NOISE LEVEL AT NEAREST RESIDENTIAL RECEPTOR (dBA)

Equipment	Quantity	Total Operational Noise Level (dBA)	Noise at Nearest (1 mile) Residential Receiver (dBA)
ATV	10	96.8	56.4
Cranes/Lifts	1	96.8	56.4
Flat-bed truck	2	96.8	56.4
Forklift	2	96.8	56.4
Personal cars	20	96.8	56.4
Semi	1	96.8	56.4
Water Truck	2	96.8	56.4

The Ocotillo Sol Project area is surrounded by agricultural and BLM-administered land, and is not close to dense urban uses.

4.15.3.2.4Sensitive Biological Receptors

As discussed in detail in Section 4.6, noise and vibrations from construction equipment may cause indirect noise impacts to burrowing owls and raptors.

Construction noise could potentially result in direct impacts to burrowing owl individuals and/or active burrowing owl burrows during grading, vegetation clearing, and other construction activities if construction takes place within 250 feet of an active burrow during the breeding season.

Construction noise could potentially result in indirect impacts to raptors. The transmission towers east of the Ocotillo Sol Project area provide nesting and perching opportunities. If construction occurs between February 1 and July 15, impacts to an active raptor nest may occur.

Impact Determination

As discussed above, modeled construction noise levels for each phase of construction range from 93.9 to 97.0 dBA at a distance of 50 feet from the source. The modeled operation and maintenance noise level was 96.8 dBA at a distance of 50 feet from the source. No sensitive receptors occur within 50 feet of the Ocotillo Sol Project area, the nearest sensitive receptor rural residences) are located approximately 1 mile north of the project area. Although operational noise levels would be louder than current conditions, the resultant noise levels at residences would be below the daytime ambient noise level (see Table 4.15-5). With the distances involved between the Ocotillo Sol Project area and sensitive receptors, construction noise would not result in an adverse impact under Alternative 2.

Noise impacts from the Ocotillo Sol Project are not anticipated to conflict with adjacent uses. As seen in Table 4.15-6, operational noise is not anticipated to increase noise levels at the residents above what is considered normally acceptable noise levels.

No equipment or component of the Ocotillo Sol Project is expected to produce noise that would exceed ambient levels in the project vicinity. The implementation of mitigation measures discussed in Section 4.6 would avoid, minimize, or mitigate potential impacts to burrowing owl and raptors during construction activities. No impacts due to operational noise are expected to occur to burrowing owls or raptors.

There would be no direct or indirect noise related impacts under Alternative 2.

4.15.3.3 ALTERNATIVE 3

Under Alternative 3, the Applicant would construct, operate, maintain, and decommission a 100-acre solar PV facility on BLM-managed lands under an authorized ROW. The 15-acre temporary ROW described under Alternative 2 would be reduced to 2 acres under Alternative 3. The 2-acre temporary ROW would provide for parking during construction of the Ocotillo Sol Project. Laydown and staging would occur within the 100-acre ROW as construction activities progress. Construction of the Ocotillo Sol Project would include grading, foundation excavation, trenching, and fencing.

Under Alternative 3, construction and operational noise sources would be the same as those associated with Alternative 2. As discussed above for Alternative 2, neither construction noise and operation nor maintenance noise associated with Alternative 3 would result in adverse impacts to sensitive receptors (residential areas, burrowing owls, and raptors). There would be no direct or indirect noise related impacts under Alternative 3.

4.15.4 CUMULATIVE IMPACTS

4.15.4.1 GEOGRAPHIC SCOPE

The cumulative analysis impact area for noise and vibration is an approximate 2-mile radius around the Ocotillo Sol Project area. This area includes all projects that could create a substantial increase in noise and vibration near the Ocotillo Sol Project area. This area also includes sensitive receptors that may hear construction and operation related noise in the vicinity.

Past, present, and reasonably foreseeable future projects are listed in Table 4.1-1. Projects within the cumulative analysis impact area are listed in Table 4.1-2. Projects or actions within the 2-mile radius include BLM actions (within BLM-administered lands) such as ongoing road maintenance and recreation designations. Other actions include Imperial Valley Substation operation and maintenance, Imperial Valley Substation expansion for North Gila to Imperial Valley Substation #2 transmission line, Sunrise Powerlink, transmission and utility corridor maintenance, agricultural activities, recreational activity, North Gila to Imperial Valley Substation #2 transmission line, Dixieland Imperial Irrigation District transmission line and connection, and Imperial Irrigation District canal and drain maintenance. Renewable energy projects (and associated transmission lines) include the following:

Calexico Solar Farm II
Mount Signal Solar farm
Calexico Solar Farm I
Imperial Solar Energy Center South solar farm
Centinela Solar farm
Acorn Greenworks solar farm
Silverleaf Solar Farm
Campo Verde Solar farm (and shared transmission line with Silverleaf solar farm)
Imperial Solar Energy Center West solar farm

The existing condition for noise in the Ocotillo Sol Project area, which represents the aggregate effect of past and present actions that could result in noise and vibration impacts, is described in Chapter 3, Section 3.16. The reasonably foreseeable future projects listed above could result in short-term adverse impacts to noise and vibration, primarily during construction and decommissioning activities. The combination of these projects could result in increased noise in the area, particularly if projects are concurrently under construction. Operation and maintenance activities are anticipated to result in minimal, if any, significant changes in noise and vibration in the area.

4.15.4.2 ALTERNATIVES 1, 4, AND 5

Based on direct and indirect impact analysis presented in Section 4.15.3, it is expected that Alternatives 1, 4, and 5 would not result in impacts related to noise and vibration. These alternatives would not increase noise or cause significant vibration. These alternatives, in combination with other reasonably foreseeable future projects, would not contribute to cumulative impacts related to noise and vibration.

4.12.4.3 ALTERNATIVES 2 AND 3

Under Alternatives 2 and 3, no adverse impacts related to noise and vibration would occur. These alternatives, in combination with other reasonably foreseeable future projects, would not significantly increase traffic volumes resulting in an increase in traffic noise. Renewable energy projects in the vicinity would not likely have the same construction schedule and would not result in a significant increase in noise and vibration in the vicinity. Alternatives 2 and 3, when combined with other reasonably foreseeable future projects, are not expected to result in cumulative impacts to noise and vibration in the area.

4.15.5 MITIGATION

No mitigation measures for noise and vibration would be required. Mitigation measures outlined in under biology (Section 4.6.5) would minimize or avoid indirect impacts to burrowing owls and raptors related to noise.

4.15.6 IRREVERSIBLE AND IRRETRIEVABLE COMMITMENT OF RESOURCES

No direct impacts from noise and vibration would occur due to the Ocotillo Sol Project. Indirect unavoidable impacts could occur, however, to burrowing owl individuals and/or active burrowing owl burrows during grading, vegetation clearing, and other construction activities if these activities occur within 250 feet of an active burrow during the breeding season. In addition, if construction occurs between February 1 and July 15, impacts to an active raptor nest could occur. These impacts would be mitigated or avoided by mitigation measures, as detailed above. No irreversible and irretrievable commitment of resources from noise or vibration impacts would occur.

4.16 PUBLIC HEALTH AND SAFETY

4.16.1 MANAGEMENT GOALS

The CDCA Plan does not set out specific goals for public health and safety and management of hazardous materials. BLM's stated policy is to reduce threats to public health, safety, and property. In accordance with the FLPMA, BLM is required to comply with state standards for public health and safety. Additionally, the CDCA Plan multiple-use classifications do not allow hazardous or non-hazardous waste disposal sites on public lands, except where landfills are suitable. The public lands may be transferred to the appropriate owner/operator.

4.16.2 TYPICAL IMPACTS FROM SOLAR ENERGY DEVELOPMENT

Impacts to public health and safety from solar energy development could include storage and use of petroleum and other hazardous materials at facilities and increased traffic on local roads by construction vehicles.

No significant hazardous conditions have been observed or are known to exist within the Ocotillo Sol Project area.

4.16.3 IMPACTS BY ALTERNATIVE

4.16.3.1 ALTERNATIVES 1, 4, AND 5

Under Alternative 1, the Ocotillo Sol Project would not be approved by the BLM and the CDCA Plan would not be amended. The Ocotillo Sol Project would not be constructed and the BLM would continue to manage the site consistent with the CDCA Plan (1980, as amended), Yuha Basin ACEC Management Plan (1981), Yuha Desert Wildlife Habitat Management Plan (1983), Yuha Desert Management Plan (1985), and the *Flat-tailed Horned Lizard Rangewide Management Strategy*.

Under Alternative 4, the Ocotillo Sol Project would not be approved and no ROW grant would be issued to the Applicant. The project area would remain in its existing condition, with no construction of structures or facilities resulting in ground disturbance, and no impacts associated with the Ocotillo Sol Project would occur. Under Alternative 4, the CDCA Plan would be amended to identify the Ocotillo Sol Project area as suitable for solar energy development. As a result, a project might be proposed in the future using the same or different solar energy technology on the project site, possibly resulting in impacts similar to the proposed Ocotillo Sol Project. The impacts of such a future project, however, are speculative at this time.

Under Alternative 5, the Ocotillo Sol Project would not be approved and no ROW grant would be issued to the Applicant. The project area would remain in its existing condition, with no construction of structures or facilities resulting in ground disturbance, and no impacts associated

with the Ocotillo Sol Project would occur. Under Alternative 5, the CDCA Plan would be amended to identify the Ocotillo Sol Project area as unsuitable for solar energy development.

No direct or indirect impacts to public health and safety or related to hazardous materials from construction, operation, or decommissioning of the Ocotillo Sol Project would occur under Alternatives 1, 4, and 5.

4.16.3.2 ALTERNATIVE 2

Under Alternative 2, the Applicant would construct, operate, maintain, and decommission a 100-acre solar PV facility on BLM-managed lands under an authorized ROW. This alternative includes a 15-acre temporary ROW that would be used as a laydown area during construction of the solar facility. Construction of the Applicant's Ocotillo Sol Project would include grading, foundation excavation, trenching, and fencing.

The Ocotillo Sol Project area is located approximately one mile north of the former Camp Seeley Ordnance Desert Proving Ground. Tests reportedly did not involve the use of ordnance or explosive materials in this area. The Ocotillo Sol Project area was not listed on HAZMAT regulatory databases and facilities of potential environmental concern and was not listed on databases within the American Society for Testing and Materials specified search distances. Potentially hazardous materials associated with a spill of mineral oil/transformer oil reportedly occurred at the Imperial Valley Substation, adjacent to the Ocotillo Sol Project area. Because the substation was commissioned in 1983, PCBs would not be present in the mineral oil, which was confirmed by soil sampling following spill cleanup. The nearest landfill to the Ocotillo Sol Project area is the Mesquite Regional landfill located approximately 10.4 miles to the northwest. No oil/gas wells or geothermal fields were depicted on the site or adjacent properties.

CdTe may be present from PV solar panels used within the solar facility, and is considered toxic if ingested or inhaled via dust particles. Appropriate measures would be implemented during the construction, operation and maintenance, and decommissioning of the Ocotillo Sol Project to properly handle the PV solar panels, and to provide an appropriate response to the release of any potential contaminants to the environment resulting from damage to the panels.

Potential land use hazards may exist with the transport of potentially hazardous cargo on major highways—specifically Interstate 8 to the north and State Highway 98 to the south. Provisions to address highway accidents have been formulated within the County of Imperial General Plan sufficient to mitigate any potential impact.

No direct or indirect adverse impacts to public health and safety would occur under Alternative 2. This alternative would not likely result in the release of hazardous materials. Implementation of BMPs would avoid and reduce the potential for release of hazardous materials.

4.16.3.3 ALTERNATIVE 3

Under Alternative 3, the Applicant would construct, operate, maintain, and decommission a 100-acre solar PV facility on BLM-managed lands under an authorized ROW. The 15-acre temporary ROW described under Alternative 2 would be reduced to 2 acres under Alternative 3.

The 2-acre temporary ROW would provide for parking during construction of the Ocotillo Sol Project. Temporary laydown and staging would occur within the 100 acres as construction activities progress. Construction under Alternative 3 would include grading, foundation excavation, trenching, and fencing.

Impacts to public health and safety would be the same under Alternative 3 as discussed above for Alternative 2. As discussed above for Alternative 2, construction, operation and maintenance, and decommissioning activities would not result in adverse impacts to public health and safety or result in release of hazardous materials.

No direct or indirect adverse impacts to public health and safety would occur under Alternative 3. This alternative would not likely result in the release of hazardous materials. Implementation of BMPs would avoid and reduce the potential for release of hazardous materials.

4.16.4 CUMULATIVE IMPACTS

4.16.4.1 GEOGRAPHIC SCOPE

The cumulative analysis impact area for public health and safety/hazardous materials is an approximate 20-mile radius around the Ocotillo Sol Project area. Cumulative analysis includes the renewable energy projects and other actions within approximately 20 miles of the Ocotillo Sol Project area which may result in release of hazardous waste or impacts to public health within residential areas and communities in the vicinity.

Past, present, and reasonably foreseeable future projects are listed in Table 4.1-1. Projects within the cumulative analysis impact area are listed in Table 4.1-2. Project or actions include BLM actions (within BLM-administered lands) such as ongoing road maintenance and recreation designations. Other actions include the following: Imperial Valley Substation operation and maintenance, Imperial Valley Substation expansion for North Gila to Imperial Valley Substation #2 transmission line, Sunrise Powerlink, transmission and utility corridor maintenance, Interstate 8 and Highway 98, agricultural activities, recreational activity, North Gila to Imperial Valley Substation #2 transmission line, Dixieland Imperial Irrigation District transmission line and connection, Geothermal Overlay, Rancho Los Lagos, Brookfield Specific Plan, Desert Springs Oasis, Alder 70, Mosaic Specific Plan, sand and gravel mining, and Imperial Irrigation District canal and drain maintenance. Renewable energy projects include the following:

Calexico Solar Farm II
Mount Signal Solar Farm
Calexico Solar Farm I
Imperial Solar Energy Center South Solar Farm
Centinela Solar Farm
Acorn Greenworks Solar Farm
Silverleaf Solar Farm
Campo Verde Solar Farm (and shared transmission line with Silverleaf Solar Farm)
Imperial Solar Energy Center West Solar Farm
Keystone Solar
Ocotillo Express Wind Farm

The existing condition for public health and safety/hazardous materials in the Ocotillo Sol Project area, which represents the aggregate effect of past and present actions related to public health and safety, is described in Chapter 3, Section 3.17. The reasonably foreseeable future projects listed above could result in short-term adverse impacts to public health and safety, primarily during construction and decommissioning activities. The combination of these projects could result in increased traffic hazards or release of hazardous materials, particularly if projects are concurrently under construction. Operation and maintenance activities are anticipated to result in minimal, if any, significant hazards to the public.

4.16.4.2 ALTERNATIVES 1, 4, AND 5

Based on direct and indirect impact analysis presented in Section 4.16.3, it is expected that Alternatives 1, 4, and 5 would not result in impacts to public health and safety. These alternatives would be consistent with applicable laws, policies, and regulations related to public health and safety. These alternatives, in combination with other reasonably foreseeable future projects, would not contribute to cumulative impacts to public health.

4.10.4.3 ALTERNATIVES 2 AND 3

Alternatives 2 and 3 would not result in adverse impacts to public health and safety. Renewable energy projects and other activities within approximately 20 miles of the Ocotillo Sol Project area have been consistent with applicable laws, policies, and regulations related to public health and safety. Alternatives 2 and 3 would also be consistent with applicable laws, policies, and regulations. Alternatives 2 and 3, when combined with other reasonably foreseeable future projects, are not expected to result in cumulative impacts to public health and safety.

4.16.5 MITIGATION

No mitigation measures for public health and safety/hazardous materials would be required. Implementation of BMPs would avoid and reduce the potential for release of hazardous materials.

4.16.6 IRREVERSIBLE AND IRRETRIEVABLE COMMITMENT OF RESOURCES

Construction, operation and maintenance, and decommissioning of the Ocotillo Sol Project could result in release of hazardous materials. Implementation of BMPs would avoid and reduce the potential for release of hazardous materials. No unavoidable adverse impacts related to public health and safety would occur and no irreversible and irretrievable commitment of resources would occur.

4.17 SOCIOECONOMICS

4.17.1 MANAGEMENT GOALS

By statute, regulation, and EO, the BLM must use social science in the preparation of informed, sustainable land use planning decisions. Section 202(c)(2) of FLPMA requires BLM to integrate physical, biological, economic, and other sciences in developing land use plans (43 USC 1712(c)(2)). FLPMA regulations 43 CFR 1610.43 and 1610.46 also require BLM to analyze social, economic, and institutional information. Section 102(2)(A) of NEPA requires federal agencies to ensure "the integrated use of the natural and social sciences in planning and decision making" (42 USC 4332(2)(A)).

4.17.2 TYPICAL IMPACTS FROM SOLAR ENERGY DEVELOPMENT

For the socioeconomic impact analysis of solar energy projects the typical areas of concern are population, housing, employment, income, labor force, and tax revenues for federal, state and local agencies. Social and economic effects may include those that are growth inducing or related to induced changes in the pattern of land use, population density, or growth rate.

The cumulative impact analysis in Section 4.17.5 evaluates the combined socioeconomic impacts of the proposed action and projects identified in the cumulative scenario (see Section 4.1.4, Cumulative Scenario Approach).

4.17.3 IMPACTS BY ALTERNATIVE

As previously discussed in Chapter 2, all of the alternatives would be located entirely within BLM-administered lands. The Ocotillo Sol Project area and adjacent BLM-administered lands to do not have commercially viable minerals or metals, salable minerals, oil, gas, or geothermal energy resources, timber, or grazing resources. As such, impacts to these resources and land uses are not addressed in the following socioeconomic analysis of environmental consequences by alternative. The discussion of socioeconomic impacts from the build alternatives is separated into three categories: construction, operation and maintenance, and decommissioning. This analysis measures the economic effects (direct, indirect, and induced) in terms of regional output, income, employment, tax revenues, population change, housing change and social impacts generated by each alternative.

4.17.3.1 ALTERNATIVES 1, 4, AND 5

Under Alternative 1, the Ocotillo Sol Project would not be approved by the BLM and the CDCA Plan would not be amended. The Ocotillo Sol Project would not be constructed and the BLM would continue to manage the site consistent with the CDCA Plan (1980, as amended), Yuha Basin ACEC Management Plan (1981), Yuha Desert Wildlife Habitat Management Plan (1983), Yuha Desert Management Plan (1985), and the *Flat-tailed Horned Lizard Rangewide Management Strategy*.

Under Alternative 4, the Ocotillo Sol Project would not be approved and no ROW grant would be issued to the Applicant. The project area would remain in its existing condition, with no construction of structures or facilities resulting in ground disturbance, and no impacts associated with the Ocotillo Sol Project would occur. Under Alternative 4, the CDCA Plan would be amended to identify the Ocotillo Sol Project area as suitable for solar energy development. As a result, a project might be proposed in the future using the same or different solar energy technology on the project site, possibly resulting in impacts similar to the proposed Ocotillo Sol Project. The impacts of such a future project, however, are speculative at this time.

Under Alternative 5, the Ocotillo Sol Project would not be approved and no ROW grant would be issued to the Applicant. The project area would remain in its existing condition, with no construction of structures or facilities resulting in ground disturbance, and no impacts associated with the Ocotillo Sol Project would occur. Under Alternative 5, the CDCA Plan would be amended to identify the Ocotillo Sol Project area as unsuitable for solar energy development.

Under Alternatives 1, 4, and 5, existing conditions relevant to socioeconomics in the LSIA and the regional economy would remain the same. These alternatives are no build alternatives and no construction would occur. As such the residents of the LSIA and Imperial County would not benefit from the marginal economic benefits of the construction, operation and maintenance, and decommissioning activities associated with the build alternatives. Alternatives 1, 4, and 5 would not result in direct or indirect socioeconomic impacts for the LSIA or Imperial County.

4.17.3.2 ALTERNATIVE 2

Under Alternative 2, the Applicant would construct, operate, maintain, and decommission a 100-acre solar PV facility on BLM-managed lands under an authorized ROW. This alternative includes a 15-acre temporary ROW that would be used as a laydown area during construction of the solar facility. Under Alternative 2, the CDCA Plan would be amended to identify the Ocotillo Sol Project area as suitable for solar energy development. The CDCA Plan amendment would result in the possibility of development of the same or different solar energy technology in the project area after decommissioning of the Ocotillo Sol Project.

4.17.3.2.1 Construction

A minimum eight-month construction period is estimated under Alternative 2. Construction of the Ocotillo Sol Project under Alternative 2 would require a peak of approximately 270 workers on the site, but would average about 80 to 120 workers. A majority of construction personnel would be drawn from the large unemployed construction work force in Imperial County. Some skilled trades would require personnel from San Diego County, but relatively few personnel (less than 10 percent) would require temporary residency in hotels and rental properties in the Calexico/El Centro area.

The total project cost for the Ocotillo Sol Project was estimated to range from $66 million to $78 million. Project design cost was estimated at $400,000 to $500,000. Project materials cost was estimated at $45 million to $50 million. Project labor cost was estimated at $8 million to $10 million. The combined cost of construction management, support costs, overhead, financing, and profit was estimated at $13 million to $17 million. No land acquisition would be required for the project (San Diego Gas & Electric 2012).

Regional Economic and Fiscal Impacts

Only the expenditures for materials and labor were used as exogenous (or outside) change input factors for the modeling of the impacts to the Imperial County regional economy. The midpoint of the estimated materials and labor cost estimate was $54 million and was used as the direct impact for the regional economic model. The summarized results (direct, indirect, and induced) for the economic impacts are presented in Table 4.17-1.

TABLE 4.17-1
REGIONAL ECONOMIC IMPACTS OF PROJECT BUILD ALTERANTIVES (ALTERNATIVES 2 AND 3)

Impact Category	Direct Impact	Indirect Impact	Reduced Impact	Total Impact
Output (millions)	$54.0	$13.1	$22.9	$90.0
Employment	127	43	100	270
Income (millions)	$ 9.0	$ 2.5	$ 5.1	$16.6
Value Added (millions)	$ 9.4	$ 3.7	$ 8.0	$21.1
Tax Revenue (millions)	$ 0.4	$ 0.9	$2.3	$ 3.6

The $54 million in estimated labor and materials for the project build alternatives would result in indirect and induced sales within the region of $36 million. The total impact (direct, indirect, and induced) would be $90 million in regional output. The $90 million in regional output would require total employment within Imperial County of approximately 270 labor years of effort and would include $16.6 million in income and $21.1 million in regional value added. The total economic impact would represent less than 0.5 percent of the regional indirect business taxes, value added, and employment. While the Ocotillo Sol Project would generate a marginal economic benefit for the local economy, the impact would be relatively small and would not represent a substantial impact to the regional economy.

Population and Housing Impacts

Employment of construction personnel would be beneficial to local businesses (i.e., the LSIA) and the regional economy through direct employment of the large supply of unemployed resident construction workers and the resulting increased expenditure of wages for goods and services. Personnel for construction could be drawn predominately from local populations in Imperial County. Currently there are more than 700 unemployed construction workers in the Imperial County labor force, which represents about one-third of the resident construction labor force (California Employment Development Department 2012). Some of the Ocotillo Sol Project construction personnel could be drawn from San Diego County, primarily in specialty trades associated with specific aspects of the PV equipment installation, wiring and connection systems, the 12.47 kV interconnection line to the adjacent Imperial Valley Substation, and connection with the electrical grid. A limited number of construction personnel (less than 10 percent) would require temporary housing, likely in local LSIA hotels, and would purchase food, beverages, and other commodities, which would provide a marginal economic benefit to the local economy. The queue of renewable energy projects in Imperial County (approved and proposed) would create demand for training and certification within the available Imperial County work force to support the longer-term construction of these projects, while reducing overall construction labor

cost for the various project developers. Adequate resources for housing and services were identified in Chapter 3 and no mitigation for changes in population and housing would be required. The magnitude and timing of longer term construction of renewable energy projects is somewhat speculative due to unknown changes in energy pricing and political support for the projects.

Changes in Property Values

Adverse impacts to property values are generally associated with decreased marketability or desirability of a property. Land uses on an adjacent or nearby property that is unwanted or undesirable can diminish property values in a local area. Some examples of land uses that may decrease marketability of a property would include concerns about hazards to public health and safety, or increased noise, traffic, odor, or dust. Property values can also be impacted by visual impacts associated with the removal or obscuring of scenic natural views or the introduction of undesirable views of land uses such as freeways, power plants, and high-voltage transmission lines, etc.

The Ocotillo Sol Project area is located entirely within BLM-administered lands. Alternative 2 would not have a direct impact on the market value of the federal land, which is generally not available for purchase. Land adjacent to the area is also federal land, and Alternative 2 would not result in a change in market value. No offsite impacts were identified under Alternative 2 other than the potential for low to moderate visual impacts (Section 4.13) and this level of visual impact would not reach a threshold of substantially affecting the market value of land within the LSIA.

Social Impacts

Construction of the Ocotillo Sol Project under Alternative 2 would not divide or disrupt communities of the LSIA and would not result in substantial changes to cultural interpretation or enjoyment of the affected environment within the LSIA. No residential or commercial business activities exist in the immediate vicinity of the project area and the Ocotillo Sol Project would not require the removal or relocation of any businesses. As described in Section 3.18, the site is relatively isolated and rarely visited. No social impacts were identified for the LSIA from degradation of views, views of construction equipment and activity, vehicular or pedestrian access restrictions, land use, air quality, noise effects, or health and safety concerns (such as electromagnetic frequencies). These issues are analyzed in other sections of Chapter 4–Environmental Consequences (i.e., Sections: 4.2–Air Quality; 4.7–Cultural Resources; 4.8–Paleontological Resources; 4.10–Lands and Realty; 4.13–Visual Resources; 4.14–Transportation and Public Access; 4.15–Noise and Vibration; and 4.16–Public Health and Safety). The short-term construction impacts for these issues would not be substantial or have been mitigated such that they would not be substantial. Therefore, no additional mitigation measures are recommended beyond those discussed in other sections of this chapter.

4.17.3.2.2 Operation and Maintenance Period

Operation of the site would be relatively passive, with periodic security patrols, and relatively infrequent periodic maintenance, inspection, and cleaning of the PV modules and transmission systems.

Regional Economic and Fiscal Impacts

The maximum required operation and maintenance workforce onsite would result in about three years of labor effort per annum (direct, indirect, and induced) and would generate *de minimus* impacts for the regional labor force and the economy. The resulting employment and income expenditures during the operation and maintenance period would provide a marginal economic benefit to the local economy. No mitigation for economic or fiscal impacts would be required.

Population and Housing Impacts

No impacts to population and housing, adverse or beneficial, were identified for the relatively passive and infrequent operation and maintenance activities under Alternative 2.

Changes in Property Values

No impacts to property values, adverse or beneficial, were identified for the relatively passive and infrequent operation and maintenance activities under Alternative 2.

Social Impacts

Operation and maintenance of the site and improvements under Alternative 2 would not divide or disrupt communities of the LSIA and would not result in substantial changes to cultural interpretation or enjoyment of the affected environment within the LSIA. No social impacts, adverse or beneficial, were identified for the relatively passive and infrequent operation and maintenance activities under Alternative 2.

4.17.3.2.3 Site Decommissioning

The Ocotillo Sol Project solar PV facility would be operational for 30 years and then the site would be decommissioned. All equipment, buildings, foundations, and driven piles would be removed from the site. The site would be restored to a near original state. It is assumed that land use activities and the socioeconomic impacts of decommissioning of the facility would be similar to those described above for construction under Alternative 2.

Regional Economic and Fiscal Impacts

The economic and fiscal effects that closure and decommissioning activities would have on the LSIA and Imperial County would be speculative, because future conditions are unknown. Upon decommissioning of the facility, the marginally beneficial socioeconomic operational impacts such as worker payroll, operational expenditures, and local economic stimulus would no longer occur.

Employment of decommissioning personnel would be beneficial to businesses in the LSIA and the regional economy through increased expenditure of wages for goods and services. Temporary employment of personnel for decommissioning would be drawn primarily from Imperial County. Less than 10 percent of the decommissioning personnel would require temporary housing in LSIA hotels and would purchase food, beverages, and other commodities. These purchases would provide a marginal economic benefit to the local economy in terms of

increased sales and fiscal revenues. These marginal economic and fiscal benefits would not be substantial.

Population and Housing Impacts

A detailed decommissioning plan is not available at this time, but it is assumed that decommissioning activities and costs would be similar to or less intensive than the construction activities and costs. Employment of decommissioning personnel would be beneficial to local businesses (i.e., the LSIA) and the regional economy through direct employment of resident construction workers and the increased expenditure of wages for goods and services. Personnel for decommissioning could be drawn predominately from Imperial County labor force. A smaller proportion of the decommissioning personnel could be drawn from San Diego County, primarily in specialty trades associated with specific aspects of the PV equipment, wiring and connection systems, the 12.47 kV interconnection line to the adjacent Imperial Valley Substation, and disconnection from the electrical grid. A limited number of construction personnel would require temporary housing, likely in local LSIA hotels, and would purchase food, beverages, and other commodities, which would provide a marginal economic benefit to the local economy. Adequate resources for housing and services were identified in Chapter 3 and no mitigation for changes in population and housing would be required.

Changes in Property Values

The Ocotillo Sol Project area is located within BLM-administered lands. The decommissioning of the site under Alternative 2 would not have a direct impact on the market value of the federal land, which is generally not available for purchase. Land adjacent to the site is also federal land and decommissioning under Alternative 2 would not result in a change in market value. No offsite impacts were identified for the decommissioning activities under Alternative 2, other than the potential for the removal of low to moderate visual impacts (Section 4.13). This level of visual impact benefit would not reach a threshold of affecting the market value of land within the LSIA. No adverse change in property value was identified under Alternative 2.

Social Impacts

Site decommissioning activities under Alternative 2 would not divide or disrupt communities of the LSIA and would not result in substantial changes to cultural interpretation or enjoyment of the affected environment within the LSIA. No residential or commercial business activities exist in the immediate vicinity of the Ocotillo Sol Project area and would not require the removal or relocation of any businesses. As described in Section 3.18, the site is relatively isolated and rarely visited. No social impacts were identified for the LSIA from degradation of views, views of construction equipment and activity, vehicular or pedestrian access restrictions, land use, air quality, noise effects, or public health and safety concerns. These issues are analyzed in other sections of Chapter 4–Environmental Consequences (i.e., Sections: 4.2–Air Quality; 4.7–Cultural Resources; 4.8–Paleontological Resources; 4.10–Lands and Realty; 4.13–Visual Resources; 4.14–Transportation and Public Access; 4.15–Noise and Vibration; and 4.16–Public Health and Safety). The short-term decommissioning construction impacts for these issues would not be substantial or have been mitigated such that they would not be substantial. Therefore, no

additional mitigation measures are recommended beyond those discussed in other sections of this chapter for Alternative 2.

4.17.3.3 ALTERNATIVE 3

Under Alternative 3, the Applicant would construct, operate, maintain, and decommission a 100-acre solar PV facility on BLM-managed lands under an authorized ROW. The 15-acre temporary ROW described under Alternative 2 would be reduced to 2 acres under Alternative 3. The 2-acre temporary ROW would provide for parking during construction of the Ocotillo Sol Project. Laydown and staging would occur within the 100-acre ROW as construction activities progress.

Impacts to socioeconomics would be the same under Alternative 3 as discussed above for Alternative 2. Under Alternative 3, the Ocotillo Sol Project would generate a marginal economic benefit for the local economy. The impact would be relatively small and would not represent a substantial impact to the regional economy. Adequate resources for housing and services were identified in Chapter 3 and no mitigation for changes in population and housing would be required. Under Alternative 3, no adverse change in property value was identified.

No social impacts were identified for the LSIA from degradation of views, views of construction equipment and activity, vehicular or pedestrian access restrictions, land use, air quality, noise effects, or health and safety concerns (such as electromagnetic frequencies). No mitigation for economic or fiscal impacts would be required. No impacts to population and housing, adverse or beneficial, were identified for the relatively passive and infrequent operation and maintenance activities under Alternative 3.

No impacts to property values, adverse or beneficial, were identified for the relatively passive and infrequent operation and maintenance activities. No social impacts, adverse or beneficial, were identified for the relatively passive and infrequent operation and maintenance activities.

The economic and fiscal effects that closure and decommissioning activities would have on the LSIA and Imperial County would be speculative, because future conditions are unknown. Upon decommissioning of the facility, the marginally beneficial socioeconomic operational impacts such as worker payroll, operational expenditures, and local economic stimulus would no longer occur.

Employment of decommissioning personnel would be beneficial to businesses in the LSIA and the regional economy through increased expenditure of wages for goods and services. These marginal economic and fiscal benefits would not be substantial under Alternative 3. Adequate resources for housing and services were identified in Chapter 3. No mitigation for changes in population and housing would be required for decommissioning under this alternative.

No adverse change in property value was identified and no social impacts were identified for the LSIA from degradation of views, views of construction equipment and activity, vehicular or pedestrian access restrictions, land use, air quality, and noise effects, or health and safety concerns under Alternative 3.

4.17.4 CUMULATIVE IMPACTS

4.17.4.1 GEOGRAPHIC SCOPE

The cumulative analysis impact area for socioeconomics is Imperial County. This geographic area encompasses the communities most likely to be impacted (beneficial and adverse) from construction, operation and maintenance, and decommissioning of the Ocotillo Sol Project. Past, present, and reasonably foreseeable future projects are listed in Table 4.1-1. All the projects described in Table 4.1-1 would fall within the geographic scope for socioeconomic cumulative impacts.

The existing condition for socioeconomics in the Ocotillo Sol Project area, which represents the aggregate effect of past and present actions, is described in Chapter 3, Section 3.18. The reasonably foreseeable future projects listed in Table 4.1-1 could result in short-term beneficial cumulative impacts to economics, primarily during construction and decommissioning activities. The combination of these projects could result in increased employment in the region. Operation and maintenance activities are anticipated to result in minimal, if any, significant changes in socioeconomics in the area.

4.17.4.2 ALTERNATIVES 1, 4, AND 5

Based on direct and indirect impact analysis presented in Section 4.17.3, it is expected that Alternatives 1, 4, and 5 would not result in impacts to socioeconomics. These alternatives, in combination with other reasonably foreseeable future projects, would not contribute to cumulative impacts related to socioeconomics within Imperial County or near the Ocotillo Sol Project area.

4.17.4.3 ALTERNATIVES 2 AND 3

Alternatives 2 and 3, in combination with the capital investment and construction of the approved and proposed renewable energy projects for Imperial County, would generate a cumulative economic benefit that is needed for the region. The high levels of chronic unemployment in Imperial County require a major economic stimulus as an alternative to the seasonal employment and low paying jobs offered by the large agricultural sector. Due to the relatively small size of the Applicant's proposed Ocotillo Sol Project, however, even in combination with other reasonably foreseeable future projects, no cumulative socioeconomic impacts for the LSIA or Imperial County were identified.

4.17.5 MITIGATION

No mitigation measures for socioeconomics would be required.

4.17.6 IRREVERSIBLE AND IRRETRIEVABLE COMMITMENT OF RESOURCES

Construction, operation and maintenance, and decommissioning of the Ocotillo Sol Project would generate a marginal economic benefit for the local economy. The impact would be

relatively small and would not represent a substantial impact to the regional economy. No unavoidable adverse impacts to economic resources or social condition would occur and no irreversible and irretrievable commitment of resources would occur.

4.18 ENVIRONMENAL JUSTICE

Environmental Justice involves the fair treatment and meaningful involvement of all people regardless of race, color, national origin, or income with respect to the development, implementation, and enforcement of environmental laws, regulations, and policies. Fair treatment means that no group of people, including racial, ethnic, or socioeconomic group should bear a disproportionate share of the negative environmental consequences resulting from industrial, municipal, and commercial operations or the execution of federal, state, local, and Tribal programs and policies.

4.18.1 MANAGEMENT GOALS

BLM's Environmental Justice principles include the following:

- It will be determined whether the proposed actions on BLM managed land will adversely and disproportionally impact minority populations, low-income communities, and Tribes (see Section 3.19 and EO 12898, Environmental Justice) and consider aggregate, cumulative, and synergistic effects, including results of actions taken by other parties. Further, while Environmental Justice analysis is specifically concerned with disproportionate effects on the three populations listed above, the social and economic analysis produced in accord with NEPA will consider all potential social and economic effects, positive and negative, on any distinct group.
- The BLM will promote and provide opportunities for full involvement of minority populations, low-income communities, and Tribes in BLM decisions that affect their lives, livelihoods, and health.
- The BLM will incorporate Environmental Justice considerations in land use planning alternatives to adequately respond to Environmental Justice issues and problems facing minority populations, low-income communities, and Tribes living near public lands, working with, and/or using public land resources.
- Where disproportionately high adverse impacts are anticipated, the BLM will work with local community groups/associations, governments, and Tribal leaders to determine if land disposition and/or acquisition policies affect real estate values and real income of minority and low-income communities, and Tribes.
- The BLM State and Field Offices will continue to make Environmental Justice a mandatory critical element for consideration in all land use planning and NEPA documents.

4.18.2 TYPICAL IMPACTS FROM SOLAR ENERGY DEVELOPMENT

Solar energy projects in the CDCA Plan area are often located in rural and desert areas with notable characteristics and qualities of a relatively natural environment with little human impact. The construction and facilities associated with solar energy projects have the potential to change the cultural interpretation and feel of an environment. Areas of concern that might potentially affect low-income or minority populations are noise and dust during the construction of utility-

scale solar facilities and the associated access roads; visual impacts of solar generation and auxiliary facilities, including transmission lines; noise and electromagnetic frequency effects associated with solar project operations; access to land used for economic, cultural, or religious significance; and property values. Furthermore, federally recognized Native American Tribes have a unique relationship with the federal government on the basis of their original sovereign and independent status as defined in treaties, statutes, EOs, and court decisions. The federal government is required to take into account the interests of federally recognized Native American Tribes when proposing actions that could affect those interests. Interests of Native Americans include not only cultural resources but also economic development, access to energy resources, health and safety, environmental justice, and protection of the environment (BLM and U.S. Department of Energy 2010).

Cultural resources important to Tribes include cemeteries, campsites, and dwelling places associated with Tribal ancestors; traditional hunting, fishing, and gathering places; traditionally important plant and animal species and their habitats; and sacred places, landscapes, and resources important to the free practice of traditional Native American religions and the preservation of traditional Native American cultures (BLM and U.S. Department of Energy 2010).

4.18.3 IMPACTS BY ALTERNATIVE

4.18.3.1 ALTERNATIVES 1, 4, AND 5

Under Alternative 1, the Ocotillo Sol Project would not be approved by the BLM and the CDCA Plan would not be amended. The Ocotillo Sol Project would not be constructed and the BLM would continue to manage the site consistent with the CDCA Plan (1980, as amended), Yuha Basin ACEC Management Plan (1981), Yuha Desert Wildlife Habitat Management Plan (1983), Yuha Desert Management Plan (1985), and the *Flat-tailed Horned Lizard Rangewide Management Strategy*.

Under Alternative 4, the Ocotillo Sol Project would not be approved and no ROW grant would be issued to the Applicant. The project area would remain in its existing condition, with no construction of structures or facilities resulting in ground disturbance, and no impacts associated with the Ocotillo Sol Project would occur. Under Alternative 4, the CDCA Plan would be amended to identify the Ocotillo Sol Project area as suitable for solar energy development. As a result, a project might be proposed in the future using the same or different solar energy technology on the project site, possibly resulting in impacts similar to the proposed Ocotillo Sol Project. The impacts of such a future project, however, are speculative at this time.

Under Alternative 5, the Ocotillo Sol Project would not be approved and no ROW grant would be issued to the Applicant. The project area would remain in its existing condition, with no construction of structures or facilities resulting in ground disturbance, and no impacts associated with the Ocotillo Sol Project would occur. Under Alternative 5, the CDCA Plan would be amended to identify the Ocotillo Sol Project area as unsuitable for solar energy development.

Under Alternatives 1, 4, and 5, existing conditions relevant to Environmental Justice would remain the same. These alternatives are no build alternatives and no construction would occur.

No further analysis of construction, operation and maintenance, and decommissioning activities associated with the build alternatives for Environmental Justice impacts under Alternatives 1, 4, and 5 would be required. Alternatives 1, 4, and 5 would not result in direct or indirect impacts to Environmental Justice.

4.18.3.2 ALTERNATIVE 2

Under Alternative 2, the Applicant would construct, operate, maintain, and decommission a 100-acre solar PV facility on BLM-managed lands under an authorized ROW. This alternative includes a 15-acre temporary ROW that would be used as a laydown area during construction of the solar facility. Under Alternative 2, the CDCA Plan would be amended to identify the Ocotillo Sol Project area as suitable for solar energy development. The CDCA Plan amendment would result in the possibility of development of the same or different solar energy technology in the project area after decommissioning of the Ocotillo Sol Project.

No adverse socioeconomic impacts were identified for Alternative 2 (Section 4.17.4.2) and Alternative 2 would not generate disproportionate adverse Environmental Justice impacts during the construction, operation and maintenance, or decommissioning periods. No further analysis of Environmental Justice impacts under Alternative 2 is required. Alternative 2 would not result in direct or indirect impacts to Environmental Justice.

4.18.3.3 ALTERNATIVE 3

Under Alternative 3, the Applicant would construct, operate, maintain, and decommission a 100-acre solar PV facility on BLM-managed lands under an authorized ROW. The 15-acre temporary ROW described under Alternative 2 would be reduced to 2 acres under Alternative 3. The 2-acre temporary ROW would provide for parking during construction of the Ocotillo Sol Project. Laydown and staging would occur within the 100-acre ROW as construction activities progress.

Impacts to socioeconomics would be the same under Alternative 3 as discussed above for Alternative 2. No adverse socioeconomic impacts were identified for Alternative 3 (Section 4.17.4.2) and Alternative 3 would not generate disproportionate adverse Environmental Justice impacts during the construction, operation and maintenance, or decommissioning periods. No further analysis of Environmental Justice impacts under Alternative 3 is required. Alternative 3 would not result in direct or indirect impacts to Environmental Justice.

4.18.4 CUMULATIVE IMPACTS

The cumulative analysis impact area for Environmental Justice is Imperial County. This geographic area encompasses the low-income and minority communities most likely to be impacted (beneficial and adverse) from construction, operation and maintenance, and decommissioning of the Ocotillo Sol Project. Past, present, and reasonably foreseeable future projects are listed in Table 4.1-1. All the projects described in Table 4.1-1 would fall within the geographic scope for Environmental Justice cumulative impacts.

The existing condition for Environmental Justice in the Ocotillo Sol Project area, which represents the aggregate effect of past and present actions, is described in Chapter 3, Section 3.19. The reasonably foreseeable future projects listed in Table 4.1-1 are primarily planned within fallow agricultural fields or adjacent to existing industrial development or structures (e.g., along existing utility corridors or adjacent to the Imperial Valley Substation). These projects are planned within rural areas and are primarily at a significant distance from low-income or minority populations. Cumulative impacts to Environmental Justice from reasonably foreseeable future development are not anticipated.

4.18.4.2 ALTERNATIVES 1, 4, AND 5

Based on direct and indirect impact analysis presented in Section 4.18.3, it is expected that Alternatives 1, 4, and 5 would not result in impacts to Environmental Justice. These alternatives, in combination with other reasonably foreseeable future projects, would not contribute to cumulative impacts related to Environmental Justice within Imperial County or near the Ocotillo Sol Project area.

4.18.4.3 ALTERNATIVES 2 AND 3

No cumulative adverse Environmental Justice impacts were identified under Alternatives 2 and 3. These alternatives, in combination with other reasonably foreseeable future projects, would not generate a cumulative impact that would yield disproportionate adverse Environmental Justice impacts.

4.18.5 MITIGATION

No mitigation measures for Environmental Justice would be required.

4.18.6 IRREVERSIBLE AND IRRETRIEVABLE COMMITMENT OF RESOURCES

The Ocotillo Sol Project area is located within a rural area and within a designated utility corridor. The project area is not located in or near an urban area and would not disproportionately have an effect on low income or minority populations. No direct or indirect impacts to Environmental Justice would occur due to the Ocotillo Sol Project and no irreversible and irretrievable commitment of resources would occur.

4.19 SHORT-TERM VERSUS LONG-TERM PRODUCTIVITY OF THE ENVIRONMENT

NEPA requires consideration of the relationship between short-term uses of the environment and long-term productivity associated with the project. This involves the consideration of whether the project would sacrifice a resource value that might benefit the environment in the long-term for some short-term value to the Applicant or the public. For purposes of this discussion, short-term refers to three years or less after the construction phase ends and subsequent restoration and rehabilitation activities. Long-term refers to three years or longer.

Short-term use of the environment during construction and decommissioning would result in the temporary loss of some resources, such as temporary loss of some vegetation communities and wildlife habitat, and temporary air quality effects. The Ocotillo Sol Project would result in 100 acres of land that would be lost within the project area until decommissioning and habitat restoration. Longer-term effects include landscape scarring. There would be no permanent loss of the overall productivity of the environment from the Ocotillo Sol Project.

CHAPTER 5.0 CONSULTATION, COORDINATION, AND PUBLIC PARTICIPATION

5.1 PUBLIC SCOPING

Scoping is required by NEPA pursuant to the CEQ (40 CFR 1501.7) regulations. The scoping process ensures that significant issues, alternatives, and impacts are addressed in environmental documents and determines the degree to which these issues and impacts will be analyzed in the EIS. As the federal lead agency on the proposed Ocotillo Sol Project, the BLM is responsible for soliciting comments from relevant agencies and the public, organizing and analyzing the comments received, and identifying the issues that will be addressed as part of the environmental analysis. The scoping process and results for the Ocotillo Sol Project are described below.

5.1.1 PUBLIC SCOPING PERIOD

An initial 30-day scoping period for the Ocotillo Sol Project was announced by the publication of the Notice of Intent in the *Federal Register* on July 15, 2011. The Ocotillo Sol project scoping meetings were announced through media releases, e-mail, and the BLM California Desert District Web site. In addition, postcards announcing the scoping meetings were sent to more than 100 addresses. The BLM extended the scoping period by 10 days to August 25, 2011 as required to allow 15 days of comment after the public meeting and so that all interested parties would have an opportunity to participate in the process.

The Notice of Intent announced the period for public scoping of alternatives, issues, impacts, and planning criteria. The Notice of Intent also requested the views of other agencies regarding the scope and content of the environmental information relevant to their statutory responsibilities or areas of expertise. Federal, state, and local agencies, as well as individuals or organizations that were interested or may be affected by the BLM's decision on the Ocotillo Sol Project, were invited to participate in the scoping process. Eligible agencies could request to participate as a cooperating agency.

5.1.2 SCOPING MEETINGS

The BLM hosted two public scoping meetings in El Centro, California, on August 10, 2011. Both the afternoon (2:00–4:00 P.M.) and evening (6:00–8:00 P.M.) meetings were held at the Imperial County Executive Office. Approximately 18 people attended the two meetings.

Both meetings were conducted as an open house, allowing participants to review maps, display boards, and ask specific questions of BLM staff available at the display stations. A letter from the BLM to the public provided information about the scoping meetings and process, and was made available as a handout for the public. Fact sheets about the project and NEPA process

were also made available, along with comment forms. The public comment form requested the public's input on the proposed project and any potential issues, concerns, or alternatives. The BLM invited participants to submit comments in formats other than comment forms, including letters and e-mail. All meeting materials contained a project-specific e-mail address to facilitate collection of electronic comments.

5.1.3 SCOPING RESPONSE

During the public scoping period, two federal agencies, eight special interest (environmental) organizations (many of which combined their comments), and three individuals provided comments by email. No scoping comments, written or verbal, were received at either of the two scoping meetings. A Scoping Report was prepared and made available to the public (Appendix M).

5.1.4 ISSUES IDENTIFIED DURING SCOPING

This section provides a summary of issues identified by the public during scoping. Summaries may be of either one comment or multiple comments. The full text of all comments received is provided in the Scoping Report (see Appendix M).

5.1.4.1 GENERAL

Five general comments were received regarding assessing impacts on resources. Commenters requested that impacts be quantified and fully disclosed, that the significance rationales be provided, and that measures proposed to mitigate impacts be disclosed.

5.1.4.2 PURPOSE AND NEED

Two comments addressed the purpose and need for the project, and one comment addressed the BLM's purpose and need. The project-related purpose and need comments concerned existing energy demand and generation in the Applicant's service area and meeting the California RPS goals. The agency-related purpose and need comment requested that the BLM's purpose and need be expanded beyond the need to respond to the ROW request.

5.1.4.3 ALTERNATIVE DEVELOPMENT PROCESS AND PRELIMINARY RESULTS

Several comments were received regarding alternatives. These comments included requests to provide reasons for eliminating alternatives, suggestions to include alternative sites and generation technologies, a request to identify and analyze an environmentally preferred alternative, a requests for a comparison of all alternatives, and a suggestion to include an approach to identifying and designating environmentally sensitive areas.

5.1.4.4 AIR QUALITY

Four comments were received concerning air quality. These comments concerned the existing air quality conditions in Imperial County. The commenters also requested detailed discussions and analysis of air quality as well as an evaluation of measures to reduce air emissions.

5.1.4.5 BIOLOGICAL RESOURCES

Several comments were received specific to biological resources near the Ocotillo Sol Project. With regard to threatened and endangered species, commenters requested that BLM:

1) identify all petitioned and listed threatened and endangered species and critical habitat,
2) initiate consultation with the USFWS for threatened and endangered species present,
3) analyze impacts on threatened and endangered species and their habitats, and
4) identify measures to mitigate adverse impacts to threatened and endangered species and their habitats.
5) disclose cumulative impacts to special status species, and
6) discuss impacts to vegetation and develop an invasive plant management plan.

5.1.4.6 CLIMATE CHANGE

Three comments were received regarding climate change and greenhouse gas emissions. Commenters requested that construction-related greenhouse gas emissions be analyzed and compared with different types of energy generating facilities. A comment was received requesting that the climate change benefits of solar energy be quantified, while another comment requested consideration of how climate change could affect the Ocotillo Sol Project and its related impacts.

5.1.4.7 CULTURAL RESOURCES

Two comments were received specific to cultural resources. Both comments requested that cultural resources at the Ocotillo Sol Project be protected or avoided pursuant to existing legislation. In addition, one comment requested that Tribal and SHPO coordination be discussed.

5.1.4.8 PUBLIC HEALTH AND SAFETY

Four comments were received regarding public health and safety. Two comments requested that construction and operation related hazardous waste, its impacts, and potential mitigation measures be identified. One comment requested that electromagnetic issues related to transmission be discussed. In addition, one comment requested that the EIS include a requirement for a decommissioning and site restoration plan.

5.4.1.9 SOCIOECONOMICS

Two comments were received relating to socioeconomics. One comment requested a cost/benefit analysis and the other requested that the local labor commitment for the project be discussed.

5.1.4.10 ENVIRONMENTAL JUSTICE

One comment was received regarding environmental justice requesting an evaluation of the project's impact on minority populations and low-income communities and an analysis of disproportionate impacts to these populations.

5.1.4.11 SPECIAL DESIGNATIONS

Several comments were received specific to special designations, particularly the Yuha Desert ACEC. Commenters expressed concern regarding the management of the ACEC and potential impacts of this project or other renewable energy projects within this or other ACECs. Commenters requested that the BLM discuss management actions to protect the Yuha Desert ACEC, other ACECs, and other flat-tailed horned lizard management areas from renewable energy uses. Some commenters believe special management areas (e.g., ACECs, wildlife management areas) should be off limits to renewable energy projects and that renewable energy projects should be directed elsewhere. Commenters also requested that the full history of the Yuha Desert ACEC be discussed and that impacts, including cumulative, be thoroughly analyzed.

5.4.1.12 VISUAL RESOURCES

Two comments were received for visual resources—one asking that light and glare be discussed and one asking that impacts to visual resources be analyzed.

5.1.4.13 WATER RESOURCES

Numerous comments were received concerning water resources for the Ocotillo Sol Project. Commenters requested that, should groundwater be used for the project, the affected groundwater basin and the availability of that groundwater be thoroughly discussed. Commenters requested that the Draft EIS identify the source of water and the quantity required for the project as well as process water disposal and containment. Commenters also suggested that alternative sources for water be explored.

Comments concerning the Clean Water Act included requests that: 1) the Draft EIS describe all Waters of the U.S. that could be affected and provide maps identifying those waters in the project area, 2) a jurisdictional delineation should be included for Waters of the U.S. in the project area, 3) existing natural drainage patterns and drainage during project operation should be described, 4) the Draft EIS identify whether Ocotillo Sol project components are within a 50- or 100-year floodplain, 5) information regarding Section 303 impaired waters in the project area and efforts to develop/revise total maximum daily loads be provided, and 6) the Applicant should

coordinate with the USACE to determine if the Ocotillo Sol project requires a Section 404 permit.

Several commenters expressed concern regarding water resources impacts and requested that the potential for adverse aquatic impacts and the effects of project discharges be thoroughly analyzed. Additionally, commenters requested that the Draft EIS disclose and discuss cumulative impacts to water resources, including impacts from proposed large-scale solar facilities. Commenters also indicated that a discussion of how water resources may be affected by climate change be included, with a qualitative analysis of impacts to water supply and adaptability of the project to these changes.

Comments concerning mitigation included requests that: 1) water conservation and mitigation measures be described, 2) how the project and mitigation measures will coordinate with existing restoration and enhancement efforts be described, and 3) the need for a California State Water Resources Control Board General Permit and associated mitigation measures be determined. One commenter recommended the following specific mitigation measures for drainages, ephemeral washes, and floodplain: A) using existing natural drainage channels on-site and more natural features, such as earthen berms or channels, rather than concrete-lined channels; and B) committing to the use of natural washes, in their present location and natural form and including adequate natural buffers, for flood control to the maximum extent practicable.

5.1.4.14 ISSUES OR CONCERNS OUTSIDE THE SCOPE OF THE EIS

Comments in this category are outside the scope of the EIS and analysis and will not be addressed in the EIS. These comments included requests to discuss illegal OHV use within and overall management of the Yuha ACEC, concerns regarding the Imperial Valley substation, and requests to disclose financial and legal information relating to the Applicant and its projects on public lands.

5.2 ORGANIZATIONS AND PERSONS CONSULTED

In March 2009, the Applicant began holding pre-application meetings with the BLM and other interested parties about the potential for developing a PV solar project in the Imperial Valley. The Applicant held seven meetings between March 2009 and September 2010. Interested parties included the BLM California State Office, BLM El Centro Field Office, USACE, and Imperial County. The BLM hosted an initial affected agency meeting on April 20, 2011 at the El Centro Field Office in El Centro, California. In addition to the BLM staff, attendees included U.S. Border Patrol, and CDFG. The BLM hosted a second affected agency meeting on August 1, 2011 at the El Centro Field Office in El Cento, California. In addition to the BLM staff, representatives from Imperial County attended.

BLM has initiated and continued informal consultations with USFWS related to the Bald and Golden Eagle Act and the flat-tailed horned lizard.

5.2.1 NATIVE AMERICAN GOVERNMENT-TO-GOVERNMENT CONSULTATION

The BLM is responsible for consultation with Indian tribes to identify sacred sites, historic properties, other places of traditional religious and cultural significance, and other resources within the project area. The BLM is also responsible for consultation with Indian tribes to incorporate appropriate mitigation measures in the event such sites are adversely affected by the Ocotillo Sol Project.

The BLM invited Indian tribes to consult on the Ocotillo Sol Project on a government-to-government basis at the earliest stages of project planning. Initial Tribal consultation letters were sent in February 2010. Additional correspondence and communication has occurred since the initial letters were sent. Tribes were also invited to the August 2011 affected agency pre-application meeting. Consultation with Tribes will continue throughout the NEPA and Section 106 compliance processes.

Individuals from the following 15 tribes were contacted as part of these processes:

- Barona Band of Mission Indians
- Campo Kumeyaay Nation
- Cocopah Indian Tribe
- Ewiiaapaayp Band of Kumeyaay Indians
- Fort Yuma Indian Reservation
- Jamul Indian Village
- Kwaaymii Laguna Band of Indians
- La Posta Band of Kumeyaay Indians
- Manzanita Band of Kumeyaay Indians
- Mesa Grande Band of Mission Indians
- San Pasqual Band of Diegueno Indians
- Santa Ysabel Band of Diegueno Indians
- Sycuan Band of the Kumeyaay Nation
- Torres-Martinez Desert Cahuilla Indians
- Viejas Band of Kumeyaay Indians

The Viejas Band of Kumeyaay Indians requested testing of the archaeological site located within the proposed site footprint. The Quechan Culture Committee supported this request. No significant resources have been identified, and no other issues have been raised in government-to-government consultation.

5.2.2 SECTION 106 COMPLIANCE

As described in Section 3.8—Cultural Resources, Section 106 of the NHPA requires a federal agency with jurisdiction over a project to take into account the effect of the project on historic properties and to afford the Advisory Council on Historic Preservation a reasonable opportunity to comment. Under the Section 106 process, federal agencies are obliged to identify cultural resources within a proposed project's APE, to assess impacts to resources listed in, or eligible for listing in, the NRHP, and to mitigate adverse effects to such resources.

Section 106 compliance for the Applicant's proposed Ocotillo Sol Project is in progress. The Archaeological report and 106 consulting party meeting invite letter were sent in November 2010. A Section 106 consulting party meeting was held in December 2010 and a pre-application meeting was held in August 2011. No tribal representatives attended either meeting, even though they were invited. As explained in Chapters 3 and 4, no significant resources have been identified within the project's APE, and no other issues have been raised to date with respect to the project as a result of Section 106 consultation.

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CHAPTER 6.0
LIST OF PREPARERS

Although individuals have primary responsibility for preparing or contributing to sections of the Draft EIS/Draft CDCA Plan Amendment, the document is an interdisciplinary team effort. In addition, internal review of the document occurs throughout preparation. Specialists at the BLM's El Centro Field Office, California Desert District Office, California State Office, and Washington Office reviewed the analysis and supply information, as well as provided document preparation oversight. Contributions by individual preparers may be subject to revision by other BLM specialists and by management during internal review. The individuals identified below made substantial contributions toward the development of this document.

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None.

FIRE AND FUELS

None.

LANDS AND REALTY

None.

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None.

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None.

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CHAPTER 5.0

None.

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CHAPTER 8.0
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CHAPTER 9.0
GLOSSARY OF TERMS AND LIST OF ACRONYMS

9.1 GLOSSARY OF TERMS USED

Adverse visual impact: any modification in landforms, water bodies, or vegetation, or any introduction of structures, which negatively interrupts the visual character of the landscape and disrupts the harmony of the basic elements (i.e., form, line, color, and texture).

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.

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 public.

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 nonattainment area for others.

A-weighted decibel (dBA): A frequency-weighted decibel scale that approximates the relative sensitivity of human hearing to different frequency bands of audible sound.

Basic elements: The four design elements (form, line, color, and texture), which determine how the character of a landscape is perceived.

Carbon monoxide (CO): A colorless, odorless gas that is toxic because it reduces the oxygen-carrying capacity of the blood.

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.

Clean Water Act (CWA): Provides guidance for the restoration and maintenance of the chemical, physical, and biological integrity of the nation's waters.

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.

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 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. In addition, they may include definite locations of traditional, cultural, or religious importance to specified social or cultural groups.

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.

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.

De minimis level: A threshold for determining whether various regulatory requirements apply to a particular action or facility. In an air quality context, de minimis thresholds typically are based on emissions, facility size, facility activity levels, or other indicators.

Desert pavement: A surface covering of closely packed rock fragments of pebble or cobble size found on desert soils.

Distance zones: A subdivision of the landscape as viewed from an observer position. The subdivision (zones) includes foreground-middleground, background, and seldom seen.

Endangered species: An animal or plant species that is in danger of extinction throughout all or a significant portion of its range (as defined in the ESA, as amended in 1982).

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.

Foreground-middleground distance zones: The area visible from a travel route, use area, or other observation point to a distance of 3 to 5 miles. The outer boundary of this zone is defined as the point where the texture and form of individual plants are no longer apparent in the landscape. Vegetation is apparent only in patterns or outline.

Geothermal resources: Products of geothermal steam or hot water and hot brines, including those resulting from water, gas, or other fluids artificially introduced into geothermal formations; heat or other associated energy found in geothermal formations; and associated byproducts (43 CFR 3200.1).

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.

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 food, water, cover, and living space.

Hazardous air pollutant: Air pollutants that have been specifically designated by relevant federal or state authorities as being hazardous to human health. Most hazardous air pollutant 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.

Indian tribe: Any American Indian group in the US that the Secretary of the Interior recognizes as possessing tribal status (listed periodically in the Federal Register).

Invasive non-native plant: A plant species that was introduced to the ecosystem under consideration after European contact as a direct or indirect result of human activity and that produces large numbers of offspring at considerable distances from parent plants.

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.

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.

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 that distinguishes it from its immediate surroundings.

Landscape features: The land and water form, vegetation, and structures that compose the characteristic landscape.

Memorandum of Understanding: A formal document describing an agreement between parties.

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).

National Historic Preservation Act of 1966, as amended: A federal statute that established a federal program to further the efforts of private agencies and individuals in preserving the nation's historic and cultural foundations. The National Historic Preservation Act:: 1) authorized the National Register of Historic Places, 2) established the Advisory Council on Historic Preservation and a National Trust Fund to administer grants for historic preservation, and 3) authorized the development of regulations to require federal agencies to consider the effects of federally assisted activities on properties included on or eligible for the National Register of Historic Places. Also see National Register of Historic Places.

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 Eligible Properties: Cultural resource properties that meet the National Register criteria and have been determined eligible for nomination to the National Register of Historic Places because of their local, state, or national significance. Eligible properties generally are older than 50 years and have retained their integrity. They meet one or more of four criteria: a) associated with events that have made a significant contribution to the broad patterns of our history; b) associated with the lives of persons significant in our past; c) embody the distinctive characteristics of a type, period, or method of construction, or that represent the work of a master; and d) have yielded, or may be likely to yield, information important in prehistory or history.

National Register of Historic Places (NRHP): Administered by the National Park Service, the NRHP is part of a national program to coordinate and support public and private efforts to identify, evaluate, and protect America's historic and archeological resources.

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 (NO_2): 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 (NO_x): 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.

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.

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.

Ozone: 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.

Paleontological resources (fossils): The physical remains of plants and animals preserved in soils and sedimentary rock formations. Paleontological resources are important 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.

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.

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, PM10 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, PM2.5 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 Resources: Those attributed to Native American groups who occupied the region before contact with Europeans; historic resources are those associated primarily with Europeans and Americans but also include resources of Native Americans following contact.

Rare plant: A plant that is not presently threatened with extinction but exists in such small numbers throughout its range that it may become endangered if its present environment worsens.

Reactive organic compounds: The most technically accurate term for the organic precursors of ozone and other photochemically generated pollutants. The more commonly used term is "reactive organic gases."

Reactive organic gases: Organic compounds emitted into the air that have photochemical reaction rates sufficient to be considered precursors of ozone. Organic compounds that are not

considered reactive in the lower atmosphere include methane, ethane, acetone, methyl acetate, carbonic acid, ammonium carbonate, methylene chloride, methyl chloroform, and numerous fully saturated chloro-flourocarbon compounds. The term "reactive organic compounds" would be technically more accurate, since many of the compounds of concern may be present in both gaseous and aerosol states (e.g., as atmospheric aerosols or as liquid films condensed on atmospheric particles in dynamic equilibrium with gas phase vapors). However, the acronym ROC is not in common use, and there are far too many acronyms already in use for organic compound emissions.

Right-of-way (ROW) corridor: A permit or easement that authorizes the use of lands for certain specified purposes, commonly for pipelines, roads, telephone lines, or power lines.

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: 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.

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 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.

Sensitive species (plant and animal): Species that are under status review, have small or declining populations, live in unique habitats, or need special management. Sensitive species include threatened, endangered, and proposed species that are classified by the USFWS.

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 Officer (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 period mandated by the Clean Air Act.

State Water Resources Control Board (WRCB): 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 topography, geology and hydrology.

Sulfur dioxide (SO_2): 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.

S**ulfur oxides (SO_x)**: A group term meaning the combination of sulfur dioxide and sulfur trioxide; treated as a precursor of sulfur dioxide, sulfate particles, and atmospheric sulfuric acid.

Take: To harass, harm, pursue, hunt, shoot, wound, kill, trap, capture, or collect, or to attempt to engage in any such conduct (under ESA).

Texture: The visual manifestations of the interplay of light and shadow created by the variations in the surface of an object or landscape.

Threatened species: Any plant or animal species likely to become endangered within the near future throughout all or part of its range and designated by the USFWS under the ESA.

Total maximum daily load: Total maximum daily load is a calculation of the maximum amount of a pollutant that a water body can receive and still safely meet water quality standards.

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.

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 resources: The visible physical features on a landscape (e.g., land, water, vegetation, animals, structures, and other features).

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 resource management classes: Categories assigned to public lands based on scenic quality, sensitivity level, and distance zones. There are four classes, each of which has an objective that prescribes the amount of change allowed in the characteristic landscape.

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).

Wildlife corridor: a strip of land that aids in the movement of species between disconnected areas of their natural habitat.

9.2 LIST OF ACRONYMS USED

AB	Assembly Bill
AC	alternating current
ACEC	Area of Critical Environmental Concern
APE	Area of Potential Effect
APLIC	Avian Power Line Interaction Committee
BLM	Bureau of Land Management
BMP	best management practices
CAAQS	California Ambient Air Quality Standards
CAISO	California Independent System Operator
CAL FIRE	California Department of Forestry and Fire Protection
Cal-IPC	California Invasive Plant Council's Invasive Plant Inventory
Caltrans	California Department of Transportation
CARB	California Air Resources Board
CDCA	California Desert Conservation Area
CDFA	California Department of Feed and Agriculture
CDFG	California Department of Fish and Game
CdTe	cadmium telluride
CEC	California Energy Commission
CEQ	Council on Environmental Quality
CEQA	California Environmental Quality Act
CERCLA	Comprehensive Environmental Response, Compensation, and Liability Act
CFR	Code of Federal Regulations
CGS	California Geological Survey
CH_4	methane
CNEL	Community Noise Equivalent Level
CO	carbon monoxide
CO_2	carbon dioxide
CWA	Clean Water Act
dBA	decibels on the A-weighted scale
DC	direct current
DOI	Department of Interior
EIS	environmental impact statement
EO	Executive Order
EPA	Environmental Protection Agency
ESA	Endangered Species Act
FEMA	Federal Emergency Management Area
FLPMA	Federal Land Policy and Management Act of 1976
FR	Federal Register

gal	gallon
gal/day	gallons per day
GHG	greenhouse gas
GIS	geographic information systems
GPS	global positioning system
GWP	global warming potential
HFC	hydrofluorocarbons
ICAPCD	Imperial County Air Pollution Control District
IM	Instruction Memorandum
IMPLAN	Impact Analysis for Planning
KOP	key observation point
kV	kilovolt
L_{dn}	day-night average sound level
L_{eq}	equivalent continuous sound level
LOS	level of service
LSIA	Local Socioeconomic Impact Area
MBTA	Migratory Bird Treaty Act
MLD	Most Likely Descendent
$MMTCO_2E$	million metric tons of CO_2 equivalent
$MTCO_2E$	metric tons of CO_2 equivalent
msl	mean sea level
MW	megawatt
MWh	megawatt hour
N_2O	nitrous oxide
NAAQS	National Ambient Air Quality Standards
NAHC	Native American Heritage Commission
NEPA	National Environmental Policy Act of 1969
NHPA	National Historic Preservation Act
NLCS	National Landscape Conservation System
NO_x	oxides of nitrogen
NO_2	nitrogen dioxide
NPDES	National Pollutant Discharge Elimination System
NRA	Natural Resources Assessment
NRHP	National Register of Historic Places
O_3	ozone
OHV	off-highway vehicle
OPLA–PRP	Omnibus Public Lands Act–Paleontological Resource Preservation
PCB	polychlorinated biphenyl
PFC	perfluorocarbons
PFYC	Potential Fossil Yield Classification
PL	Public Law

$PM_{2.5}$	particulate matter less than 2.5 microns in diameter
PM_{10}	particulate matter less than 10 microns in diameter
POD	Plan of Development
pphm	parts per hundred million
PRC	Public Resources Code
PRPA	Paleontological Resources Preservation Act
PV	photovoltaic
RCRA	Resource Conservation and Recovery Act
ROW	right-of-way
RPS	Renewable Portfolio Standard
RWQCB	Regional Water Quality Control Board
SB	Senate Bill
SCAG	Southern California Association of Governments
SCAQMD	South Coast Air Quality Management District
SCIC	South Coastal Information Center
SF_6	sulfur hexafluoride
SHPO	State Historic Preservation Officer
SIP	State Implementation Plan
SO	Secretarial Order
SO_2	sulfur dioxide
SLRU	Sensitivity Level Rating Units
SQRU	Scenic Quality Rating Units
SSAB	Salton Sea Air Basin
SWPPP	Stormwater Pollution Prevention Plan
U.S.	United States
USACE	United States Army Corps of Engineers
USC	United States Code
USFWS	United States Fish and Wildlife Service
USGS	United States Geological Survey
VOC	volatile organic compound
VRI	Visual Resource Inventory
VRM	Visual Resource Management
WECO	Western Colorado OHV Routes of Travel Designation Plan
WRCB	Water Resources Control Board
WRI	Wildlife Research Institute
°F	degrees Fahrenheit
$\mu g/m^3$	micrograms per cubic meter