Appendix M
Draft EIS Comment Letters

Appendix M

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Draft EIS Comment Letters

1.0 Lucerne Valley Solar Project Draft EIS Comment Analysis Process

1.1 Introduction

In February 2010, the Bureau of Land Management (BLM), Barstow Field Office (BFO) released a Draft Environmental Impact Statement (DEIS) for the proposed Lucerne Valley Solar Project. On February 5, 2010, a Notice of Availability (NOA) Lucerne Valley Solar Project Draft Environmental Impact Statement/Draft CDCA Plan Amendment for public review and comment on the DEIS was published in the *Federal Register* (Vol. 75, No. 24, pp. 6057-6058). The DEIS was distributed in both hard copy and on CD-ROM and was available for downloading from the BLM's Web site at http://www.blm.gov/ca/st/en/fo/barstow.html. Additional copies of these volumes were made available for public inspection at the BLM California Desert District Office, 22835 Calle San Juan de Los Lagos, Moreno Valley, California, the Apple Valley Public Library (Newton T. Bass Branch, 14901 Dale Evans Parkway, Apple Valley, CA 92307), and at the Lucerne Valley Public Library (Janice Horst Branch, 33103 Old Woman Springs Road, Lucerne Valley, CA 92356). The BLM invited public and agency comment on the DEIS and technical support documents for a period of 90 calendar days, which was scheduled to end on May 13, 2010. However, on February 19, 2010, the BLM extended the public comment period to May 20, 2010.

A public comment meeting was held to provide information about the project and to receive comments on the Draft EIS/Draft CDCA Plan Amendment. The public comment meeting was held on Tuesday, March 9, 2010, from 6:30 PM to 8:30 PM at the Lucerne Valley Elementary School, 10788 Barstow Road, Lucerne Valley, California.

The purpose of this narrative summary is to provide the numbers and types of comments that were received during the comment period for the DEIS and to describe the process by which all comments were analyzed to determine their relevance and significance for subsequent revision of the document. In addition, this summary describes the comment tracking procedures used for preparing the Final EIS, along with the organization of Appendices N and O to assist the reader in locating specific letters/comments and BLM responses.

1.2 The Public Comment Process under NEPA

Solicitation of public comment on draft plans for major federal actions is required under the National Environmental Policy Act (NEPA). Specifically, the BLM and other federal agencies must "assess and consider [the resulting public] comments both individually and collectively" (Title 40, Code of Federal Regulations [CFR], Section 1503.4). Comments received on the Lucerne Valley Solar Project DEIS are viewed as critical to helping the BLM modify or clarify, as necessary, the existing alternatives and the preferred alternative to best suit the purpose and need for the project in light of public, project applicant, and cooperating agency input; to potentially develop and evaluate new alternatives; to supplement, improve, or modify the existing environmental analyses; and to correct factual errors in the DEIS.

1.3 Overview of Comments Received

During the 90-day comment period for the Lucerne Valley Solar Project DEIS, the BLM received twelve individual written comments, including e-mail and hard copy letters, and two written comments and four oral comments at the public meeting. Comments were received from federal, state, and local agencies, environmental advocacy groups, a law firm, the Lucerne Valley Economic Development Association, the Applicant, and members of the public.

Comments by Submittal Type

The comments were divided into the following four groups:

1. Letters;
2. E-mails;
3. Oral public meeting comments; and
4. Written public meeting comments.

1.4 Process for Tracking and Analyzing Public Comments

Public comments play an integral role in the NEPA process. Comments to the Lucerne Valley Solar Project DEIS were categorized by their form of submittal: hard copy or electronic (e-mail). The process for tracking and analyzing public comments is shown in Figure N-1 and is outlined below.

As comment documents were received, each comment was assigned a three-digit document number. Comments in documents received in the form of a letter were assigned sequential numbers starting with 001. Comments in documents received in the form of e-mail messages were assigned sequential numbers starting with 501. Oral and written comments provided during the public comment meeting were assigned sequential numbers starting with 901. All comment documents received during the public comment period have been cataloged in this manner and are being considered in preparing the Final EIS.

The BLM analyzed each letter, e-mail, written public meeting comment form, and oral public meeting comment to identify substantive comments through a process referred to as content analysis. Through this process, the BLM identified a total of 214 individual comments and assertions.

The comment organization of the letters, e-mails, and public meeting written and oral comments are shown in Table M-1 below.

1.5 Content Analysis Annotation

The Content Analysis process was used to identify significant comments and assertions that may require a response from the BLM. Public comments and assertions are identified electronically on the original correspondence (Appendix N), along with their unique identifier by highlighting individual comments. The letter/e-mail identifier, comment number, and assertion number are annotated in the left margin of the correspondence. Letters and e-mail may contain comments similar to other letters. In these cases, the BLM may refer to a previous response, e.g., “Please refer to our response to letter number (insert the appropriate letter number).”

Table M-1. Log of Comments Received

Unique Comment Numbers	Date Received	Agency, Organization, or Individual
Comment Letters		
001	3/5/2010	Mojave Desert Air Quality Management District
002-006	3/3/2010	CalTrans, District 8
007-014	5/20/2010	Defenders of Wildlife
015-020	5/13/10	San Bernardino County
021-147	5/20/10	Robyn C. Purchia, Adams Broadwell Joseph & Cardozo, Attorneys at Law
148-178	5/27/10	Chuck Bell, Lucerne Valley Economic Development Association
179-182	5/18/10	Chevron Energy Solutions
183	5/20/10	Chevron Energy Solutions
184-241	5/20/10	United States Environmental Protection Agency
242-252	5/13/10	Natural Resources Defense Council, Sierra Club, and The Wilderness Society
Emails		
501-502	2/13/2010	Edward Wood
503	4/11/2010	Douglas Metcalf
Public Meeting (Oral Comments)		
901-07	3/9/2010	Adams Broadwell Joseph & Cardozo, Attorneys at Law
908-913	3/9/2010	Bill Lembright
914-919	3/9/2010	Chuck Bell, Lucerne Valley Economic Development Association
920-925	3/9/2010	Dinah Shumway
Public Meeting (Written Comments)		
926	3/9/2010	Mike Hawkins, Friends of Giant Rock OHV Club
927-928	3/9/2010	Millie Rader

2.0 Key Issue Summary

Comments received by the BLM during the scoping process provided a mechanism for identifying key issues regarding the Proposed Action and these comments are provided in the Scoping Summary Report (Appendix A). Comments received during public review of the Lucerne Valley Solar Project DEIS are contained in this appendix. In order to assist the reader in understanding these key issues and concerns, the following sections provide a summary of comments by major issue. Section 3.0 of this appendix also provides a discussion of how many public comments were directed to each of the major issue areas that are summarized below.

2.1.1 REGULATORY COMPLIANCE

NEPA and CEQA Compliance

Commenters on the DEIS expressed concerns that the project does not comply with the requirements of NEPA or the California Environmental Quality Act (CEQA) and that the BLM may not approve the CDCA Plan amendment or ROW until an adequate joint Environmental Impact Statement (EIS)/Environmental Impact Report (EIR) is prepared and circulated for public review and comment. Other commenters indicated that the BLM did not take a “hard

look" at the environmental consequences of the Proposed Action and that the level of detail must be sufficient to support reasoned conclusions by comparing the amount and the degree of the impact caused by the Proposed Action and the alternatives.

Federal and State Laws

Comments on the DEIS noted that the project will require approval of a streambed alteration agreement from the CDFG and waste discharge requirements (WDRs) by the Regional Water Quality Control Board (RWQCB) and that the project will require approval under CEQA before it can proceed with construction. Other comments recommended that the BLM work with the CDFG and RWQCB to facilitate the state-level permitting process and that a joint EIS/EIR must be prepared to avoid duplication of government materials and resources.

2.1.2 PROJECT ALTERNATIVES

Private Land Alternative

A commenter on the DEIS expressed concerns about the relatively small size of the proposed project (516 acres) and the relatively large amount of potentially suitable and available private and public lands needed to support the project. The commenter recommends that the BLM examine a private lands alternative.

Alternative Sites

A commenter on the DEIS expressed concerns that the BLM's decision not to consider alternate sites is impermissible because it is based on an arbitrarily narrow purpose and need statement, and the BLM must consider reasonable alternatives. One commenter indicated that the DEIS violates NEPA's basic requirement to consider alternatives. A comment from the pubic meeting recommended land east of the Twentynine Palms Marine Base as an alternative project location. Another commenter indicated that the "private land" alternative was not considered and no rationale was provided, while First Solar and Next-Era found large fallowed parcels in Lucerne Valley, with a lot more existing all the way to Palmdale. Other commenters stated that the BLM should consider an alternate site on disturbed land north of the Proposed Action site, as well as in Kings and Fresno Counties, where there is an extensive amount of abandoned farmland that would facilitate long-term energy generation, while reducing the project's impacts on environmental resources. Another commenter indicated that the BLM must evaluate siting the Proposed Action on these alternate sites, such as pre-disturbed/fallowed private land.

Alternative Site Design

A commenter on the DEIS indicated that the BLM must consider an alternative site design with four sides. Concerns were raised that the Proposed Action, as well as Alternative 4 (Modified Site Layout) and Alternative 5 (Smaller Project), have twelve sides and a very high boundary-to-area and that the BLM should consider a project design with four sides to reduce the boundary-to-area ratio and minimize impacts on biological resources.

Alternative Design for Drainage

Commenters on the DEIS indicated the BLM must consider an alternative site design that avoids or significantly minimizes impacts on the blue-line drainages that run through the project site; alternative site designs would also allow water from project activities to be captured in bioswales and discharged into dry washes.

Alternative Technology—Rooftop Solar

A commenter on the DEIS recommended the installation of solar panels on such surfaces as rooftops and parking lots throughout Southern California as a viable alternative to the further commitment of public land resources to subsidize urban areas.

2.1.3 PROJECT DESCRIPTION

Project Description

Commenters on the DEIS raised concerns that the proposed project would be located on a small isolated parcel of public land surrounded by private land and that the project boundary east of the Santa Fe Fire Road may have been mechanically altered by former mining claim assessment work. Other concerns were that approval of Phase I would be premature without knowing the transmission requirements upgrading existing line or a new one for both of the project phases combined.

Commenters expressed concerns about inconsistent descriptions about the Proposed Action site as both “occupied” and “vacant” and indicated that the BLM must provide a consistent description of the site so that a meaningful comparison of the alternatives and their environmental consequences would be possible. Another commenter indicated that within Table 1-1 of the Draft EIS, the statement “The site chosen is within a ‘development corridor’” is not consistent with the Lucerne Valley Community Plan’s locations for “industrial” development and thus is misleading and the entire table includes very weak rationale.

The Applicant commented that the phasing of the project has been revised to defer construction of the eastern portion of the site until Phase II. This would defer the design and construction costs in the area susceptible to the greatest surface water flows, as well as the potential impacts and mitigation associated with grading and development of this area. Comments also indicated that if the transmission line capacity was not upgraded by SCE, this portion of the site would not be developed, avoiding the potential impacts altogether. The Applicant also commented that the site layout plans have been revised to reflect both fixed tilt and single axis tracker systems.

Project Impacts

Commenters indicated that the discussion of impacts must include both “direct and indirect effects” (secondary impacts) of a proposed project and that the impacts analysis should discuss the relationship between short-term uses of man’s environment and the maintenance and enhancement of long-term productivity and any irreversible or irretrievable commitments of resources that would be involved in the proposal should it be implemented. There were also concerns that the DEIS does not consider all of the project’s significant and foreseeable environmental impacts on biological resources, water resources, transmission and communication systems, mineral resources, noise, hazards, and cultural resources.

Site Preparation

The Applicant commented that cutting vegetation at four inches above the ground would not be practical for construction and that vegetation would be removed. The Applicant explained approximately 420 acres of the Proposed Action site would be rough graded or grubbed and scarified but that the general slope and undulations would be preserved.

Decommissioning

Commenters expressed concerns about project decommissioning and recycling of facilities, including specific measures for reclamation and bonding to ensure that the site would be

completely cleaned up and returned to its original condition. Another commenter indicated that BLM leases should include provisions for cleanups that are now a problem with abandoned mines rather than leaving this public cleanup for future generations.

Restoration Plan

Commenters expressed concerns that a complete project restoration plan is prepared so that decision makers and the public will understand all of the Proposed Action's impacts. Concerns were raised about what plants would be used for revegetation, how drainages would be restored, whether wildlife would be reintroduced, and what other restoration would be implemented.

Energy Transmission and Telecommunication Systems

Commenters raised concerns that the BLM did not consider all of the project's impacts associated with new transmission and communications systems. There were concerns about where utility poles would be placed, whether an off-site corridor must be established, and what impacts would be associated with installing new communications systems. Commenters expressed concerns that all significant impacts associated with the Project's energy transmission be considered, including interconnection to the Southern California Edison (SCE) 33-kV transmission line, upgrades to the existing line, "reconductoring" (i.e., replacing the existing wire with heavier wire and reusing the existing cross arms and insulators) the existing SCE transmission line back to the Cottonwood Substation, and actual transmission line capacity that would have to be verified by a transmission study. Concerns were raised about addressing impacts from the transmission upgrades, reconductoring, use of machinery that may have direct and indirect impacts on biological resources, traffic, visual resources, noise, and air quality. Commenters also noted that the DEIS must discuss all impacts of installing any new transmission poles off-site and impacts associated with transmitting energy and those associated with connecting to the Cottonwood Substation.

Another commenter indicated that a transmission study must be conducted and made available to the public before the project is approved and that, without a transmission study, the BLM cannot conclude that energy from the Proposed Action would not require significant transmission upgrades.

2.1.4 PURPOSE AND NEED

Commenters were concerned that the purpose and need statement should focus on the need to generate greater amounts of electrical energy from renewable energy sources, reduce dependency on carbon-based fuels, and meet the minimum state and federal renewable energy standards. Another commenter raised concerns about the BLM having a narrowly defined goal of "processing a ROW application," whereas the Applicant has two goals: promote solar technology and develop 45 megawatts of energy on public land to maintain a profit margin.

2.1.5 AESTHETICS/VISUAL RESOURCES

A commenter noted that State Route 247 is designated as a scenic route in the County of San Bernardino General Plan and because the project uses an array configuration approximately six feet high, it would not block the views of mountains for drivers along State Route 247. Thus the Proposed Action would be consistent with the scenic designation.

2.1.6 AIR QUALITY

Commenters expressed concerns that the "heat sink" and albedo "change" effects need to be assessed, especially for the larger projects and those close to residential uses and that the

energy and CO_2 emissions required for manufacturing panels, structures, and construction, plus the additional loss of "multiple use" on the mitigation/compensation land—compared to other energy sources—need to be assessed from a more global perspective. Another commenter said that the proposed mitigation measures for air quality (MM AQ-1 and MMAQ-2) represent feasible mitigation.

2.1.7 BIOLOGICAL RESOURCES

Comments received on the DEIS included assertions that the BLM's mitigations were not adequate and that disturbance would result in reduced habitat quality and wildlife populations. Concerns were expressed for a range of wildlife species, including desert tortoise, Joshua trees, rare plants, mesquite plants, creosote rings, Mojave ground squirrels, burrowing owls, raptors, and golden eagles. Another commenter said that the DEIS does not propose sufficient mitigation measures to reduce or avoid the project's impacts, such as "increased predation of reptiles, small mammals, and small birds around the Proposed Action site because raptors would use the infrastructure for perches" from predatory ravens that are a leading cause of mortality for the desert tortoise; however, the DEIS does not disclose how perching would be discouraged on the tortoise-proof fence and the transmission poles.

Desert Tortoise

Commenters said that the project site supports a natural plant and animal community composed largely of common species of plants and animals, with a relatively low number of BLM sensitive or special status species. Commenters indicated that the threatened desert tortoise occurs in the area in low densities; one desert tortoise was observed within the extreme southeastern corner of the proposed project area, and a few desert tortoises were observed in this same general area but outside the project boundary, within the surveyed buffer zone, which is not considered an insurmountable issue for the project developer. Another commenter said that it is essential that the BLM consult with the US Fish and Wildlife Service (USFWS), in accordance with Section 7 of the Endangered Species Act, 16 USC, Section 1536(a) (2), and if necessary obtain an incidental take permit. Avoidance of desert tortoises in this area by a slight modification of the project layout may prove advantageous because it may preclude the need for their relocation or translocation. Another commenter said that the slight modification to avoid direct impact on the desert tortoise, the modified layout described in Alternative 4 (Modified Site Layout), may be advantageous to the project proponent as a means of reducing dust accumulation on PV panels generated from vehicles using the Santa Fe Fire Road, and also in providing a visual screen of natural vegetation around the perimeter of the project.

Commenters raised concerns regarding mitigation for threatened/endangered species. The commenter supports project development in a manner that optimizes future economic opportunity by minimizing land set-asides and instead focusing on funding conservation, habitat restoration, and species recovery. The DEIS in Section 4.6 is consistent with San Bernardino County's approach by first requiring avoidance of impacts via several mitigation measures in BIO-1, BIO-6, and BIO-11, and invasive weed removal in BIO-2. Mitigation measure BIO-12 discusses compensatory mitigation and sensibly requires a 1:1 mitigation ratio for impacts on desert tortoise that may be achieved via either land replacement or an in lieu fee. However, rehabilitation of habitat during decommissioning is not clearly addressed in either the biological impact analysis or the project description, specifically Section 2.2.3.6, which describes decommissioning.

Commenters raised concerns about the tortoise-proof fence's impacts on tortoise foraging and breeding migrations and an increase in the presence of natural predators, which may cause significant stress on the species and mortality. Another commenter indicated that a

translocation plan with specific information about the translocation area, how and when the tortoises would be moved, and who would monitor their relocation and the long-term effectiveness of tortoise relocations to adjacent areas did not seem adequately addressed. Comments also raised concerns that transmission lines upgrades should include “raven proof” devices to the extent feasible, ravens being the biggest threat to juvenile tortoises.

BLM Consultation with FWS and DFG

Commenters on the DEIS raised concerns that there is no evidence that consultation has been completed with the USFWS and the California Department of Fish and Game (CDFG) to address impacts on desert tortoise on the project site. Commenters also stated that the DEIS does not disclose the environmental effects of the USFWS’s issuance of a biological opinion and incidental take permit and any of the terms and conditions the USFWS and CDFG require the Applicant to implement.

Impacts on Vegetation

Comments on the DEIS raised concerns about providing a complete description of activities that could have long term affect to vegetation such as mowing and grubbing. Another commenter indicated that the Alternative 4 (Modified Site Layout) was a viable option that would allow a buffer and that on-site location and maintenance of transplanted yuccas/Joshua trees would be more reliable than off-site, which would likely result in 50% mortality at best. Concerns were that minimal grading, vegetation mowing, and decomposed granite or small gravel placement would help to stabilize the site and reduce weed infestations and that mowing was worth pursuing.

Commenters raised concerns that shaded ground would become devoid of vegetation and root structure and that the partially shaded area would likely generate more weeds than native vegetation. Other concerns were raised about impacts on Joshua trees and how these plants would be flagged for salvage and removed. Comments on the DEIS were raised with regard to requiring the Applicant to conduct an adequate plant survey so that impacts on rare plants are identified and mitigated. Other comments indicated that there was no discussion about the Project’s impacts on mesquite plants and that the impacts on creosote rings should be evaluated in accordance with the Plant Protection and Management Ordinance in the San Bernardino County Development Code.

Mohave Ground Squirrel

Commenters on the DEIS expressed concerns that construction and operation could significantly impact Mohave ground squirrels which could trigger “incidental take” provisions. Other commenters indicated that the Mohave ground squirrels have been observed within four miles of the project site. Commenters said that the Applicant surveys were inconsistent with CDFG guidelines. Another commenter indicated that the USFWS is considering listing the Mohave ground squirrel as an endangered species under the ESA, and the BLM would need to consult with USFWS and request a biological opinion and incidental take permit before conducting any activity that may harm the species to ensure compliance with the federal ESA.

Avian Species

Commenters raised concerns that although no burrowing owls were observed during the surveys, the species may still be present on the site and that it is important that the BLM specifically determine whether the western burrowing owl is present on the site in order to mitigate potentially significant impacts. Commenters raised concerns that, although no Golden eagles were identified during the avian point-count survey, that the DEIS should include an impact analysis or mitigation measures. One commenter indicated that the USFWS is developing protocol for Golden eagle surveys and because nesting sites are within ten miles of

the project site and typical prey species occur on the project site the BLM should consult with the USFWS and conduct a focused survey for this species.

Noise Impacts on Sensitive Species

Commenters on the DEIS raised concerns that all direct and indirect noise impacts on sensitive species and sensitive receptors were not considered. The DEIS notes that sensitive receptors, such as nearby residences and special management areas, may be impacted by construction and operation noise from the project. The DEIS should include a discussion about construction and operation noise impacts on wildlife; sounds that are rare or even minor may have a negative impact on wildlife and sensitive species in the area.

Mitigation for Biological resources

Commenters on the DEIS raised concerns about the project's effect on biological resources, mitigation ratios and compensation. Commenters were also concerned with the ultimate loss of "multiple uses" on said parcel that might be purchased and any in-lieu fee might be directed. Commenters also said that off-site mitigation/compensation requirements resulting from this project would need to be fully explained.

2.1.8 CULTURAL RESOURCES

Commenters raised concerns that all impacts on cultural resources were not addressed and that the BLM must consult with all tribes that have ties to the land to determine if there are historical resources that have not been identified. Another commenter raised concerns that the Proposed Action conflicts with Section 106 of the National Historic Preservation Act.

2.1.9 CUMULATIVE IMPACTS

Impacts on Resources

Commenters expressed concerns that cumulative effects of the project, when coupled with the additional ongoing and proposed development, could have significant cumulative impacts on air, water, land, biological, and cultural resources and transmission capacity.

Impacts on the Character of Lucerne Valley

Public meeting commenters raised concerns about the County looking at the whole of these projects because "we're getting buried in the parts since there are too many of them, and if they all get approved the community would lose their land-use character—and their land-use configuration." Another commenter indicated that the projects on BLM lands and on private land project should be reviewed in unison to evaluate cumulative effects.

Impacts on the Desert Tortoise

Commenters indicated that, given the protected status of desert tortoises, the BLM must adequately evaluate the project's cumulative effects on the desert tortoise from other projects that would occur within a six-mile radius and must compare the Proposed Action's cumulative effects with the reduced cumulative effects of Alternative 5 (Smaller Project) and the use of alternate sites.

2.1.10 HAZARDOUS MATERIALS/WASTE

Comments included concerns about impacts from hazardous materials and potential health risks associated with human contact with areas where mining was previously conducted. Another commenter recommended that the BLM conduct a Phase I Environmental Site Assessment to evaluate these potential human health risks, and if the Phase I Assessment

finds the mining debris to represent potential human health risks, a Phase II Environmental Site Assessment should be conducted to include sampling of the debris. Another comment indicated that the BLM must conduct a Phase I assessment and include the results in a revised DEIS that is circulated for public review. Comments also raised concerns that the BLM must identify which herbicides would be used and must disclose any studies that prove the herbicides are harmless, or take a hard look at the Project's impacts on human health and biological resources.

2.1.11 LAND USE AND MINERALS

Land Use

Public meeting commenters on the DEIS indicated that projects on public land do not serve the public, and there are "plenty of other projects around here on fallow private land; private landowners can do whatever they want if it conforms with community standards." Another comment on the DEIS regarding Alternative 5 (Smaller Project) indicated that existing structures south of Zircon Road would not require the destruction and removal of these structures, but the buildings north of Zircon Road would be destroyed and workers may be exposed to asbestos, lead paint, and other hazardous materials. In addition, the visual and noise impacts on on-site sensitive receptors should be assessed. Another comment indicated that depending on the location of the occupied buildings, Alternative 4 (Modified Site Layout) may reduce visual impacts on these on-site sensitive receptors.

Mineral Resources

Commenters indicated that mineral extraction may be a beneficial and valuable use of the site; gold, copper, silver, lead, sand, gravel, stone, and uranium have all been prospected, produced and/or processed within five miles of the Project site. Other commenters indicated that the description of mineral resources on the site needs to be adequately determined and consistently described so that all of the impacts would be disclosed to the public and decision makers. Concerns were also raised that the project would restrict access to mineral resources and result in an irreversible and irretrievable commitment of mineral resources.

2.1.12 RECREATION AND HUNTING

A comment received to the DEIS included the assertion that hunting would be an allowed use on the Proposed Action site, up until construction begins.

2.1.13 SOCIAL AND ECONOMIC CONSIDERATIONS

Commenters raised concerns about the social and economic impacts of the Proposed Action, including the cost of operations and maintenance, compatibility of the project with surrounding residential properties, and the adverse impact on land values. Commenters also expressed concern about use of local workforce and locally available materials, such as cement/concrete/aggregate, that can be used for developing the project. Other comments expressed concern that the projects are not necessarily "beneficial" to local communities, and the applicant could be the lead in devising a method to "arrange" the purchase of materials in San Bernardino County, with sales tax benefiting the county, and Lucerne Valley roads that get "hammered" by all the truck traffic associated with these projects. Commenters also indicated that these projects are not feasible without taxpayer subsidies, that they are expensive and inefficient, and that they take away public use from public lands. Another comment raised concerns about the impact on those who property taxes for the privilege of living in this clean, beautiful desert.

2.1.14 TRANSPORTATION AND TRAFFIC

Commenters raised concerns that Santa Fe Fire Road was probably not a county-maintained road and the Applicant should consult with the County of San Bernardino and CalTrans to establish legal access and obtain any required permits. Other commenters indicated that construction of the project would result in short-term increases in traffic due to the construction deliveries of materials and that the impacts on the level of service for the routes of travel should be evaluated. Another comment indicated that a right-turn lane on Hwy 247 would provide safer egress in this area of high-speed traffic during the construction phase.

2.1.15 UTILITIES AND SERVICES

One commenter indicated that the closest available emergency facility are hospitals in Apple Valley or Victorville and not Big Bear.

2.1.16 WATER RESOURCES

Impacts on Water Resources

Commenters raised concerns that impacts associated with an increased operational water use underestimated the amount of water the Applicant would need to clean the solar panels. There were concerns that there may be an irreversible and irretrievable commitment of water resources and that large amounts of operational water could cause runoff that may create ephemeral ponding and/or flooding. Another commenter indicated that the Applicant could mitigate runoff by implementing bioswales and/or catchment basins; the basins could remove silt and pollution from surface runoff water and provide another source of refuge, cover, and food for wildlife. Another comment concerned the Proposed Action's impacts on water users, the groundwater aquifer, and flooding that would result from using at least 270,000 gallons of water per year to clean the solar arrays. The Applicant commented that the Proposed Action would maintain existing flow patterns and velocity for surface water runoff from the site, that the potential for flooding would not change as a result of the Proposed Action, and that a finalized hydrology study would be provided.

Water Demand

Pubic meeting commenters indicated that that the project site is sitting on top of Mojave Water Agency pipeline that goes to the Morongo Basin. They stated that "in order to reach our Morongo basin in Yucca and the Joshua Tree area, and there are turnouts available, so the construction water may be able to a work out a deal with the Mojave Water Agency and not have to use good ground water for that purpose." Another comment was that "we are an adjudicated basin, and the water can be hauled within the basin. Domestic water could be hauled … to the site. You shouldn't need much after construction, unless they're going to wash the panels now and then."

Water Source and Usage

Public meeting commenters indicated that the water source needed to be identified so that the public could ascertain whether that source has sufficient capacity to service the Proposed Action and also how the water would be conveyed from a possible off-site source to the project area. In addition, the DEIS should describe whether that will be potable water or nonpotable water, and what federal, state, and local permits are required for the project to receive the water.

Commenters also expressed concern about the amount of water the Proposed Action and alternatives would need during construction, operation, and maintenance. Concerns were

raised that water usage for both construction and operation was underestimated and that solar panels could require approximately 270,000 gallons per year for maintenance, which would be six times more than what the BLM determined the Proposed Action would require in the DEIS. Commenters raised concerns that a specific water source of construction and maintenance water for the Proposed Action is not disclosed in the DEIS. Another commenter indicated that using water from any of these sources raises a myriad of potentially significant effects and legal issues that have not yet been addressed, including impacts on groundwater from increased extraction, impacts on state water, impacts on biological resources, land use, and air quality from construction of pipelines, availability and reliability of water supplies, legal entitlements, need for further rights-of-way, effects from trucking water to the site, and others. Concerns were also raised regarding the Proposed Action's need for large amounts of construction and operational water, which would likely exacerbate overdraft conditions and cause an overall decline in water levels in the region.

Groundwater Assessment

Commenters expressed concern about water usage and indicated that the County policy is to require a groundwater assessment report if a Proposed Action anticipates using 10 acre-feet per year or more of groundwater. The Proposed Action appears to fall below that threshold for both construction and for operations.

Hydrology Report

Commenters raised concerns about preparing a complete and final hydrology report and stormwater pollution prevention plan (SWPPP) before approving the Proposed Action; the information contained in the hydrology report and the SWWPP would help the public understand and assess the water table, the natural flow pattern on-site and off-site, and the Applicant's measures to address flooding.

Jurisdiction of Water/Streambed Alteration Agreement (Section 1602)

Commenters expressed concerns that the construction of the Proposed Action would alter the natural flow patterns of those streams where concrete pads and structures are installed and within the solar array field. There was concern that the Proposed Action would temporarily and permanently impact these streams, and that the CDFG must issue a streambed alteration agreement before the Applicant impacts these drainage systems.

Impacts on Drainage Systems

Comments on the DEIS expressed concerns that the Proposed Action 's impacts on drainage systems is incomplete and inconsistent and a complete description of the Proposed Action's impacts on natural drainage systems should be provided as well as mitigation, where feasible. Another commenter indicated that the DEIS must also describe what fill material the Applicant would use to modify the drainages. Commenters also expressed concerns about storm drainage on the project site and whether stormwater would be drained from the site through newly constructed drainages or through natural on-site drainages.

Wastewater Discharge Requirements

Commenters expressed concerns about the Proposed Action's compliance with the WDRs of the RWQCB, pursuant to the California Porter Cologne Water Quality Control Act. Another commenter indicated that the Proposed Action may also discharge at least 270,000 gallons of non-stormwater runoff when the solar panels are cleaned, and because the Proposed Action would discharge stormwater and non-stormwater into state waters, either the Colorado River Basin RWQCB or the Lahontan RWQCB must prescribe WDRs. One commenter indicated that the jurisdictional delineation does not contain sufficient information to adequately and specifically determine jurisdiction of the waters on and impacted by the project site.

Specifically, the delineation relies on incomplete soil data. Another comment indicated that further soils surveys would be required to support the findings in the jurisdictional delineation.

2.1.17 MITIGATION REQUIREMENTS

Public meeting commenters expressed concerns that these Proposed Actions are not going to be held to the same standards that the mining industry is held to. Concerns were raised that habitat would be obliterated, public land would be disturbed, the mitigation ratios and revegetation plans are unknown, and the applicant should bear the expense for mitigation and restoration.

2.1.18 GENERAL

Comments included environmental degradation, loss of jobs caused by construction moratoriums, elimination of protected species and habitat, and reduced freshwater. Concerns were raised that Chevron Energy Solutions representatives have not participated in community meetings, unlike the representatives of every other local solar/wind proposed action in the permitting process, that the town was being overrun with these types of proposed actions, and that the BLM's programmatic process would identify the limited areas available and suitable for solar plants and the need for these types of proposed actions. Comments also included requests to meet with the Applicant for a better explanation of the Proposed Action's tax revenue benefit, specifically the annual taxes from its "leasehold interest," and for answers to questions about Proposed Action tax incentives and revenues deducted from what the County receives from BLM as "payment in lieu of taxes." Another comment included a request to meet with the Applicant and the BLM before the EIS is finalized and a decision is made on the permit. A commenter indicated that the BLM must revise the DEIS to remove any inconsistent and inaccurate information about alternatives and to provide a reasonable, good faith, and objective presentation of the affected environment and environmental consequences of the Proposed Action and its alternatives.

General Opposition for the Proposed Action

Public meeting comments on the DEIS included general opposition to the Proposed Action because these proposed actions are going to raise the cost of living, tighten up their freedoms, and decimate the community. Another commenter indicated no solar and wind projects should be approved until something gets agreed on locally and nationally that this is even practical. Another commenter raised concerns that people who live in the desert enjoy the views, and the Proposed Action should be relocated to an area that is not inhabited.

General Support for the Proposed Action

Commenters expressed support for the Proposed Action and indicated that the Applicant appears to have identified a site with excellent solar resources, close to existing transmission and other infrastructure, and with limited biological conflicts, and that Chevron should be commended for its efforts in working closely the BLM staff to identify this "sustainable" site for the Proposed Action. Public meeting comments included general support for Alternatives 3 (Proposed Action) and Alternative 4 (Modified Site Layout).

3.0 Analysis of Letters and Comments

As noted above, the BLM received twelve comment letters, including two e-mails and eight hard copy comment letters, and two written comments, and four oral comments from the public meeting. The comments were evaluated further, as illustrated in Tables M-2 and M-3.

Table M-2. Number of Commentators and Individual Comments

Individual Letters Comments	
001	1
002-006	5
007-014	8
015-020	6
021-147	128
148-178	31
179-182	4
183	1
184-241	57
242-252	11
Subtotal	*252*
Individual E-mail Comments	
501-502	2
503	1
Subtotal	*3*
Individual Oral Public Meeting Comments	
901-907	7
908-913	6
914-9119	6
920-925	6
Subtotal	25
Individual Written Public Meeting Comments	
926	1
927-928	2
Subtotal	*3*
Total Individual Comments	*283*

Comments by Key Issue

The BLM placed the individual comments into categories, based on the key issue addressed in the comment. Table M-3 shows a breakdown of comments by key issue.

Table M-3. Individual Comments by Key Issue

Key Issue	Number of Comments
2.1.1 Regulatory Compliance	13
2.1.2 Proposed Action Alternatives	29
2.1.3 Proposed Action Description	26
2.1.4 Purpose And Need	22
2.1.5 Aesthetics/Visual	1
2.1.6 Air Quality/Climate Change	8
2.1.7 Biology	48
2.1.8 Cultural Resources	3
2.1.9 Cumulative	21

Table M-3. Individual Comments by Key Issue

Key Issue	Number of Comments
2.1.10 Hazardous Materials	5
2.1.11 Land Use	4
2.1.12 Recreation	1
2.1.13 Socioeconomics	10
2.1.14 Transportation And Traffic	7
2.1.15 Utilities And Services/ Emergency Services	1
2.1.16 Water and Hydrology	59
2.1.17 Mitigation Requirements	1
2.1.18 General	24
Total Number of Comments	283

Comment Organization

For this Final EIS, all comments from letters received on the DEIS can be found in Appendix M, and the individual comments and the responses to each comment can be found in Appendix N.

4.0 Comment Letters

Mojave Desert Air Quality Management District
14306 Park Avenue, Victorville, CA 92392-2310
760.245.1661 • fax 760.245.2699
Visit our web site: http://www.mdaqmd.ca.gov
Eldon Heaston, Executive Director

2010 MAR -5 AM 10: 03

March 3, 2010

Greg Thomsen
BLM California Desert District Office
22835 Calle San Juan de Los Lagos
Moreno Valley, CA 92553

Project: Chevron Energy Solutions Lucerne Valley Solar Project

Dear Mr. Thomsen:

The Mojave Desert Air Quality Management District (District) has received Draft Environmental Impact Statement and California Desert Conservation Area Plan Amendment for the Proposed Chevron Energy Solutions Lucerne Valley Solar Project. Chevron Energy Solutions has requested a 516-acre right-of-way authorization to construct and operate a 45-megawatt solar photovoltaic project and connect it to an existing Southern California Edison 33 kV distribution system on public lands located approximately 8 miles east of Lucerne Valley. The proposed project would include a solar array, switchyard, a control and maintenance building, and parking area.

The District has reviewed the environmental documentation for the project and concurs that the proposed mitigation measures for Air Quality (MM AQ-1 and MM AQ-2) represent feasible mitigation.

Thank you for the opportunity to review this planning document. If you have any questions regarding this letter, please contact me at (760) 245-1661, extension 6726, or Tracy Walters at extension 6122.

Sincerely,

Alan J. De Salvio
Supervising Air Quality Engineer

AJD/tw Chevron LV Solar Project.doc

DEPARTMENT OF TRANSPORTATION
DISTRICT 8
PLANNING AND LOCAL ASSISTANCE (MS 722)
464 WEST 4th STREET, 6th FLOOR
SAN BERNARDINO, CA 92401-1400
PHONE (909) 383-4557
FAX (909) 383-5936
TTY (909) 383-6300

2010 MAR -5 AM 10: 05

Flex your power!
Be energy efficient!

March 03, 2010

Mr. Greg Thomsen
California Desert District Office
Bureau of Land Management
22835 Calle San Juan de los Lagos
Moreno Valley, CA 92553

Dear Mr. Thomsen:

Chevron Energy Solutions Lucerne Valley Solar
08-SBd-247-PM 36.514

The California Department of Transportation (Caltrans) has reviewed the Chevron Energy Solutions (Applicant) Lucerne Valley Project Draft Environmental Impact Statement (DEIS) and Amendment to the California Desert Conservation Area Plan (Project). The proposed Project is to develop a 45-megawatt photovoltaic solar plant and associated facilities on 516 acres of federal land managed by the Bureau of Land Management.

This Project would involve the Applicant improving Santa Fe Fire Road to access the project site via State Route 247 (SR-247). However, it is unlikely that Santa Fe Fire Road is a county maintained road and considered as a legal access to SR-247. We recommend that the Applicant consults with the County of San Bernardino Land Development, Land Use Services Department and this Office to warrant a legal access to SR-247 and county maintained road.

Design and construction plans to establish Santa Fe Fire Road shall meet county's standards and connection to SR-247 shall meet Caltrans Highway Design Manual. Review and approval of such plans are contingent to Encroachment Permits.

When improving Santa Fe Fire Road, all existing tributary areas, area drainage facilities and runoff volumes having an impact to SR-247 must be identified and analyzed. Hydrology study should be considered.

The construction of said Project will be completed in two phases which would result in short-term increases in traffic volume of a maximum of 90 trips per day (45 morning and 45 evening trips) due to the construction labor force assuming they all drive separately. This volume is less than significant.

However, the Project should address the number of truck trips per day pertinent to delivering the materials to construct the solar project. The State is the owner and operator of SR-247 and is concern about the impact that the delivery trucks will have onto the facility during the construction phases.

We appreciate the opportunity to offer our comments concerning this project. If you have any questions regarding this letter, please contact David Lee at 909-383-6908 or me at 909-383-4557.

Sincerely,

DANIEL KOPULSKY
Office Chief
Community Planning/Local Development Review
Division of Planning

cc: Gia Kim, Office Chief, County of San Bernardino Land Development
Carrie Hyke, Principal Planner, County of San Bernardino Land Use Services Department
Roxie C. Trost, Field Manager, Barstow Field Office, Bureau of Land Management

California Office
1303 J Street, Suite 270 | Sacramento, CA 95814 | tel 916.313.5800 | fax 916.313.5812
www.defenders.org

May 20, 2010

Greg Thomsen
Bureau of Land Management
California Desert District Office
22835 Calle San Juan de Los Lagos
Moreno Valley, CA 92553
Via email to LucerneSolar@blm.gov

Re: Comments on the Draft Environmental Impact Statement for the Proposed Chevron Energy Solutions Lucerne Valley Solar Project and Draft California Desert Conservation Area Plan Amendment, 75 Fed. Reg. 6057 (Feb. 5, 2010)

Dear Mr. Thomsen:

Thank you for the opportunity to comment on the Draft Environmental Impact Statement (DEIS) for the proposed Chevron Energy Solutions Lucerne Valley Solar project. These comments are submitted on behalf of Defenders of Wildlife (Defenders), a non-profit public interest conservation organization with more than 1,000,000 members and supporters nationally, 200,000 of whom reside in California.

Defenders is dedicated to protecting all wild animals and plants in their natural communities. To this end, we employ science, public education and participation, media, legislative advocacy, litigation, and proactive on-the-ground solutions in order to impede the accelerating rate of extinction of species, associated loss of biological diversity, and habitat alteration and destruction.

Defenders strongly supports the emission reduction goals found in the Global Warming Solutions Act of 2006, AB 32, including the development of renewable energy in California. We also recognize that to succeed in meeting State and Federal mandates for generation and utilization of renewable energy, some priority projects will be located on public lands managed by the Bureau of Land Management (BLM). We urge that in seeking to meet our renewable energy portfolio standard in California, project proponents locate and design their projects in the most sustainable manner possible. Thus, renewable energy projects should be placed in the least environmentally harmful locations, near existing transmission lines and on or adjacent to already disturbed lands including idle agricultural fields, industrial sites, previous mining sites and lands with little or no long-term potential for sustaining healthy biological resources. Based on our review of the project site and the DEIS, we believe this project meets many of these "sustainability" criteria.

National Headquarters
1130 17th Street, N.W.
Washington, D.C. 20036-4604
tel 202.682.9400 | fax 202.682.1331

Proposed Project Description[1]

Chevron Energy Solutions applied to the Bureau of Land Management (BLM) for a right-of-way on public lands to construct a solar photovoltaic power plant facility on approximately 516-acres of BLM managed land eight miles east of the community of Lucerne Valley. When completed the facility will generate 45 megawatts of electricity. The project proponent appears to have identified a site with excellent solar resources, close to existing transmission and other infrastructure, and with limited biological conflicts. Chevron should be commended for their efforts in working closely the BLM staff in identifying this "sustainable" site for their proposed project.

Comments on the Proposed Project and Draft Environmental Impact Statement (DEIS)

Based on our field inspection of the proposed project site, an in-depth knowledge of the California Desert Conservation Area Plan, as amended, and review of the DEIS, we considers Alternative 3 (Proposed Action) or Alternative 4 (Modified Site Layout) appropriate. Either of these alternatives would result in an environmentally acceptable and sustainable project that generates electrical power using solar energy, and would contribute to the State and Federal mandates for generation and utilization renewable energy.

The proposed project is located on a relatively small and isolated parcel of public land surrounded on three sides by private land. Paved Highway 247 and an existing SCE transmission line is very near the proposed project area. We noticed that public lands within the project boundary east of the Santa Fe Fire Road have been mechanically altered in several areas, probably associated with former mining claim assessment work.

With regard to species and habitat, the proposed project site supports a natural plant and animal community comprised largely of common species of plants animals, with a relatively low number of BLM sensitive or special status species. The threatened Desert Tortoise occurs in the area in low densities, and one Desert Tortoise was observed within the extreme southeastern corner of the proposed project area, and a few Desert Tortoises were observed in this same general area but outside the project boundary within the surveyed buffer zone. We do not consider this an insurmountable issue for the project developer. It is essential, however, that the BLM consult with the U.S. Fish and Wildlife Service pursuant to section 7 of the Endangered Species Act, 16 U.S.C. § 1536(a)(2), and if necessary obtain an incidental take permit. Avoidance of Desert Tortoises in this area by a slight modification of the project layout may prove advantageous because it may preclude the need for their relocation or translocation.

In addition to the slight modification to avoid direct impact to the Desert Tortoise, the modified layout described in Alternative 4 may be advantageous to the project proponent as a means of reducing dust accumulation on PV panels generated from vehicles using the Santa Fe Fire Road, and also in providing a visual screen of natural vegetation around the perimeter of the project. We urge BLM to perform a site specific needs-analysis before determining whether or not a realignment of the Zircon trail is warranted.

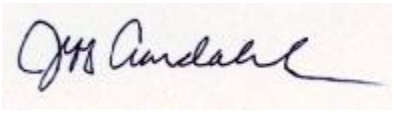
[1] The proposed action by BLM includes an amendment to the California Desert Conservation Area Plan (CDCA) that would designate the proposed site as suitable for solar energy generation.

Though we are supportive of this project, we are concerned about the DEIS' purpose and need and alternatives analysis pursuant to the National Environmental Policy Act (NEPA). *See* 40 C.F.R. § 1502.13; 40 C.F.R. § 1502.14. To ensure reasoned decision-making and expedited project permitting, we ask that the BLM provide a broader purpose and need statement, and determine whether or not the alternatives presented and analyzed in the DEIS constitute a reasonable range of alternatives that satisfies applicable legal requirements.
Instead of the current purpose and need statement focusing on the BLM responding to a right of way application under Title V of the Federal Land Policy and Management Act , we would recommend that the purpose and need statement focus on the need to generate and greater amounts of electrical energy from renewable energy sources so that dependency on carbon-based fuels is reduced, and to contribute to the requirement to generate certain minimum amounts of renewable energy to comply with State and federal standards.

In addition, considering the relatively small size of the proposed project (516 acres) and the relatively large amount of potentially suitable and available private and public lands necessary to support the project, we recommend that the BLM re-examine its decision to categorically determine that private land alternatives are categorically unreasonable for BLM to consider and analyze. Instead, we would recommend that the BLM examine a private lands alternative.

Thank you for considering our comments. If you have any questions, please contact me at (916) 313-5800 x110 or via email at jaardahl@defenders.org.

Sincerely,



Jeff Aardahl
California Representative

LAND USE SERVICES DEPARTMENT

COUNTY OF SAN BERNARDINO

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DENA M. SMITH
Director

May 13, 2010

Sent by U.S. Mail and e-mail

Mr. Greg Thomsen, Project Manager
California Desert District
U.S. Department of the Interior
Bureau of Land Management
22835 Calle San Juan De Los Lagos
Moreno Valley, CA 92553

Subject: January 2010 Draft Environmental Impact Statement for Chevron Lucerne Valley Solar Project

Dear Mr. Thomsen:

Thank you for providing the January 2010 Draft Environmental Impact Statement (DEIS) for the Chevron Lucerne Valley Solar Project (Project) for our review. The proposed Project would utilize solar photovoltaic technology to generate approximately 45 megawatts (MW) of electricity on approximately 433 acres of a 516-acre site, located south of State Route 247, on both sides of Santa Fe Road east of Lucerne Valley in unincorporated San Bernardino County. The site is located entirely on public land administered by the Bureau of Land Management (BLM). The County appreciates the opportunity to comment on the DEIS.

The County has three key issues that should be addressed for each of the large scale renewable energy projects in our boundaries: endangered species mitigation, mitigation for infrastructure impacts, and addressing the impacts to County services operations costs, lost recreation and tourism revenue.

Regarding mitigation for threatened/endangered species, the County supports project development in a manner that optimizes future economic opportunity by minimizing land set-asides and instead focusing on funding conservation, habitat restoration and species recovery efforts. The DEIS in Section 4.6 is consistent with our approach by first requiring avoidance of impacts via several mitigation measures in BIO-1, BIO-6, and BIO-11, and invasive weed removal in BIO-2. Mitigation measure BIO-12 discusses compensatory mitigation and sensibly requires a 1:1 mitigation ratio for impacts to desert tortoise that may be achieved via either land replacement or an in-lieu fee. However, rehabilitation of habitat during decommissioning is not clearly addressed in either the biological impact analysis or the Project Description, specifically Section 2.2.3.6 that describes decommissioning.

With regard to addressing economic impacts to the County including infrastructure cost impacts and ongoing operations and maintenance costs, the County is developing a fiscal impact analysis to determine project-specific cost impacts that we will seek from project proponents. That analysis is ongoing at this time.

The County supports the creation of 45 construction jobs while we recognize there will be only 3 permanent jobs created by the Project. The DEIS Section 4.15.3 discusses the economic benefits from the Project: $20 million in direct spending on wages, materials and equipment, and an additional $16.1 million in indirect and induced effects related to supplies, services and household spending. Annual direct spending is estimated at $400,000 for the 30-year life of the Project (DEIS page 4.15-7).

In terms of aesthetic impacts, this portion of State Route 247 is designated as a Scenic Route in the County General Plan. The Project utilizes an array configuration that is approximately six (6) feet high, and grading is minimized throughout, by keeping existing vegetation at a brush cut height under the solar arrays. This is lower in height than any habitable structure would be and would not block the views of mountains for drivers along State Route 247. Further, the maintenance, rather than complete elimination, of vegetation reduces the possibility of fugitive dust and softens the view of the Project. With these considerations, the Project is not inconsistent with the Scenic Route designation.

With regard to water usage, the County policy is to require a groundwater assessment report if a project anticipates using 10 acre feet per year (AFY) or more of groundwater. The project appears to fall below that threshold for both construction phases and for operations.

In terms of cumulative impacts, the County has received three (3) applications for solar photovoltaic projects in Lucerne Valley, since the BLM held Project scoping meetings in July 2009. A list of these projects and a map of their locations has been provided informally before and is also attached for your reference. We realize these projects were not included in the DEIS as the existing conditions baseline is generally established at the time of the Notice of Intent and scoping meetings.

Thank you for considering our comments. If you have any questions or require any information, please contact me at (909) 387-4371 with any questions.

Sincerely,

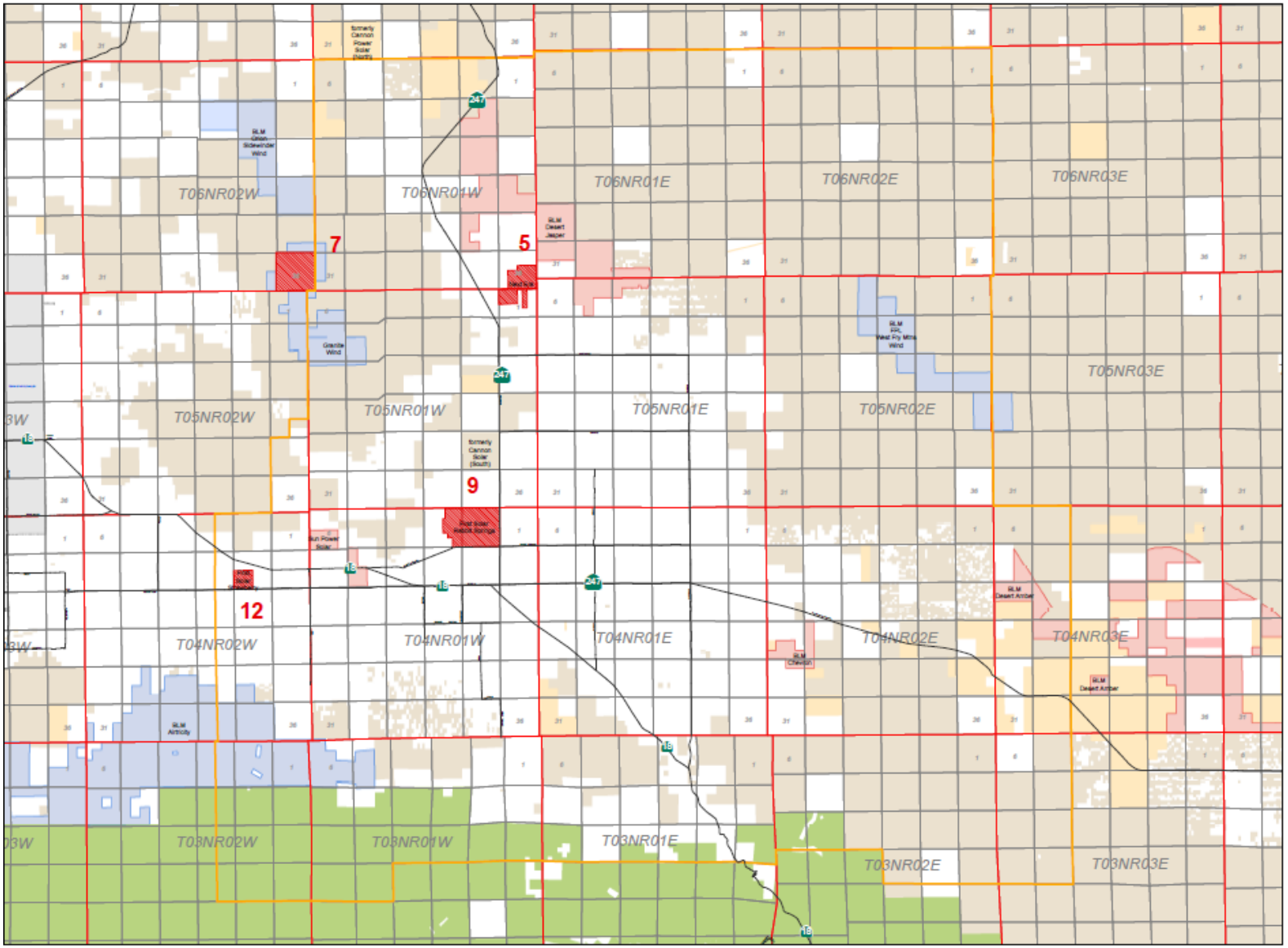
Carrie Hyke, AICP, Principal Planner
Environmental and Mining Team
Advance Planning Division

Attachments: List and Map of Lucerne Valley Projects

cc: Brad Mitzelfelt, Supervisor, First District
Gerry Newcombe, Deputy Administrative Officer
Dena Smith, Director, Land Use Services
James M. Squire, Deputy Director, Advance Planning
Bart Brizzee, Deputy County Counsel
Wes Reeder, County Geologist
Gerry Hillier, Public Lands Consultant

LUCERNE VALLEY SOLAR PROJECTS UNDER COUNTY JURISDICTION

GIS Map No.	PROJECT NAME/ NUMBER	ASSESSOR PARCEL NO.	CONTACT INFORMATION	LOCATION	MEGAWATTS	ACREAGE
12	**STRAWBERRY PEAK P200900655/CF**	0435-072-05 0435-072-11 0435-072-12 0435-072-13 0435-072-14	Kenzie Riesselman First Solar LLC 18101 Von Karman Ave, Ste 1700 Irvine, CA 92612	Canyon View Rd, East side, approx .25 mi So of Hwy 18, Lucerne Valley	15 MW	160 Ac
5	**BOULEVARD ASSOC-NEXT ERA/ LUCERNE VALLEY P200900663/CF**	0453-091-72 0453-091-12 0453-091-24 0453-091-29 0453-091-31 0453-091-48	Cory Ramsel Boulevard Assoc., LLC 700 Universe Blvd. Juno Beach, FL 33408	Haynes Rd @ Meridian Rd No, Approx 075 mi, West side, Lucerne Valley	60 MW	440 Ac
9	**RABBIT SPRINGS SOLAR, LLC P200900580/CF**	0450-011-08 0450-011-11 0450-011-13 0450-011-14 0450-011-15 0450-011-22 0450-011-25 0450-011-26 0451-022-12 0451-022-13 0451-022-53 0451-022-54	Kenzie Riesselman First Solar LLC 18101 Von Karman Ave, Ste 1700 Irvine, CA 92612	Rabbit Springs Rd & Hwy 247, NW corner extending one mi No & 1.25 mi West, Lucerne Valley	104 MW	922 Ac



Number	Project	Type	Acres
1	PRE-APP) AXIO POWER HOLDINGS/ JOSHUA TREE	(S) 30 MW	157 Ac
2	PRE-APP) AXIO-EL MIRAGE	(S) 80MW	654 Ac
3	PRE-APP) REDOO POWER	(S) 5 MW	40 Ac
4	BOULEVARD ASSOC-NEXTERA/ KRAMER JUNCTION	(S) 20 MW	191 Ac of 313.8 Ac parcel
5	BOULEVARD ASSOC-NEXTERA/ LUCERNE VALLEY	(S) 80 MW	640 Ac
6	DAGGETT RIDGE WIND FARM, LLC	(W) 82.5 MW	380 Ac private land on 1577 Ac B
7	GRANITE WIND	(W) 9 Turbine	170.39 Ac
8	LIGHT SOURCE RENEWABLES	(S) 40 MW	350 Ac of a 402 Ac parcel
9	SUNSET SPRINGS SOLAR, LLC	(S) 104 MW	822 Ac
10	SOLTECH SOLAR, INC	(S) 1.3 MW	11.55 Ac
11	SOLUTIONS FOR UTILITIES	(S) 3 MW	22 Ac of an 80 Ac parcel
12	STRAWBERRY PEAK	(S) 15MW	160 Ac

Alternative Energy Sites
Lucerne Valley Community Plan Area

0 0.5 1 2 3 4 Miles

1 Inch = 0.8 miles

1:84,155

Legend

- Pre-App County Projects
- Submitted County Projects
- Verified Solar Energy Facilities
- Verified Wind Energy Facilities
- Preliminary Solar Energy Facilities
- Preliminary Wind Energy Facilities
- Lucerne Valley Community Plan Area
- BLM
- National Park
- National Forest
- Military
- State
- Indian Land
- Other Federal Government
- County Jurisdiction

N W E S

Map prepared by:
Advance Planning Division
Land Use Services Department
San Bernardino County
01/2010

ADAMS BROADWELL JOSEPH & CARDOZO

A PROFESSIONAL CORPORATION

ATTORNEYS AT LAW

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RACHAEL E. KOSS
LOULENA A. MILES
ROBYN C. PURCHIA

FELLOW
AARON G. EZROJ

OF COUNSEL
THOMAS R. ADAMS
ANN BROADWELL
GLORIA D. SMITH

May 20, 2010

VIA EMAIL AND OVERNIGHT MAIL

Greg Thomsen
Bureau of Land Management
California Desert District Office
22845 Calle San Juan de Los Lagos
Moreno Valley, CA 92553
Email: LucerneSolar@blm.gov

Re: Draft Environmental Impact Statement for Lucerne Valley Solar Project

Dear Mr. Thomsen:

We are writing on behalf of the International Brotherhood of Electrical Workers, Local 477 to comment on the Bureau of Land Management's ("BLM") Draft Environmental Impact Statement ("DEIS"), prepared pursuant to the National Environmental Protection Act ("NEPA"),[1] for Chevron Energy Solutions' ("CES" or "Applicant") proposed 45-MW Lucerne Valley Solar Project ("Project" or "Proposed Action"). The Project requires an amendment to the California Desert Conservation Area ("CDCA") Plan, a right-of-way ("ROW") to construct, operate and decommission the facility, rerouting of Zircon Road, a streambed alteration agreement, certification of waste discharge requirements and incidental take permits, among other agency actions. As explained more fully below, the DEIS does not comply with the requirements of NEPA, or the California Environmental Quality Act ("CEQA") for required discretionary approvals by California State agencies. Therefore, the BLM may not approve the CDCA Plan amendment or ROW until an adequate joint DEIS/Environmental Impact Report ("EIR") is prepared and circulated for public review and comment.

The members of Local 477 build, maintain and operate conventional and renewable energy power plants in San Bernardino County. Individual members of

[1] National Environmental Policy Act, 42 U.S.C. §§ 4321 et seq. (2010).

Local 477 work in areas affected by environmental degradation and public health and safety risks from industrial development. Members also live in and use areas that will suffer the impacts of projects related to power plant development, including noise and visual intrusion, water and soil pollution, and destruction of archaeological or wildlife areas. Environmental degradation jeopardizes future jobs by causing construction moratoriums, eliminating protected species and habitat, using limited fresh water and putting added stresses on the environmental carrying capacity of the State. This reduces future employment opportunities. In contrast, well designed projects that reduce environmental impacts of electrical generation improve long-term economic prospects.

The DEIS for this Project is wholly inadequate, because it fails to consider, among other impacts, the cumulative effects in the region that will cause environmental degradation. As of January 2010, 244 renewable energy projects were proposed for development in California.[2] At least three of the proposed projects may be located within six miles of the Project,[3] totaling 31,752 acres of land devoted to solar projects in a six-mile radius.[4] The proposed Project will unavoidably tax the State of California's limited air, water, land, biological and cultural resources and transmission capacity to a potentially significant cumulative extent. The final toll taken by this historic energy boom on California's environment, public health and natural resource base may not be known for several years or longer, but currently available and substantial evidence shows that the effects will be severe. Based on these concerns, Local 477 and its members have a strong interest in ensuring that this Project complies with all applicable federal, State and local laws and regulations.

As these comments will demonstrate, the DEIS is fatally deficient and must be substantially revised and recirculated for further public review and comment before it may be finalized.[5] We have prepared these comments with the assistance of Dr. Oliver Seely (water use), Jim Cornett, M.S. (biological resources impacts),

---

[2] Press Release, Office of the Governor, Governor Schwarzenegger Announces 244 Proposed Renewable Energy Projects Throughout the State (Dec. 29, 2009), *available at* http://gov.ca.gov/press-release/14092/.
[3] BUREAU OF LAND MANAGEMENT, DRAFT ENVIRONMENTAL IMPACT STATEMENT AND CALIFORNIA DESERT CONSERVATION AREA PLAN AMENDMENT FOR THE PROPOSED CHEVRON ENERGY SOLUTIONS LUCERNE VALLEY SOLAR PROJECT 3.18-9 (vol. 1 Jan. 2010) [hereinafter DEIS].
[4] DEIS, p. 4.12-12 (calculating 31,236 acres (three solar projects) + 516 acres (Applicant's Project)).
[5] 40 C.F.R. § 1502.9(a) (2009) ("If a draft statement is so inadequate as to preclude meaningful analysis, the agency shall prepare and circulate a revised draft of the appropriate portion.").

T'Shaka Toure, M.S. (hydrology impacts) and Matt Hagemann, P.G. (hazardous soils). Their comments and qualifications are appended hereto as Attachment A ("Seely Comments"), Attachment B ("Cornett Comments"), Attachment C ("Toure Comments") and Attachment D ("Hagemann Comments"). Please note that their comments supplement the issues addressed below and should be addressed and ***responded to separately***.

I. NEPA'S PURPOSE AND GOALS

NEPA has two basic requirements, neither of which the DEIS satisfies. First, NEPA requires that agencies take a "hard look" at the environmental consequences of a proposed action.[6] A hard look is defined as a "reasoned analysis containing quantitative or detailed qualitative information."[7] The level of detail must be sufficient to support reasoned conclusions by comparing the amount and the degree of the impact caused by the proposed action and the alternatives.[8] Second, NEPA review makes information on the environmental consequences of a proposed action available to the public, which may then offer its insight to assist the agency's decision-making.[9]

An EIS is an "action-forcing device" which ensures that NEPA's requirements are infused into the ongoing programs and actions of the federal government.[10] It is more than just a disclosure device, but a device used by federal agencies to plan actions and make decisions.[11] An EIS must provide a full and fair discussion of every significant impact, as well as inform decision-makers and the public of reasonable alternatives which would avoid or minimize adverse impacts.[12] It should be "concise, clear, to the point, and supported by evidence that the agency has made the necessary environmental analyses."[13] A concise and clear EIS that is supported by evidence ensures that federal agencies are informed of environmental consequences ***before*** making decisions and that the information is available to the

[6] Robertson v. Methow Valley Citizens Council, 490 U.S. 332, 350 (1989); Dubois v. U.S. Dep't of Agric., 102 F.3d 1273, 1284 (1st. Cir. 1996).
[7] BUREAU OF LAND MANAGEMENT, NEPA HANDBOOK 55 (Jan. 2008) [hereinafter NEPA Handbook].
[8] NEPA Handbook p. 55; *see also* 40 C.F.R. § 1502.1 (2009).
[9] *See Robertson,* 490 U.S. at 350; *Dubois,* 102 F.3d at 1284.
[10] 40 C.F.R. § 1502.1.
[11] *Id.*
[12] *Id.*
[13] *Id.*

public.[14] As the Council on Environmental Quality ("CEQ") explains in its regulations, "[e]nvironmental impact statements shall serve as the means of assessing the environmental impact of proposed agency actions, rather than justifying decisions already made."[15]

The DEIS for the proposed Project fails to comply with these basic requirements. First, the lack of complete, accurate and consistent information in the DEIS precludes an informed comparison of the alternatives and an analysis of the Proposed Action. Second, the BLM failed to take a hard look at all of the Project's impacts. Third, the BLM impermissibly limited its alternatives analysis by relying on an arbitrarily narrow purpose and need statement. Finally, the BLM violated NEPA's integration requirement by not conducting joint review under both NEPA and CEQA. For these reasons, the DEIS precludes a meaningful analysis of the Project, and the BLM must prepare and recirculate a joint DEIS/EIR before making a decision.[16]

II. INFORMATION IN THE DEIS IS INCOMPLETE, INCONSISTENT AND INACCURATE

A complete and consistent description is necessary for the public and decision makers to understand the effects of the proposed action and its alternatives.[17] A clear description results in more focused and meaningful public input and BLM participation, a more complete identification of issues, development of reasonable alternatives, sound analysis and interpretation of effects, focused analysis and a sound and supportable decision.[18] It follows that information in the DEIS that is incomplete, inconsistent and/or inaccurate will skew the environmental consequences analysis and prevent informed public input. Courts have held that "[w]here the information in the initial EIS was so incomplete or misleading that the decisionmaker and the public could not make an informed comparison of the

[14] Inland Empire Pub. Lands Council v. U.S. Forest Serv., 88 F.3d 754, 758 (9th Cir. 1996).
[15] 40 C.F.R. § 1502.2(g).
[16] *Id.*
[17] *See* 40 C.F.R. § 1502.15; *see also* Laguna Greenbelt v. U.S. Dep't of Transp., 42 F.3d 517, 528-29 (9th Cir. 1994) (reviewing plaintiff's claim that inconsistent definition resulted in misleading analysis of project's positive and negative effects).
[18] NEPA Handbook p. 43.

alternatives, revision of an EIS [was] necessary to provide a reasonable, good faith, and objective presentation of the subjects required by NEPA."[19]

The DEIS contains incomplete, inconsistent and inaccurate information that precludes a meaningful comparison of the alternatives and understanding of the Proposed Action. This violates the basic requirements of NEPA. The BLM must revise the DEIS to provide a reasonable, good faith and objective presentation of the affected environment and environmental consequences of the Proposed Action and its alternatives.

A. The DEIS fails to disclose BLM's consultation and potential permit under the Endangered Species Act

The DEIS completely fails to disclose BLM's required consultation under the Endangered Species Act ("ESA") with the United States Fish & Wildlife Service ("USFWS") for the federally and State threatened desert tortoise. The DEIS also completely fails to analyze the USFWS's potential issuance of a biological opinion and incidental take permit under Section 7 of the ESA. Therefore, the DEIS is wholly inadequate. The BLM must disclose and analyze these activities in a revised DEIS that is circulated to the public for review and comment.

The ESA prohibits "take" of threatened and endangered species.[20] "Take" is defined as "to harass, harm, pursue, hunt, shoot, wound, kill, trap, capture, or collect, or attempt to engage in any such conduct."[21] "Harm" includes "the destruction or adverse modification of habitat resulting in potential injury to a species, including injury from impairment of essential behavioral patterns, such as breeding, feeding or sheltering."[22] Under ESA Section 7, a federal agency must initiate consultation with the USFWS "at the earliest possible time" whenever the agency proposes to undertake an action that "may affect" a listed species or species' critical habitat.[23] If a "may affect" determination is made, which is certain for the proposed Project, then the USFWS must develop and issue a biological opinion containing terms and conditions to ensure that the activities are not likely to

[19] Natural Res. Def. Council v. U.S. Forest Serv., 421 F.3d 797, 811 (9th Cir. 2005) (citing Animal Def. Council v. Hodel, 840 F.2d 1432, 1439 (9th Cir. 1988)).
[20] 16 U.S.C. § 1538 (2010).
[21] 16 U.S.C. § 1532(19).
[22] 50 C.F.R. § 17.3 (2009).
[23] 50 C.F.R. § 402.14(a).

jeopardize protected species.[24] Furthermore, USFWS's issuance of a biological opinion requires environmental review under NEPA.

Here, despite protected species on the proposed Project site, there is no indication in the DEIS or its appendices that the BLM has initiated consultation under Section 7 of the ESA, or that the DEIS reviews the environmental effects of the USFWS's issuance of a biological opinion and incidental take permit. A total of seven desert tortoises were detected during surveys conducted in March and April on the Project site.[25] Incidental desert tortoise observations were also made during plant surveys conducted in May, and thirty-eight desert tortoise burrows were identified within the site and buffer zone.[26] The DEIS recognizes that the Project will cause both short- and long-term, as well as direct and indirect impacts, to federally protected tortoises.[27]

Direct and indirect impacts to desert tortoises will be severe. For example, the tortoises could be susceptible to mortality from collisions with vehicles entering and leaving the site.[28] Clearing of the site and construction of the security fence could introduce feral dogs and the presence of raptors.[29] Vibrations of heavy equipment could cause burrows to collapse, burying the tortoises alive and destroying their habitat.[30] Tortoises forced to construct new burrows would be exposed to death by dehydration or upper respiratory tract disease.[31] In addition, the spread of invasive plant species on the site, especially Sahara mustard, would cause an indirect loss to foraging habitat.[32]

Because desert tortoises have been found on the site, and the Project will clearly impact the species, the BLM must undertake Section 7 consultation.

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[24] *See* 16 U.S.C. § 1536.
[25] DEIS p. 3.6-21; CHAMBERS GROUP, INC., COMPREHENSIVE BIOLOGICAL RESOURCES ASSESSMENT FOR THE CHEVRON SOLAR PROJECT SITE 41 (July 2009) (quoting DEP'T OF FISH & GAME, A FIELD GUIDE TO LAKE AND STREAMBED ALTERATION AGREEMENTS SECTIONS 1600-1607 (1994)) [hereinafter Comprehensive Biological Assessment].
[26] DEIS p. 3.6-21.
[27] *Id* at pp. ES-10, 4.6-13.
[28] *Id.* at p. 4.6-13.
[29] *Id.*
[30] *Id.*
[31] *Id.*
[32] *Id.*

The DEIS states that the *Applicant* has completed consultation with the USFWS and the California Department of Fish & Game ("CDFG") and that all terms and conditions associated with these consultations would be implemented.[33] However, the DEIS and its appendices provide no evidence to support this statement, and no evidence that the *BLM* has consulted with the USFWS. In addition, the DEIS fails to disclose any of the terms and conditions the USFWS and CDFG require the Applicant to implement. Because the terms and conditions seem to include moving tortoises from the site, the DEIS must include a Translocation Plan with specific information including, but not limited to, the location of the translocation area, how the tortoises will be moved, when they will be moved and who will monitor their relocation.

In sum, the DEIS must disclose the status of BLM consultation with the USFWS, the terms and conditions imposed by the USFWS and the Translocation Plan. Without this information, it is impossible for the public to meaningfully assess the environmental effects and mitigation for impacts to the desert tortoise. Furthermore, without full public disclosure and opportunity for comment, USFWS will be required to conduct further environmental review under NEPA.

B. The BLM must accurately describe the amount of water the Proposed Action and alternatives will need during operation

The BLM must accurately describe the amount of water the Proposed Action and action alternatives will need. The DEIS does not contain any evidence, discussion, or information to support the determination that the Proposed Action would only require, at most, 45,000 gallons of water per year during operation.[34] The BLM must revise the DEIS to support its findings for both construction and operational water use, or acknowledge that the Project will likely require much more than 45,000 gallons of water per year during operation.

Photovoltaic ("PV") solar panels require periodic rinsing to maintain their efficiency.[35] The amount of water needed for cleaning depends on a variety of factors such as dust fall, dust compaction, water waste, etc. Because the Project's solar panels will likely need cleaning at least twice per year, Dr. Oliver Seely

[33] *Id.*
[34] *Id.* at pp. ES-8, 2-23, 4.5-4.
[35] Oliver Seely, *Some Observations on Photovoltaic Cell Panels*, http://www.csudh.edu/oliver/smt310-handouts/solarpan/solarpan.htm (Attachment E).

estimated that the Proposed Action would require approximately 270,000 gallons per year for maintenance.[36] Dr. Seely's estimated water use is ***six times*** more than what the BLM determined the Project would require in the DEIS.[37]

Dr. Seely's estimate is further supported by the estimated water use for other PV solar projects in the region. For example, the Mitigated Negative Declaration for the Boulevard Associates Kramer Junction Project states that the 20-MW PV solar facility "shall consume a 'minimal amount' of water for the occasional cleaning of panels as they become dusty throughout the year."[38] This "minimal amount" is approximately 150,000 gallons of water per year.

Stephanie Tavares, an environmental reporter for the *Las Vegas Sun*, compared the proposed operational water use for various PV solar projects.[39] She determined that 16,689 gallons of water per MW was required yearly to clean PV solar plants. Based on this assumption, the proposed Project would need approximately 751,005 gallons of water per year for maintenance.[40]

As Dr. Seely's analysis in Attachment A and additional factual data indicate, the BLM likely underestimated the Project's proposed operational water use. Because the BLM underestimated the operational water use, the BLM may have also underestimated the Project's construction water use. The BLM must either support its initial determinations with factual evidence, or recalculate the Proposed Action's water use, as well as the water use necessary for each of the alternatives. Only then will the BLM's analysis of the environmental impacts become meaningful.

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[36] Seely Comments p. 1.
[37] *Id.*
[38] SAN BERNARDINO COUNTY, KRAMER JUNCTION SOLAR ENERGY CENTER BOULEVARD ASSOCIATES, LLC 6 (March 2010), *available at* http://www1.sbcounty.gov/landuseservices/Public%20Notices/Projects/Boulevard%20Associates/Initial%20Study_final%2003042010.pdf (see excerpts in Attachment F).
[39] Stephanie Tavares, *Dirty detail: Solar Panels Need Water*, LAS VEGAS SUN, Sept. 18, 2009 (Attachment G).
[40] 16,689 x 45 = 751,005.

C. The DEIS's description of the Project's water source is incomplete

The specific ***source of construction and maintenance water for the Project is not disclosed*** in the DEIS. The DEIS states that water may be provided through a contract with one of the local large industrial or municipal water companies,[41] from new or existing onsite wells,[42] or the Mojave Water Agency.[43] The Project's environmental consequences will vary depending on the water source. Thus, the BLM must provide a complete and consistent description of the Project's water source so that the public may meaningfully assess the Project's impacts.

At this point, the BLM has completely failed to inform the public about the source of water and the environmental and public health effects from using such water for the Project. Water from an offsite source may require new infrastructure, modifications to existing infrastructure and/or additional federal, State and local approvals. The closest water company to the Project site is the Jubilee Mutual Water Company located approximately five miles away.[44] The Golden State Water Company also provides water to the Lucerne Valley area and is located approximately 20 miles away.[45] If the Jubilee Mutual Water Company and the Golden State Water Company do not have sufficient capacity to serve the Project, water may be provided from another water company in the desert area. Using water from any of these sources raises a myriad of potentially significant effects and legal issues that have not yet been addressed, including impacts on groundwater from increased extraction, impacts on State water from California's State Water Project, impacts on biological resources, land use, and air quality from construction of pipelines, availability and reliability of water supplies, legal entitlements, need for further right-of-ways, effects from trucking water to the site and others.

If the Project will receive water from new or existing onsite wells, the location of the wells, how the water will be pumped from the wells, when the water will be

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[41] DEIS pp. 2-23, 4.5-4.
[42] *Id.* at p. 3.5-6.
[43] *See id.* at p. 3.5-3.
[44] *See* SAN BERNARDINO COUNTY, GENERAL PLAN, FIGURE 2-14C WATER PURVEYORS – DESERT REGION (Attachment H).
[45] Cornett comments p. 5.

pumped from the wells, the effects of pumping water from the wells and the required federal, State and local approvals must be disclosed to the public.

The *Mojave Water Agency Watermaster Annual Report for Water Year 2008-09* identifies declining water levels in many of the Mojave Basin Area's subareas.[46] For example, the water levels in the Baja Subarea to the north and the Alto Subarea to the east are both experiencing declining water levels due to over pumping and limited recharge opportunities.[47]

The DEIS recognizes that overdraft conditions already frequently occur because of overuse of the groundwater aquifer.[48] Well levels around the Project site fluctuate.[49] **Existing water providers** within Lucerne Valley **currently rely on groundwater** from groundwater wells.**[50] In addition, the groundwater basin provides two-thirds of the potable and non-potable water needs for users in the region**.[51] Thus, the Project's need for large amounts of construction and operational water would likely exacerbate overdraft conditions and cause an overall decline in water levels in the region.

Clearly, the BLM has not even begun to describe the Project's proposed water supply and the Project's affects on water resources. The BLM must provide a complete and consistent description of the Project's water source with an assessment of the Project's impacts on that source and disclose it to the public.

D. The DEIS's description of the Project's impacts to drainage systems is incomplete and inconsistent

The description of the Project's impacts to drainage systems is incompletely and inconsistently described in the DEIS. The DEIS states that the Project would utilize and maintain natural onsite drainages to minimize potential risk associated

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[46] Memorandum from Valerie L. Wiegenstein, Watermaster Services Manager, Mojave Basin Area Water Master to Clerk of the Superior Court of Riverside County re Watermaster Annual Report for Water Year 2008-09 24-25 (May 2010) (see excerpts in Attachment I) .
[47] *Id.*
[48] DEIS p. 3.5-5.
[49] U.S. GEOLOGICAL SURVEY, NATIONAL WATER INFORMATION SYSTEM, GROUNDWATER LEVELS IN TOWNSHIP 04N, RANGE 02E (Attachment J).
[50] DEIS p. 3.15-10.
[51] *Id.* at p. 3.5-5.

with likely geologic hazards.[52] The DEIS also states, however, that "[t]he Proposed Action could modify on-site drainages."[53] The Comprehensive Biological Resources Assessment recognizes that "[d]rainage systems in the Project site will be temporarily and permanently impacted by the proposed solar project."[54] The BLM must revise these inconsistencies and provide a complete description of the Proposed Action's impacts to natural drainage systems.

Specifically, if drainage systems will be modified, the DEIS must disclose what modification will occur, which drainages will be impacted and to what extent the drainages will be modified.[55] This is fundamental information that is required to provide the public an opportunity to meaningfully compare the Proposed Action with the alternatives. For example, to compare alternatives, the public must know whether the Proposed Action would modify the same drainages as Alternative 4. In addition, there may be an alternate site design that will impact drainages less.[56]

The DEIS must also describe what fill material the Applicant will use to modify the drainages.[57] If cement is used for bank stabilization and protection for transition and curve segments, the Project will significantly impact the ability of wildlife to utilize the surrounding area.[58] If the Applicant will use natural substrate (i.e. compacted earthern material along with rip rap), however, impacts to biological resources may be reduced.[59]

The BLM's failure to provide even basic information on impacts to drainages precludes meaningful public input on the Proposed Action's affect on drainages and on alternatives to the Proposed Action. The BLM must provide this information so that it can take a hard look at impacts to the drainages and provide mitigation where feasible. Feasible mitigation measures include compensation to restore and enhance bioswales and downstream drainages.[60]

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[52] *Id.* at pp. ES-6, ES-7.
[53] *Id.* at p. 1-12.
[54] Comprehensive Biological Assessment p. 59.
[55] Toure comments p. 2.
[56] *See id.* at p. 5.
[57] *Id.* at p. 2.
[58] *Id.*
[59] *Id.*
[60] *Id.* at p. 3.

E. The BLM must describe storm drainage

The BLM failed to describe whether storm water will be drained from the site through newly constructed drainages or through natural onsite drainages. This information is necessary for a complete analysis. For example, if the Applicant will construct designated storm drains, additional grading will be necessary.[61] In addition, if natural onsite drainages are used, the DEIS should discuss their carrying capacity and the possibility of overflow.[62] The BLM must provide this information so that all of the Project's impacts can be assessed.

F. The BLM must prepare a Hydrology Report and finalize the Storm Water Pollution Prevention Plan

The BLM must provide the public with a complete and final Hydrology Report and Storm Water Pollution Prevention Plan ("SWPPP") before approving the Project. Information normally contained in these reports helps the public understand and assess the water table, the natural flow pattern onsite and offsite and the Applicant's measures to address flooding.[63] Without the basic information contained in these reports, the public cannot meaningfully assess the Project's impacts.

G. The DEIS's description of the Project's Restoration Plan is incomplete

The BLM must provide a complete and consistent description of the Project's Restoration Plan before it issues a decision. The Biological Assessment references "an approved" Restoration Plan.[64] However, the DEIS and its appendices contains no Restoration Plan to enable the public to meaningfully review the Project's effects.

The BLM must disclose the Applicant's Restoration Plan so that decision makers and the public will understand all of the Proposed Action's impacts. For example, if restoration of the site requires revegetation, the Project may impact

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[61] *Id.*
[62] *Id.*
[63] *Id.*
[64] CHAMBERS GROUP, INC., DRAFT BIOLOGICAL ASSESSMENT FOR THE CHEVRON SOLAR PROJECT SITE 22, 24 (Sept. 2009) .

native vegetative communities.[65] Project sites in California are often revegetated with creosote bushes from Texas.[66] Creosote bushes from Texas, however, are biologically different from California creosote bushes, and may overtake the native species.[67] Information about what plants will be used for revegetation, how drainages will be restored, whether wildlife will be reintroduced and what other restoration activities will be implemented, is necessary for a meaningful impacts analysis.

H. The DEIS inconsistently describes the Project site as both occupied and vacant

The DEIS inconsistently describes the Project area as both occupied and vacant and fails to clearly identify the location of structures. The DEIS states that "[t]here are several *occupied* buildings of unknown origin that are likely not permitted and graded dirt access roads, indicating there are residents living on the property illegally."[68] The DEIS also states, however, that "[t]he site is undeveloped and *vacant* and has never been officially used for any commercial, agricultural, or industrial purposes."[69] The BLM must revise this inconsistency to allow for a meaningful comparison of the alternatives and assessment of the Proposed Action.

If there are occupied buildings on the Project site, the BLM must disclose where the buildings are, what hazardous materials the buildings contain and whether the occupants of the buildings will leave the Project site before construction. Only with this information can the public and decision makers conduct a meaningful comparison of the alternatives and the Proposed Action's environmental impacts.

For example, if there are existing structures south of Zircon Road, development of Alternative 5 would not require the destruction and removal of these structures. However, if the buildings are located north of Zircon Road, destruction of the buildings would be necessary under every action alternative, and workers may be exposed to asbestos, lead paint and other hazardous materials. In addition, if residents of the buildings will remain on the Project site during

[65] Cornett comments p. 5.
[66] *Id.*
[67] *Id.*
[68] DEIS p. 3.14-4 (emphasis added).
[69] *Id.* at p. 4.14-3 (emphasis added).

construction and/or operation, the DEIS should assess visual and noise impacts to onsite sensitive receptors. Depending on the location of the occupied buildings, Alternative 4 may reduce visual impacts to these onsite sensitive receptors.

The BLM must provide a consistent description of the Project site, so that a meaningful comparison of the alternatives and an assessment of the Proposed Action's environmental consequences are possible. The DEIS's description of the site as both occupied and vacant precludes a meaningful analysis. In addition, the DEIS's failure to describe the location of buildings precludes a meaningful analysis. The BLM must revise the DEIS to provide a consistent description that adequately compares the alternatives and evaluates the environmental impacts.

I. The DEIS's description of the Project site as mining land and an area with little or no mining activity is inconsistent

The description of the Project area is inconsistently described as both mining land and an area with little or no mining activity. The DEIS states that "[t]he Proposed Action would be located approximately eight miles east of the junction of Barstow Road and Old Woman Springs Road on partially disturbed *mining land*." [70] The DEIS also states, however, that "[t]he Proposed Action is located in an area with *little or no mining activity*, and no minerals are found on the site."[71] The BLM must revise this inconsistency to avoid misleading statements and allow for a meaningful comparison of the alternatives and assessment of the Proposed Action.

The inconsistent description of the area as mining land with little or no mining activity is misleading to the public and affects the BLM's analysis of environmental consequences. The DEIS recognizes that Lucerne Valley has a rich mining history and that it is possible that mining claims occur within the Project area.[72] The BLM's description of the site as having "little or no mining activity" is clearly inconsistent and misleading.

Furthermore, the BLM relies on this misleading statement to support its own conclusion that the Project would not restrict access to mineral resources and result in an irreversible and irretrievable commitment of mineral resources.[73] The

[70] *Id.* at p. 4.10-1 (emphasis added).
[71] *Id.* at p. 4.18-5 (emphasis added).
[72] *Id.* at p. 3.7-7.
[73] *Id.* at pp. 4.17-2, 4.17-3, 4.18-5.

misleading statement, therefore, precludes informed decision-making. The description of mineral resources on the site needs to be adequately determined and consistently described so that all of the impacts will be disclosed to the public and decision makers.

J. The DEIS's description of impacts to Joshua trees is inaccurate

The DEIS mischaracterizes the Project's significant impacts to Joshua trees. The DEIS states that no long-term direct impacts to Joshua trees are anticipated because these plants would be flagged for salvage and removed.[74] However, the DEIS provides no support for this statement.

Jim Cornett found that Joshua trees experience high rates of mortality during salvaging.[75] Mortality typically exceeds 50% and sometimes reaches 100%.[76] As set forth in Attachment B, the BLM must reassess the long-term significant impacts to Joshua trees.

K. The DEIS's description of impacts resulting from cutting and grubbing site vegetation is incomplete and inaccurate

The DEIS incompletely describes and mischaracterizes impacts resulting from mowing and grubbing activities. The DEIS states that long-term effects to vegetation from mowing would depend on the scale, intensity and duration of the activity.[77] It is unclear from the DEIS what "activity" will affect vegetation long-term, and why the BLM could not conclude that the impact would be significant.

The DEIS must contain a complete description of what activity will affect vegetation in the long-term. If the effects depend on the scale and intensity of mowing activities, impacts should be easy to assess. According to the DEIS, mowing will occur on 420 acres and will reduce vegetation to between six and twelve inches in height.[78] Because the scale and intensity of mowing activities is clearly defined, a biologist should be able to determine the long-term impacts to vegetation easily.

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[74] *Id.* at pp. ES-8, 4.6-2, 4.6-3, 4.6-6.
[75] Cornett comments p. 3.
[76] *Id.*
[77] DEIS p. ES-8.
[78] *Id.*

Mr. Cornett found that long-term impacts will be significant. Desert perennials concentrate leaves, buds, blossoms, fruits and seeds in their outer branches.[79] Mowing and grubbing activities destroy those portions of the plants.[80] Grubbing also has a greater impact than grading because there is a potential for deeper penetration of the soil by the teeth of the plow.[81] The BLM must accurately describe the significant long-term effects to vegetation from mowing and grubbing.

In sum, information in the DEIS is incomplete, inconsistent and inaccurate. Courts have held that "[w]here the information in the initial EIS was so incomplete or misleading that the decisionmaker and the public could not make an informed comparison of the alternatives, revision of an EIS [was] necessary to provide a reasonable, good faith, and objective presentation of the subjects required by NEPA."[82] The BLM must revise the DEIS to provide a reasonable, good faith and objective presentation of the affected environment and environmental consequences of the Proposed Action and its alternatives.

III. THE DEIS DOES NOT CONTAIN A HARD LOOK AT THE PROJECT'S IMPACTS

In an EIS, the agency must consider every significant aspect of a proposed action.[83] An EIS's discussion of environmental impacts forms the scientific and analytic basis for comparison of the alternatives.[84] The discussion of impacts must include both "direct and indirect effects (secondary impacts) of a proposed project."[85] The impacts analysis must include a discussion of the relationship between short-term uses of man's environment and the maintenance and enhancement of long-term productivity, and any irreversible or irretrievable commitments of resources which would be involved in the proposal should it be implemented.[86] An agency need not speculate about all conceivable impacts, but it must evaluate the

[79] Cornett comments p. 4.
[80] *Id.*
[81] *Id.*
[82] Natural Res. Def. Council v. U.S. Forest Serv., 421 F.3d 797, 811 (9th Cir. 2005) (citing Animal Def. Council v. Hodel, 840 F.2d 1432, 1439 (9th Cir. 1988)).
[83] Balt. Gas & Elec. Co. v. Natural Res. Def. Council, 462 U.S. 87, 97 (1983); Dubois v. U.S. Dep't of Agric., 102 F.3d 1273, 1286 (1st Cir. 1996).
[84] 40 C.F.R. § 1502.16; *Dubois*, 102 F.3d at 1286.
[85] 40 C.F.R. 1502.16 (a), (b); Sierra Club v. Marsh, 976 F.2d 763, 767 (1st Cir. 1992); *Dubois*, 102 F.3d at 1286.
[86] 40 C.F.R. § 1502.16.

reasonably foreseeable significant effects of the proposed action.[87] Reasonable foreseeability means that "the impact is sufficiently likely to occur that a person of ordinary prudence would take it into account in reaching a decision."[88]

The DEIS does not consider all of the Project's significant and foreseeable environmental impacts to biological resources, water resources, transmission and communication systems, mineral resources, noise, hazards and cultural resources. The BLM's failure to take a hard look at the Project's impacts violates the basic requirements of NEPA. The BLM must revise its impacts analysis and issue a supplemental EIS for public review and comment.

A. The BLM did not consider all of the Project's impacts to biological resources

Jim Cornett, a certified wildlife biologist, reviewed the DEIS's analysis of impacts on biological resources and special status species. Mr. Cornett determined that the BLM failed to take a hard look at all of the Project's impacts. Therefore, the BLM must revise its analysis of the Project's impacts to biological resources.

1. The BLM must evaluate the Project's cumulative impacts to the Desert Tortoise

The DEIS recognizes that desert tortoises are present on the Project site and that construction and operation activities may impact the species.[89] Desert tortoises are listed as a threatened species under both the ESA and the California Endangered Species Act ("CESA"). Despite the protected status of desert tortoises, the BLM failed to take a hard look at the cumulative impacts caused by the Proposed Action and the action alternatives. The BLM must adequately evaluate the Project's cumulative effects on the desert tortoise.

The DEIS concludes that there would be no cumulative effect, such as extirpation or change in status to desert tortoises, because they could move within the open spaces surrounding the various projects in the region.[90] According to Mr.

[87] *Sierra Club*, 976 F.2d at 768.
[88] *Dubois*, 102 F.3d at 1286 (citing *Sierra Club*, 976 F.2d at 767).
[89] *See* DEIS pp. 3.6-21, 4.6-13 – 4.6-14.
[90] *Id*. at p. 4.6-16.

Cornett, however, desert tortoises have site-restricted populations.[91] The inability for desert tortoises to utilize the site where they typically feed, find shelter, or breed may cause stress and territorial battles and is most likely to result in death.[92]

Three solar project ROWs are proposed or available within six miles of the Project,[93] totaling 31,752 acres of land devoted to solar projects in a six-mile radius.[94] The BLM must analyze what impact the loss of 31,752 acres of land within a six-mile radius will have on the long-term success of the species. The BLM must also rigorously compare the Proposed Action's cumulative effects with the reduced cumulative effects of Alternative 5 and the use of alternate sites.

2. The BLM must evaluate the Project's impacts to the California threatened Mojave ground squirrel

The DEIS fails to recognize the Project's significant impacts to the Mohave ground squirrel. Mohave ground squirrels are a State listed threatened species and may occur on the Project site and in the immediate Project vicinity. Construction and operation activities could significantly impact Mohave ground squirrels. The BLM must determine whether the Project may impact Mohave ground squirrels in order to mitigate impacts and comply with the CESA fully.

The CESA declares that it is the policy of this State to conserve and protect any threatened or endangered species and its habitat.[95] The CESA prohibits unauthorized "take" of protected species.[96] "Take" means "hunt, pursue, catch, capture, or kill a protected species."[97] "Take" is only permitted if the take is incidental to otherwise lawful activities and the "impacts" are minimized and "fully mitigated."[98] An incidental take permit is a discretionary project that requires environmental review under CEQA.[99]

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[91] Cornett Comments p. 3.
[92] *Id.*
[93] DEIS p. 3.18-9.
[94] *Id.* at p. 4.12-12.
[95] CAL. FISH & GAME CODE § 2052 (2010).
[96] CAL. FISH & GAME CODE § 2080.
[97] CAL. FISH AND GAME CODE § 86.
[98] CAL. FISH AND GAME CODE § 2081(b).
[99] CAL. PUB. RES. CODE § 21080(a) (2010); *see also* Evntl. Prot. Info. Ctr. v. Cal. Dept. of Forestry & Fire Prot., 44 Cal.4th 459, 521 (Cal. 2008).

The Project may impact Mohave ground squirrels and trigger the "incidental take" provisions of the CESA. CDFG guidelines specify that surveys for Mohave ground squirrels be conducted on proposed project sites that support desert scrub vegetation and are within or adjacent to the Mohave ground squirrel geographic range.[100] The protocol mandates an initial visual survey of a project site.[101] If no Mohave ground squirrels are detected visually, live-trapping is required for up to three sessions of five consecutive days each.[102] If a Mohave ground squirrel is detected on the site, a project proponent must apply to CDFG for an incidental take permit and provide compensation, usually in the form of mitigation lands.[103]

The Project site is within the Mohave ground squirrel's range,[104] and the species has been observed within four miles of the Project site.[105] The Applicant conducted only one visual survey in May 2009, but failed to conduct any trapping studies on the Project site.[106] The Applicant did report that a Round-tailed ground squirrel was observed. However, Round-tailed ground squirrels are ***impossible*** to distinguish from Mohave ground squirrels during visual field surveys.[107] Thus, the biologist conducting the visual survey may have actually observed a Mohave ground squirrel.

Nevertheless, according to CDFG guidelines, because no Mohave ground squirrels were definitively identified during the visual survey, the Applicant should have conducted a trapping study. However, the Applicant failed to do so.[108] The failure to conduct trapping studies is inconsistent with CDFG guidelines.

Because the site provides suitable habitat for State protected Mohave ground squirrels, this species may be present on the site and significantly impacted by construction and operation activities. These activities could result in an unauthorized take under the CESA. The BLM must require the Applicant to

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[100] Philip Lietner, *Current Status of the Mohave Ground Squirrel* 13 (2009), *available at* nrm.dfg.ca.gov/FileHandler.ashx?DocumentID=15148 (Attachment J).
[101] *Id*.
[102] *Id*.
[103] *Id*.
[104] *See id*. at 12.
[105] CHEVRON, LUCERNE VALLEY SOLAR PROJECTS, PLAN OF DEVELOPMENT, BLM FILE CACA 49561 49 (Attachment K).
[106] DEIS pp. 3.6-18, 3.6-21; Comprehensive Biological Assessment p. 37.
[107] Cornett comments p. 6.
[108] DEIS p. 3.6-21.

conduct trapping surveys on the Project site so that it may adequately assess the Project's impacts and ensure compliance with the CESA.

In addition, the USFWS is considering listing the Mohave ground squirrel as an endangered species under the ESA. On April 27, 2010, the USFWS issued a 90-day finding on a petition to list the Mohave ground squirrel as endangered with critical habitat.[109] If the species is listed as endangered, BLM would need to consult with USFWS and request a biological opinion and incidental take permit before conducting any activity that may harm the species. Therefore, the BLM should consult with the USFWS regarding the Project's likely take of the species in order to ensure compliance with the federal ESA.

3. The BLM must evaluate the Project's impacts to the Western burrowing owl

The Western burrowing owl is protected by the Migratory Bird Treaty Act, considered a Bird of Conservation Concern by the USFWS and a Species of Concern in California.[110] The burrowing owl's special status both federally and within the State mandates that the BLM take a hard look at any potential impacts the Project may have on the species. Because of BLM's failure to assume the presence of the burrowing owl on the site and the failure of the biologists to conduct a sufficient survey, the DEIS does not contain an adequate assessment of impacts to the Western burrowing owl. The BLM must revise the DEIS to contain a hard look at the Project's impacts to the species.

The DEIS acknowledges that suitable habitat exists on the site and that the species was observed in the area in the past.[111] During the burrowing owl survey, excrement and regurgitated pellets were observed on and near the site that were estimated to be about two to three years old.[112] However, no Western burrowing owls were actually observed during the surveys. Therefore, the DEIS does not contain any specific mitigation measures to ensure the protection of this species.

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[109] Endangered and Threatened Wildlife and Plants: 90-day Finding on a Petition to List the Mohave Ground Squirrel as Endangered with Critical Habitat, 75 Fed. Reg. 22,063 (April 27, 2010), *available at* http://frwebgate.access.gpo.gov/cgi-bin/getdoc.cgi?dbname=2010_register&docid=fr27ap10-22.
[110] U.S. FISH & WILDLIFE SERV., STATUS ASSESSMENT & CONSERVATION PLAN FOR THE WESTERN BURROWING OWL IN THE UNITED STATES pp. 4-5 (2003).
[111] DEIS pp. ES-10, 4.6-12.
[112] *Id.* at p. 3.6-21.

Although no burrowing owls were observed during the surveys, the species may still be present on the site. According to the CDFG, a site should be assumed occupied if at least one burrowing owl has been observed occupying a burrow within the last three years.[113] The DEIS does not state when the species was observed on the Project site in the past. However, excrement and regurgitated pellets are evidence that the species may have occupied the site within the last three years. Thus, the BLM should assume that the site is occupied by the Western burrowing owl.

The biologists may have also missed observing a burrowing owl because the surveys were deficient. According to Mr. Cornett, owl surveys are frequently conducted with binoculars and involve looking upward to identify flushed owls and listening for owl calls.[114] The burrowing owl surveys conducted for the Project, however, seem to have been conducted in conjunction with desert tortoise surveys.[115] If the surveys were in fact conducted at the same time, it is likely that biologists may have missed observing the burrowing owl because they were looking down. Tortoise surveys do not require the biologist to look upward towards flushing owls, listen for calls or use binoculars.[116]

It is important that the BLM specifically determine whether the Western burrowing owl is present on the site in order to mitigate potentially significant impacts. The BLM must assume that the Western burrowing owl is present on the site, or require the Applicant to redo the survey using proper methods.

4. The BLM must evaluate the Project's impacts to the Golden eagle

The Golden eagle is protected by the Migratory Bird Treaty Act and the Bald and Golden Eagle Act. The DEIS recognizes that Golden eagles are common in the Mojave Desert. However, because no Golden eagles were identified during the avian point-count survey, the DEIS does not contain an impact analysis or mitigation measures.[117]

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[113] DEP'T OF FISH & GAME, STAFF REPORT ON BURROWING OWL MITIGATION 2 (Oct. 17, 1995) (Attachment L).
[114] Cornett comments p. 6.
[115] DEIS p. 3.6-21.
[116] Cornett comments p. 6.
[117] Comprehensive Biological Assessment p. 16.

The USFWS is currently developing protocol for Golden eagle surveys. Because nesting sites are within ten miles of the Project site and typical prey species occur on the Project site, Mr. Cornett expects that the Project site lies within the hunting territory of the Golden eagle.[118] The BLM should consult with the USFWS and conduct a focused survey for this species.

5. The BLM must evaluate the Project's impacts to rare plants

The DEIS does not provide a full and fair discussion of impacts to rare plants because none of the twelve special-status plants were found during the deficient onsite survey.[119] According to Mr. Cornett, the surveys were conducted only two days apart in a year when precipitation was far below average.[120] The BLM must require the Applicant to conduct an adequate plant survey so that impacts to rare plants are identified and mitigated.

6. The BLM must evaluate the Project's impacts to mesquite plants

The DEIS does not include ***any*** discussion about the Project's impacts to mesquite plants. Using large amounts of well water may cause overdraft conditions, which may impact mesquite plants.[121] Mesquite plants are vitally important to the region as a source of food and shelter to wildlife.[122] Thus, direct impacts to mesquite plants may indirectly impact wildlife and sensitive species. The BLM must take a hard look at impacts to mesquite plants in order to adequately assess indirect impacts to biological resources.

7. The Project must evaluate impacts to creosote rings

The DEIS does not include ***any*** discussion about the Project's impacts to creosote rings. The BLM must evaluate conflicts between the Project and local

[118] Cornett comments p. 7.
[119] DEIS p. 4.6-11; Cornett comments p. 6.
[120] Cornett comments p. 6.
[121] Cornett comments p. 7.
[122] *Id.*

regulations.[123] The Plant Protection and Management Ordinance in the San Bernardino County Development Code regulates the removal of plants.[124] The Code states that creosote scrubs may not be removed from a project site if they form a ring ten feet or greater in diameter.[125] The DEIS states that the Project site is comprised of creosote scrub vegetation that may be impacted by mowing and grubbing activities.[126] Impacting creosote scrubs that form a ring ten feet or greater in diameter would conflict with the County Development Code.

The BLM must take a hard look at whether the Project will impact creosote rings and, thereby, conflict with the Development Code.

8. The BLM must evaluate the impacts of herbicide use

The BLM must take a hard look at impacts associated with herbicide use for weed abatement. The DEIS recognizes that the Project would directly affect native vegetation by allowing the increase of invasive weeds, such as Sahara mustard, to spread in the disturbed areas.[127] The Weed Control Plan submitted by the Applicant and the DEIS both note that herbicides would be used to control the weeds.[128]

The BLM must not approve use of these herbicides until specific studies have been conducted indicating that they are harmless. According to Mr. Cornett, herbicides that may be approved can still cause a cancer outbreak in humans and/or serious mutations in wildlife.[129] The BLM must identify which herbicides will be used and disclose any studies that prove the herbicides are harmless, or take a hard look at the Project's impacts to human health and biological resources.

[123] 40 C.F.R. §§ 1506.2(d), 1502.16; NEPA Handbook p. 55; DEIS p. 3.6-2.
[124] San Bernardino County Development Code § 88.01.060.
[125] San Bernardino County Development Code § 88.01.060, (c).
[126] DEIS pp. 3.6-3, 4.6-11.
[127] *Id.* at pp. 4.6-5, 4.6-7, 4.6-11.
[128] *Id.* at p. 4.14-2; CHEVRON ENERGY SOLUTIONS, WEED CONTROL PLAN 6.7-6.8 (Jan. 2010).
[129] Cornett comments p. 5.

9. The BLM must evaluate the tortoise-proof fence's impacts to species' foraging patterns

The DEIS recognizes that construction of the exterior fence could increase the presence of natural predators and adversely affect desert tortoise breeding migrations.[130] However, the DEIS fails to recognize the fence's significant impacts to desert tortoise foraging. In a desert environment, where resources are in short supply, forcing desert tortoises to travel farther to locate food may cause significant stress on the species and mortality.[131] The BLM must take a hard look at the Project's impacts to desert tortoise foraging habits.

In conclusion, the BLM clearly did not consider every reasonably foreseeable significant impact of the Project. The BLM's failure to take a hard look at biological resources precludes a meaningful analysis by the public and violates NEPA. A revised supplemental DEIS/EIR must be prepared and recirculated by the BLM prior to Project approval.

B. The BLM did not consider all of the Project's impacts to water resources

T'Shaka Toure, an expert hydrologist, reviewed the DEIS with respect to significant impacts on water resources. Mr. Toure determined that the BLM failed to take a hard look at all of the Project's impacts. The BLM must revise its analysis of the Project's impacts to water resources.

1. The BLM did not discuss impacts associated with an increased operational water use

As discussed above, it is likely that the BLM underestimated the amount of water the Applicant would need to clean the solar panels. The DEIS, therefore, contains no discussion of what impact using *at least* 270,000 gallons of water per year would have on the environment. The BLM must reasses the impacts associated with increased operational water use.

[130] *Id.* at p. 4.6-13.
[131] Cornett comments p. 4.

The first impact the BLM must reassess is whether the Project will cause an irreversible and irretrievable commitment of water resources. While the DEIS concludes that the Project will not cause an irreversible and irretrievable commitment of water resources to the point where they would not be available for other users, that conclusion was based on an arbitrarily low and unsupported water use estimate. A more reliable estimate is that the Project will use at least ***six times more water*** than what was disclosed in the DEIS. Therefore, it is likely that the Project may contribute to a significant overdraft of the aquifer and cause an irreversible and irretrievable commitment of water resources. The BLM must take a hard look at this significant impact.

The second impact that the BLM must reassess is whether the large amount of operational water will cause artificial flood events to occur on the Project site. It is unclear whether this water will permeate into the soil and whether onsite drainages have the capacity to convey large amounts of water offsite. Runoff water may create ephemeral ponding locations and/or flooding events.[132] The BLM did not evaluate measures for containing large amounts of sheet flow and runoff water from this activity in the DEIS.[133]

To mitigate impacts associated with runoff water, the BLM should require the Applicant to plant native emergent vegetation in locations where the flows will exit the Project site.[134] Native plants around the drainage outlet locations would provide beneficial cover and refugia for wildlife species.[135] The BLM should also require the Applicant to implement bioswales and/or catchment basins.[136] Bioswales and catchment basins could remove silt and pollution from surface runoff water, as well as provide another source of refugia, cover and food for wildlife.[137]

The BLM must take a hard look at the Project's impacts to water users, the groundwater aquifer and flooding that result from using at least 270,000 gallons of water per year to clean the solar arrays.

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[132] Toure comments p. 4.
[133] *Id.*
[134] *Id.*
[135] *Id.*
[136] *Id.*
[137] *Id.*

2. The BLM did not consider compliance with Section 1602 of the California Fish & Game Code

The Project requires a streambed alteration agreement from the CDFG under Section 1602 of the Fish & Game Code. However, the BLM has completely ignored this and any other State requirement. Fortunately, under NEPA, the BLM's effects analysis must identify possible conflicts between the Project and State laws and regulations.[138]

The California Fish & Game Code requires project applicants to obtain a streambed alteration agreement from the CDFG before substantially diverting, obstructing, or changing a river, stream, or lake.[139] A "stream" is defined as a body of water that flows at least periodically or intermittently through a bed or channel having banks and supports fish or other aquatic life.[140] This includes watercourses having surface or subsurface flow that supports or has supported riparian vegetation.[141]

The CDFG must issue a streambed alteration agreement before this Project can proceed. The proposed Project site contains several streams under the jurisdiction of the CDFG.[142] Construction of the Project will alter the natural flow patterns of these streams where concrete pads and structures are installed, and within the solar array field.[143] Thus, development of the proposed Project will temporarily and permanently impact these streams.[144] The CDFG must issue a streambed alteration agreement before the Project Applicant impacts these drainage systems.

Because a streambed alteration agreement is required from the CDFG before modifications to the drainages can occur, the BLM must ensure that the Applicant complies with Section 1602 of the Fish & Game Code before approving the Project.[145] Failure to receive the necessary permits could jeopardize downstream

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[138] 40 C.F.R. §§ 1506.2(d), 1502.16(c); NEPA Handbook p. 55.
[139] CAL. FISH & GAME CODE § 1602.
[140] Comprehensive Biological Assessment p. 19 (quoting DEP'T OF FISH & GAME, A FIELD GUIDE TO LAKE AND STREAMBED ALTERATION AGREEMENTS SECTIONS 1600-1607 (1994)).
[141] *Id.*
[142] *Id.* at p. 59.
[143] DEIS p. 4.5-3.
[144] Comprehensive Biological Assessment p. 59.
[145] DEIS p. 2-16; Comprehensive Biological Assessment p. 59.

drainages and wildlife, as well as violate California law.[146] The BLM must revise the EIS to reflect and disclose compliance with the Fish & Game Code.

3. The BLM did not consider compliance with the California Porter Cologne Water Quality Control Act

The Project Applicant must comply with waste discharge requirements ("WDRs") of the Regional Water Quality Control Board ("RWQCB"), pursuant to the California Porter Cologne Water Quality Control Act.[147] However, the BLM has completely ignored this and any other State requirement. Fortunately, under NEPA, the BLM must identify this conflict and evaluate the Project's compliance with the statute.[148]

The State regulates discharges of material into waters of the State pursuant to the California Porter Cologne Water Quality Control Act.[149] Discharges into waters determined to be within the jurisdiction of the State must abide by all prescribed WDRs. The RWQCB is required to prescribe WDRs for any potential discharge into State waters.[150]

The DEIS clearly states that the Project will discharge storm water into State waters.[151] The Project may also discharge at least 270,000 gallons of non-storm water runoff when the solar panels are cleaned.[152] Because the Project will discharge storm water and non-storm water into State waters, either the Colorado River Basin RWCQB or the Lahontan RWQCB must prescribe WDRs.

The BLM must identify that the Applicant has not applied for WDRs and no WDRs have been certified for the Project. Approval of the Project by the BLM may, therefore, promote a violation of California law by allowing the Applicant to proceed without all of the necessary permits and approvals. The BLM must evaluate the potential conflict with State law.

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[146] *See* Toure comments p. 5.
[147] CAL. WATER CODE §§ 13000 et seq. (2010).
[148] 40 C.F.R. § 1502.16(c).
[149] CAL. WATER CODE §§ 13000 et seq.
[150] CAL. WATER CODE § 13263(a).
[151] DEIS p. 3.5-2.
[152] Seely comments p. 1.

4. The BLM must ensure compliance with other federal and State laws governing jurisdictional waters

According to Mr. Toure, the jurisdictional delineation does not contain sufficient information to adequately and specifically determine jurisdiction of the waters on and impacted by the Project site.[153] Specifically, the delineation relies on incomplete soil data.[154] Further soils surveys are required to support the findings in the jurisdictional delineation.[155] As disclosed, the jurisdictional delineation is faulty.

C. The BLM did not consider all of the Project's impacts associated with new transmission and communications systems

1. The BLM must consider significant impacts associated with new communications systems

The BLM must provide a full and fair discussion of the impacts associated with the installation of new communication systems. The DEIS states that new communications systems between the site switchyard and the Cottonwood Substation would be required.[156] While the DEIS concludes that construction of the "[c]ommunications systems would be expected to require only minimal site disturbance to implement," there is no discussion or evidence to support this conclusion.[157] The BLM must provide more information about where utility poles will be placed, whether an offsite corridor must be established, and what impacts would be associated with installing new communications systems.

2. The BLM must consider all significant impacts associated with the Project's energy transmission

The BLM must provide a full and fair discussion of all impacts associated with the Project's energy transmission. As it is currently written, the DEIS provides nothing more than a list of upgrades the Project requires to transmit

[153] Toure comments p. 5.
[154] *Id.*
[155] *Id.*
[156] DEIS p. 2-16.
[157] *Id.* at p. 2-16.

energy to the Cottonwood Substation, and it is unclear whether those upgrades will even be sufficient. The BLM must revise the DEIS to include an evaluation of the Project's transmission needs as well as all impacts associated with conveying energy from the Project site.

The DEIS states that Phase I of the Proposed Action would interconnect to the existing Southern California Edison ("SCE") 33-kV transmission line without an upgrade to the existing line.[158] During Phase I, a 33-kV transmission line segment would be constructed across Foothill Road.[159] Phase II would require "reconductoring" (i.e. replacing the existing wire with heavier wire and reusing the existing cross arms and insulators) of the existing SCE transmission line back to the Cottonwood Substation.[160] It is unclear, however, whether Phase II would require additional upgrades. The DEIS acknowledges actual transmission line capacity would have to be verified by a Transmission Study.[161] The DEIS also states that new "transmission poles" would be installed.[162]

The BLM must conduct a Transmission Study and make it available to the public before approving the Project. If the BLM does not identify the transmission line capacity, it cannot know what transmission upgrades the Project will require. Failure to identify and describe all aspects of the Project also impacts the BLM's analysis of environmental consequences. This violates NEPA.

In addition, the BLM has not taken a hard look at impacts associated with the transmission upgrades it has already identified as necessary. For example, the DEIS must discuss impacts associated with reconductoring. If machinery is used to replace existing wire with heavier wire, there could be direct and indirect impacts to biological resources, traffic, visual, noise and air quality. The DEIS must also discuss all impacts with installing any new transmission poles offsite.

Agencies frequently overlook impacts associated with transmitting energy. The BLM must provide more information and discuss all of the impacts associated with connecting to the Cottonwood Substation. The impacts analysis must be supported with a Transmission Study.

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[158] *Id.* at p. ES-4.
[159] *Id.* at p. ES-13.
[160] *Id.* at p. 2-5.
[161] *Id.* at p. 2-20.
[162] *Id.* at p. 2-19.

3. The BLM did not consider cumulative significant impacts to transmission

The BLM's analysis of cumulative impacts to transmission is cursory at best. While the DEIS recognizes that complete build out of the Proposed Action would cause a cumulative effect, it concludes that "it is unlikely that the Proposed Action would add sufficient power to electric transmission system to require high voltage transmission lines or new substations."[163] The BLM's logic is faulty, and the agency must reassess its cumulative impact analysis.

First, without a Transmission Study, the BLM cannot conclude that energy from the Proposed Action would not be sufficient enough to require significant transmission upgrades. There is no evidence or basis for that determination. Second, cumulative impacts can result from "individually minor" actions that contribute to a collectively significant impact.[164] Thus, even if the Proposed Action itself would not add sufficient power to require significant transmission upgrades, the Proposed Action's contribution, along with the other energy projects in the region, may be sufficient.

The BLM must take a hard look at the Project's cumulative impacts to transmission. The BLM must also provide more information about the transmission needs of the other action alternatives so that a meaningful comparison can be made.

D. The BLM did not consider all direct and indirect noise impacts to sensitive species and sensitive receptors

The BLM must take a hard look at construction and operation noise impacts to sensitive species. The DEIS notes that sensitive receptors, such as nearby residences and special management areas, may be impacted by construction and operation noise from the Project.[165] There is no acknowledgement in the DEIS, however, that wildlife may be impacted by construction and operation noise. Sounds that are rare or even minor may have a negative impact on wildlife and

[163] *Id.* at p. 4.11-4.
[164] 40 C.F.R. §1808.7.
[165] *Id.* at pp. 3.2-8 – 3.2-11.

sensitive species in the area.[166] The BLM must take a hard look at noise impacts to wildlife and sensitive species.

E. The BLM did not consider impacts from hazardous materials

Although the DEIS identified prospecting features in the Project area, the BLM failed to take a hard look at potential health risks associated with previous mining activities on the site. Matt Hagemann, an expert in hazardous materials, reviewed the DEIS with respect to hazards associated on the site from remnants of hand-dug mining pits. In his comments, he concludes that unevaluated significant impacts to construction workers and future site workers from mining debris may occur.[167] Those impacts include dermal contact and ingestion of dust with soils that may contain metals at concentrations that are hazardous to human health.[168]

Mr. Hagemann recommends that the BLM conduct a Phase I Environmental Site Assessment to evaluate these potential human health risks. If the Phase I Assessment finds the mining debris to represent potential human health risks, a Phase II Environmental Site Assessment should be conducted to include sampling of the debris.[169] To assess the Project's impacts adequately, the BLM must conduct a Phase I Assessment and include the results in a revised DEIS that is circulated for public review.

F. The BLM did not consider all impacts to cultural resources

The DEIS acknowledges that five ethnic groups historically used the Proposed Action area: the Mohave, Kawaiisu, Southern Paiute (Las Vegas and Chemehuevi groups), Vanyume/Serrano and Western Shoshone. The BLM neglected to notify all of the tribes, however, about the Proposed Action.[170] The BLM's failure to consult with all of the tribes that have historic ties to the Project area precludes an analysis of all of the Project's foreseeable impacts.

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[166] Cornett comments p. 6.
[167] Hagemann comments p. 2.
[168] *Id.*
[169] *Id.*
[170] *See* DEIS p. 3.7-8 (neglecting to notify Chemehuevi tribe among others).

For example, the BLM did not notify the Chemehuevi tribe about the Proposed Action. The Chemehuevi tribe considers all of San Bernardino County and parts of Riverside, Kern and Inyo Counties its ancestral, historical homeland.[171] The Mojave River was a major trade route for the Chemehuevi and ancient burial sites, camp sites, "sleeping circles" and village sites may be found in the region.[172] Victorville was most likely the ancient Chemehuevi village of Atongiabit.[173]

Because Lucerne Valley is only twenty miles from the Chemehuevi's ancient village and major trade route, it is likely that the Chemehuevi used the Project area and have ties to the land. The BLM must consult with the Chemehuevi, and all tribes that have ties to the land, to determine if there are historical resources that have not been identified. Failure to do so arbitrarily limits the BLM's hard look at the Project's impacts and conflicts with Section 106 of the National Historic Preservation Act.

IV. THE PURPOSE AND NEED STATEMENT IS ARBITRARILY NARROW AND PROMOTES PRIVATE INTERESTS

An EIS must briefly describe the underlying purpose and need to which the agency is responding in proposing the alternatives, including the Proposed Action.[174] The BLM's *NEPA Handbook* mandates that the purpose and need statement for an externally generated action must describe the BLM's purpose and need, not an applicant's or external proponent's purpose and need.[175] The "need" for the action is the underlying problem or opportunity to which the BLM is responding with the action.[176] The "purpose" is the goal or objective that the BLM is trying to reach.[177] Clearly distinguishing the purpose and the need clarifies for the public and decision makers why the agency is proposing to spend large amounts of taxpayers' money, while at the same time causing significant environmental impacts.[178]

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[171] Letter from Charles F. Wood, Chairman, Chemehuevi Indian Tribe, to Doug Feremenga, San Bernardino County Land Use Services Department/Planning Division 1 (Nov. 12, 2009) (Attachment P).
[172] *Id.* at p. 2.
[173] *Id.*
[174] 40 C.F.R. § 1502.13.
[175] NEPA Handbook p. 35 (citing 40 C.F.R. § 1502.13).
[176] *Id.*
[177] *Id.*
[178] RONALD E. BASS ET AL., THE NEPA BOOK 89 (2d. ed. 2001).

The DEIS contains an arbitrarily narrow purpose and need statement that impermissibly promotes private objectives. The purpose and need statement sets out one simple goal: "to process a ROW application."[179] This narrowly defined statement implies that BLM stands to gain nothing more than a rubber-stamped document at the end of this process. It is nonsensical to think that the BLM would spend taxpayer money and impact the environment for such an inconsequential result.

The statement fits the Applicant's goals and objectives better than the BLM's. According to the DEIS, the Applicant has two goals: (1) promote solar technology, and (2) develop 45 MW of energy on public land to maintain a profit margin.[180] While it is unclear what the BLM would gain from the Project, a ROW application rubber stamped "approved" would clearly help the Applicant meet its goals. Thus, the arbitrarily narrow purpose and need statement promotes the Applicant's objectives instead of the BLM's.

V. THE DEIS OMITS REASONABLE ALTERNATIVES

Under NEPA, federal agencies must consider alternatives to their proposed actions as well as their environmental impacts.[181] The alternatives analysis has been called the "linchpin" of an EIS.[182] An EIS must "[r]igorously explore and objectively evaluate all reasonable alternatives, and for alternatives which were eliminated from detailed study, briefly discuss the reasons for their having been eliminated."[183] It is "absolutely essential to the NEPA process that the decisionmaker be provided with a detailed and careful analysis of the relative environmental merits and demerits of the proposed action and possible alternatives, a requirement that [courts] have characterized as 'the linchpin of the entire impact statement.'"[184] This is particularly true in cases where there may be "unresolved conflicts concerning alternative uses of available resources."[185]

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[179] DEIS p. 2-32; *see also* p. 1-1 ("BLM's purpose and need for the Lucerne Valley Solar Project EIS is to respond to CES's application . . . for a right-of-way (ROW) grant").
[180] DEIS p. 1-5.
[181] 40 C.F.R. § 1502.14.
[182] Monroe County Conservation Council v. Volpe, 472 F.2d 693, 697-98 (2d Cir. 1972).
[183] 40 C.F.R. § 1502.14(a).
[184] Natural Res. Def. Council v. Callaway, 524 F.2d 79, 92 (2d Cir. 1975) (citation omitted); *see also* All Indian Pueblo Council v. United States, 975 F.2d 1437, 1444 (10th Cir. 1992) (holding that thorough discussion of alternatives is "imperative").
[185] *See* 42 U.S.C. § 4332(E); California v. Block, 690 F.2d 753, 766-67 (9th Cir. 1982).

The range of alternatives to be discussed is governed by a "rule of reason." Reasonable alternatives are alternatives that are practical and feasible from a technical and economic standpoint, rather than simply desirable from an applicant's standpoint.[186] "The 'existence of a viable but unexamined alternative renders an environmental impact statement inadequate.'"[187] Courts have shown little reluctance in striking down an EIS that fails to include a thorough discussion of reasonable, less environmentally damaging alternatives.[188] Finally, an EIS must include a discussion of "natural or depletable resource requirements (and conservation potential of various alternatives and mitigation measures)."[189]

A. The BLM must consider alternate sites

1. The BLM's failure to consider alternate sites was arbitrary and capricious

Courts have considered whether federal agencies violate NEPA by failing to consider possible alternative sites for a proposed project adequately.[190] The federal agency will violate NEPA if it impermissibly determines that alternate sites do not have to be considered.[191] In this case, the BLM's determination that alternative sites do not have to be considered is impermissible.

The BLM's decision not to consider alternate sites is impermissible because it is based on an arbitrarily narrow purpose and need statement. The BLM may not adopt private interests to draft a narrow purpose and need statement that excludes alternatives that fail to meet specific private objectives.[192] Yet, that was the result

[186] NEPA Handbook p. 50; CEQ, FORTY MOST ASKED QUESTIONS CONCERNING CEQ'S NEPA REGULATIONS No. 2(a) (1981).
[187] Resources Ltd. v. Robertson, 35 F.3d 1300, 1307 (9th Cir. 1993) (quoting Idaho Conservation League v. Mumma, 956 F.2d 1508, 1519 (9th Cir. 1992)); *see* Grazing Fields Farm v. Goldschmidt, 626 F.2d 1068, 1072 (1st Cir. 1980) (holding even existence of supportive studies and memoranda contained in administrative record but not incorporated in EIS cannot "bring into compliance with NEPA an EIS that by itself is inadequate.")
[188] *See, e.g.*, Dubois v. U.S. Dep't of Agric., 102 F.3d 1273, 1288 (1st Cir. 1996).
[189] 40 C.F.R. § 1502.16(f) (emphasis added).
[190] *See generally* Natural Res. Def. Council v. Evans, 232 F. Supp. 2d 1003, 1040 (N.D. Cal. 2002) (distinguishing holding in *Natural Resources Defense Council v. U.S. Dept. of the Navy* to determine whether failure to consider alternatives sites violated NEPA).
[191] *See Natural Res. Def. Council*, 232 F. Supp. 2d at 1040 (citing Natural Res. Def. Council v. U.S. Dep't of the Navy, 857 F.Supp. 734, 740 (C.D. Cal. 1994)).
[192] NEPA Handbook p. 50.

of the process here. The BLM must consider reasonable alternatives, even if the Applicant does not like the alternative or is incapable of implementing the Project on an alternative site.[193] Thus, as drafted, the DEIS violates NEPA's basic requirement to consider alternatives.

2. The Project site is on undisturbed lands that are prone to flooding and may contain valuable mineral resources

The proposed Project site is not ideal for long-term energy generation. This particular site lies within mostly undisturbed desert habitat that contains untouched and intact environmental resources.[194] Disturbed areas, such as roads and sediment berms, make up only one percent of the site.[195] The rest of the site is characterized by desert scrub vegetation and desert washes.[196] Special-status species, such as the desert tortoise, were observed on the site.[197] In addition, many prehistoric and historic sites have been recorded between the Proposed Action site and the Victorville area.[198]

This particular site is also prone to flooding events. According to the National Oceanic and Atmospheric Administration, Lucerne Valley was flooded in 1958, 1960, 1965, 1967, 1969, 1972, 2001, and twice in 2005 just six days apart.[199] It is likely that even more flash flood events occurred, because the study is not comprehensive.[200] In fact, modeling, not included in the DEIS, suggests that flooding of the Project site is possible during episodic rain events.[201] Residents and resource agencies have also noted that this area is subject to intense flooding events, including flash floods.[202]

Finally, mineral extraction may be a beneficial and valuable use of the site. Gold, copper, silver, lead, sand, gravel, stone and uranium have all been prospected,

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[193] *See* CEQ, FORTY MOST ASKED QUESTIONS CONCERNING CEQ'S NEPA REGULATIONS No. 2(a) (1981).
[194] *See* DEIS p. 3.11-2.
[195] *Id.* at pp. 3.5-4, 3.6-4, 3.6-7.
[196] *Id.* at p. 3.5-4.
[197] *Id.* at p. 3.6-8.
[198] *Id.* at p. 3.7-8; *see also* Attachment P.
[199] *See generally* NAT'L OCEANIC ATMOSPHERIC ADMIN., A HISTORY OF SIGNIFICANT WEATHER EVENTS IN SOUTHERN CALIFORNIA (January 2007) (listing flood events).
[200] *Id.*
[201] DEIS p. 4.5-2.
[202] *Id.* at p. 4.5-2.

produced and/or processed within five miles of the Project site.[203] It is likely, given the importance of mining in Lucerne Valley's history and the presence of mineral resources around the Project site.

Because the Project site is on undisturbed land with potentially valuable mineral resources that is also subject to intense and frequent flooding, it is not ideal for long-term energy generation. The BLM must consider other sites that will reduce the Project's impacts and support energy generation.

3. An alternate site on disturbed land not subject to frequent flooding would reduce the Project's environmental impacts and be more conducive to long-term energy generation

The BLM should consider an alternate site on disturbed land. In the desert to the north of the Project site, as well as in Kings and Fresno Counties, there is an extensive amount of abandoned farmland that would facilitate long-term energy generation while reducing the Project's impacts on environmental resources.[204] Both areas have existing infrastructure and are near roads and existing power lines.[205] Because both areas have successfully been used for long-term agriculture use, it is also unlikely that the frequency of flash floods would impact long-term energy generation. The BLM must evaluate siting the Proposed Action on these alternate sites, or risk failing to evaluate a viable alternative.

B. The BLM must consider an alternative site design with four sides

The BLM must consider a four-sided alternative site design for the solar facility. The Proposed Action has twelve sides and a very high boundary-to-area ratio. The design of Alternatives 4 and 5 are not specified, but the DEIS implies that the design of the alternatives would be irregular as well. The BLM should

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[203] *Id.* at p. 3.17-3.
[204] David Danelski, *Solar Energy Proposal Criticized Lucerne Valley: Chevron's Plans Could Disturb Threatened Species Some Say. Other Say Old Farmland is a Better Choice*, THE PRESS ENTERPRISE (July 31, 2009) (Attachment M) [hereinafter Attachment M]; Jason Dearen & Tracie Cone, *California Environmentalists, Growers Agree on Farmland Reuse for Solar*, DETROIT NEWS (March 22, 2010) (Attachment N) [hereinafter Attachment N].
[205] Attachment M; Attachment N.

consider a project design with four sides to reduce the boundary-to-area ratio and minimize impacts to biological resources and drainage systems.

The high boundary-to-area ratio increases the Project's impacts to biological resources. Instead of impacting a discreet parcel of land, the Project's impacts are spread out in different directions and on different parcels.[206] The solar arrays nearly surround one parcel and envelop large areas of three other parcels.[207]

A twelve-sided configuration also impacts species movements more than a project with four sides.[208] Because there are twelve sides, there are twelve obstructions to migratory movement; there is no clear migratory path for species to move around the Project.[209] A project with four sides, however, would have a clearer path for species to move around.

The BLM should consider approving this alternative instead of the Proposed Action. The Proposed Action will impact desert tortoises significantly, and may also impact the Western burrowing owl and Mohave ground squirrel. Implementation of this alternative, however, may significantly reduce the Project's impacts to sensitive biological resources.

C. The BLM must consider an alternative design the reduces impacts to drainage systems

The BLM must consider an alternative design that reduces impacts to drainage systems. As discussed above, the Project will impact the natural drainage systems that run through the Project site, which will in turn impact water quality and biological resources, as well as increase the potential for flooding on the Project site. The BLM should consider a site design that avoids, or significantly minimizes, these impacts.

Mr. Toure provided diagrams of two alternative site designs.[210] Both site designs completely avoided or significantly reduced impacts to the blue-line

[206] Cornett comments pp. 1-2.
[207] *Id.* at p. 2.
[208] *Id.* at p. 2.
[209] *Id.* at p. 2.
[210] Toure Comments, Exhibits 3 and 4.

drainages that run through the Project site.[211] These alternative site designs would also allow water from Project activities to be captured in bioswales and discharged into dry washes.[212] The BLM should consider this alternative to reduce the significant impacts to water resources caused by the Proposed Action.

VI. NEPA REQUIRES THAT THE DEIS INTEGRATE ALL NECESSARY FEDERAL AND STATE ENVIRONMENTAL LAWS

If a Project requires State approval, the federal agency must cooperate with State and local agencies "to the fullest extent possible to reduce duplication between NEPA and State and local requirements."[213] In California, this requires that federal agencies cooperate with State and local agencies to prepare a joint EIS/EIR under CEQA.[214] BLM policy recommends that State agencies be identified as joint lead agencies at the earliest possible stage.[215]

The Project will require approval of a streambed alteration agreement from the CDFG and WDRs by the RWQCB. Thus, the Applicant will require approval under CEQA before it can proceed with Project construction. The BLM must work with the CDFG and RWQCB to facilitate this process. It is essential for the BLM to encourage preparation of a joint EIS/EIR at the earliest possible stage to avoid duplication of materials and resources and unnecessary delay.

The DEIS does not comply with CEQA. First, California courts have repeatedly held that "an accurate, stable and finite project description is the *sine qua non* of an informative and legally sufficient [CEQA document]."[216] Compliance with CEQA, therefore, requires that the environmental document provide an accurate, consistent and complete description of the Project. As discussed above, the DEIS fails to do so.

Second, CEQA imposes an affirmative obligation on agencies to avoid or reduce environmental harm by adopting feasible project alternatives or mitigation

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[211] *Id.* at p. 5.
[212] *Id.*
[213] 40 C.F.R. § 1506.2(b).
[214] CAL. CODE REGS. tit. 14, § 15222(a)(1) (2010).
[215] NEPA Handbook p. 114.
[216] County of Inyo v. City of Los Angeles, 71 Cal.App.3d 185, 193 (Cal. Ct. App. 1977).

measures.[217] The DEIS does not propose sufficient mitigation measures, however, to reduce or avoid the Project's impacts. For example, the DEIS states that tortoise-proof fencing and transmission poles installed for the Project could "cause increased predation of reptiles, small mammals, and small birds around the Proposed Action site because raptors would use the infrastructure for perches."[218] Predatory ravens are a leading cause of mortality for the desert tortoise.[219] The DEIS does not disclose, however, how perching will be discouraged on the tortoise-proof fence and the transmission poles. Thus, it is unclear whether the Project's impacts will be sufficiently mitigated.

Because the CDFG and the RWQCB must issue permits ***before*** the Applicant can begin ***any*** development on the Project site, the BLM must abide by the requirements of NEPA and work with the State agencies to develop a joint EIS/EIR. This will avoid duplication of government materials and resources.

VII. CONCLUSION

The foregoing comments, together with those of the experts, establish that the DEIS simply cannot pass muster under NEPA. The only option is for the BLM to prepare a revised EIS/EIR that is recirculated for public review and comment. We respectfully urge the BLM to do so prior to taking any action on the Applicant's pending federal permit applications to ensure that the basic requirements of NEPA are met.

Please do not hesitate to call if you have any questions or require any further information in support of these comments.

Sincerely,

Robyn C. Purchia

RCP:cnh
Attachments

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[217] CAL. PUB. RES. CODE §§ 21002, 21002.1.
[218] DEIS p. ES-9; *see also* 4.6-8.
[219] *Id.* at p. 4.6-13.
2422-010d

COMMENTS ON THE DRAFT ENVIRONMENTAL IMPACT STATEMENT FOR LUCERNE VALLEY SOLAR PROJECT

ATTACHMENTS

Attachment A	Seely Comments
Attachment B	Cornett Comments
Attachment C	Toure Comments
Attachment D	Hagemann Comments
Attachment E	Observations on Photovoltaic Cell Panels
Attachment F	Kramer Junction Mitigated Negative Declaration ("MND")
Attachment G	*Las Vegas Sun* – Dirty detail: Solar panels need water
Attachment H	Water Purveyors – Desert Region
Attachment I	Mojave Basin Area Watermaster Report
Attachment J	Water Level Graphs
Attachment K	Current Status of the Mohave Ground Squirrel
Attachment L	Plan of Development
Attachment M	CDFG Staff Report on Burrowing Owl Mitigation
Attachment N	*Press Enterprise* – Solar Energy Proposal Criticized Lucerne Valley: Chevron's Plans Could Disturb Threatened Species, Some Say, Others Say Old Farmland Is a Better Choice
Attachment O	*Detroit News* – California Environmentalists, Growers Agree on Farmland Reuse for Solar
Attachment P	Letter from Charles F. Wood, Chemehuevi Tribe

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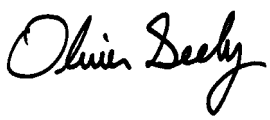
Dear Ms. Purchia:

Regarding your question about the proposal claiming a need for rinse water to keep 45 MW of solar panels clean in the Mohave Desert, I would offer that the claimed need of 45,000 gallons of water per year seems to me to be low by about a factor of 6, for the following reasons.

First, the 45 MW project on 420 acres seems to me to be about right. If there are asphalt roads in between the banks of panels for the watering truck and tilting and separation between the banks of panels, then I think one can get 45 MW into 420 acres. My calculation for complete coverage of 420 acres without space allocated for a water truck yielded 156,680 kilowatts or 156.68 MW, so 45 MW for that area, with a coverage of 45/156.68 x 100 = 29% seems to me to be reasonable.

On my domestic installation of 18 panels and a hand-held hose, I use 9 gallons per rinse. Envisioning a water truck shooting a spray of water at tilted panels, it seems to me that there is about the same amount of waste whether one sprays from a water truck at some distance or a hose up close. I have 3 kW of panels, so my rinse requires 3 gallons per kilowatt. Scaling up, 45 MW or 45,000 kilowatts will require 135,000 gallons per rinse. In the graph of the Dominguez Hills site, the data suggest that Sun Edison rinses about twice each year with the rinse triggered by a 15% loss in power, so the 45 MW installation would require 270,000 gallons of water per year if the dustfall is the same as that at my location and if the same power-loss threshold is followed. Maybe the dustfall in the Mohave Desert is low enough to allow for one rinse per year, but that region does suffer periodic sand storms. Estimating two rinses per year, the 45 MW project is low by 270,000/45,000 = 6 times and the 20 MW PV installation (20,000 kilowatts) 65 miles from that which is being proposed and which you mentioned in a previous message would require 20,000 x 3 = 60,000 gallons of water per rinse. Its claim of a requirement of 150,000 gallons of rinse water per year would suggest a rinsing frequency of 150,000/60,000 = 2.5 rinses per year, which is about right in my opinion. I think the folks proposing the 45 MW installation are low, as your intuition told you.

Sincerely yours,



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May 13, 2010

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Subject: **Comments on the biological resource information provided in the Draft Environmental Impact Statement for the proposed Chevron Energy Solutions Lucerne Valley Solar Project**

Dear Ms. Purchia:

This letter contains my comments on the biological resource information presented in the Draft Environmental Impact Statement (DEIS) prepared for the Chevron Energy Solutions Lucerne Valley Solar Project (LVSP), located near the unincorporated town of Lucerne Valley, San Bernardino County, California. The applicant proposes to construct a 45-megawatt photovoltaic solar plant on 516 acres of federal land managed by the Bureau of Land Management.

Since 1980 I have been a biological and environmental consultant specializing in sensitive species issues in the desert regions of California. I have conducted and written nearly 600 biological studies and impact analysis reports including focused studies on the Desert Tortoise, Bighorn Sheep, Burrowing Owl and Least Bell's Vireo. My research activities have focused on the ecology of desert plants with dozens of peer-reviewed research papers most recently focusing on Joshua Tree ecology. I have additional experience as a college and university instructor teaching courses in wildlife management, conservation of natural resources, the Desert Tortoise and ecology of the Joshua Tree. My educational background includes a B.A. degree in biology from the University of California at Riverside and an M.S. degree in biology from California State University at San Bernardino.

I have reviewed the DEIS focusing on the acknowledged and potential impacts to biological resources and suggested mitigation for significant adverse impacts. I have a number of concerns with the project as proposed as well as the DEIS including the site plan, resource use analysis, survey methods and inconsistencies in findings. My specific concerns are described below.

Site Configuration Maximizes Impacts To Surrounding Lands

The project site has a very irregular boundary. Such a site configuration has a high boundary to area ratio with the result that any disturbance within the site boundaries occurs much closer to

adjacent properties and is more likely to impact them. This causes an increased impact to biological resources.

The Project has ten sides, nearly surrounds one 40-acre parcel, and envelops three other parcels. As designed, the Project's footprint extends beyond the parcel and significantly onto the adjacent parcels. Thus, the Project would directly impact species on other parcels that would not otherwise be impacted if the Project design had a more regular boundary. In addition, the ten-sided configuration impacts species movements more than a project with four sides.

A simple square or rectangle configuration would only share a single boundary with any surrounding parcel and reduce impacts to biological resources. Since the applicant is requesting to use BLM-managed land, the BLM should provide a rectangular area to minimize impacts to surrounding lands.

Alternative 5

Serious consideration should be given to Alternative 5 first described on page ES-4 of the DEIS. Reducing the impacted area by 45% (from 433 to 238 acres) results in only a 33% reduction in electrical energy production. Since the project site is known to be occupied desert tortoise habitat, reduction in impact footprint with the benefits of increased efficiency in terms of megawatts per acre of the LVSP would seem desirable.

Cumulative Impacts to the Officially Threatened Desert Tortoise

The Desert Tortoise is classified as an officially threatened species by both the state and federal governments and it occurs on the LVSP site. In addition to the LVSP, I have identified at least 5 more electrical generation facilities being proposed in the general area:

1. Granite Wind (CACA 48254): 84 MW on 2,134 acres of land, located 6 miles east of Apple Valley.

2. Calico Solar (CACA 49537/49539): 850 MW on up to 8,264 acres, located 37 miles east of Barstow.

3. SES Solar Six (CACA 04939): up to 5,212 acres, located adjacent to the above facility.

4. AES Daggett Ridge Wind (CACA 049575): 92.5 MW on 1,975 acres of land, 6 miles southeast of Barstow and 5 miles SW of Daggett.

5. LSR Pisgah Solar (CACA 050706): 17,920 acres, located six miles to the east.

Dozens of additional projects are in the planning process elsewhere in the California deserts and many are located in known desert tortoise habitat.

Considered together, the total loss of tortoise habitat by the five facilities listed above is potentially 35,505 acres. Indirect impacts through road kills due to increased vehicular traffic in the area, loss of foraging habitat for tortoises on adjoining lands, and barriers to dispersal can be expected to impact tortoises on an even greater area. Considering all the projects currently proposed on lands managed by the Bureau of Land Management, the desert tortoise is facing an assault on its habitat greater than any other threat since the California population was officially listed as threatened in 1990.

The DEIS fails to take into account the long-term loss of tortoise habitat from multiple projects, increased demand for homes in the vicinity of the power plants, increased area traffic, increased needs for services, recreation, and impacts of domestic pets. It fails to consider tortoise and other wildlife habitat requirements, territoriality, seasonal movements to food and shelter resources and the effects of increased competition for diminishing resources.

A methodology used to determine cumulative impacts is absent and assumptions made are erroneous. For example, on page 4.6-16 the DEIS states "there are no site-restricted populations." Nearly every terrestrial animal ever studied, including the desert tortoise, has site-restricted populations—some seasonally, most permanently (Ernst and Lovich, 2009). "Varied construction schedules" make little difference to wildlife since most show extreme site fidelity; they are not going to move to the area where there is no construction and then return to a site because the project has been completed. Finally, animals, including the desert tortoise, routinely attempt to return to locations where they feed, find shelter or breed. Unable to follow lifelong routines causes stress, can result in territorial battles and is may result in death (Van Devender, 2002).

County Joshua Tree Ordinance

The County of San Bernardino has an ordinance regarding the disposition of Joshua trees on project sites. The DEIS states on page 1-12 that the "BLM will follow, to the extent possible, county ordinances." The BLM should demonstrate that it will be following the county plan with respect to Joshua trees or explain why that is not possible. Table 1-1 supposedly shows the rules and ordinances the County of San Bernardino has with respect to the project site. However, the table does not indicate there is a County ordinance regarding Joshua trees. This issue needs to be considered and addressed.

Temporary Relocation of Plant Species

My experience with desert plant salvaging, particularly with yuccas such as the Joshua tree, shows a very high mortality typically exceeding 50% and sometimes reaching 100%. Assuming that relocation is proposed as mitigation to offset a significant adverse impact, this is an unacceptable solution as the impact is not "temporary" (page ES-8). Consideration and discussion should be provided for alternative solutions including leaving old but vigorous plants in place and designing the project around them.

Impacts Resulting From Cutting and Grubbing Site Vegetation

On page ES-8 the DEIS describes impacts to vegetation on 420 acres as a result of "mowing" and/or "grubbing" activities. These impacts are not sufficiently assessed, however. First, because of recurring drought, as experienced in 2009 for example, desert plants often do not "re-sprout" after very severe impacts such as mowing or grubbing (Webb et.al. 2009). Desert perennials concentrate leaves, buds, blossoms, fruits and seeds in the upper portions of the plant, the part destroyed during mowing or grubbing. Thus, the impacts of these destructive activities are profound and, more often than not, permanent. Approving the LVSP requires that adverse impacts to vegetation be seen as if the entire site were graded. The final EIS must, at the very least, acknowledge and address this fact.

Table 2-1 on page 2-6 refers to the area as being "brushed." The DEIS should define "grubbing," "mowing," and "brushing." I suspect brushed is another word for "grubbed." Grubbing, and presumably brushing, has the same if not greater impact than grading because there is a potential for deeper penetration of the soil by the steel teeth of plows. The word "brushed" and the acreage that is to be impacted misleads the reader.

Transmission Lines, Reconductoring, and Communication Systems

There is insufficient information to determine what lands outside the project site will be impacted by transmission lines, connections and reconductoring. No transmission lines cross the site today. Where will the connections be made? What impacts to lands outside the project site will result from reconductoring?

Additionally, on page 2-16 the DEIS states that new utility poles will need to be installed to provide for site communications. Where will they be placed? Does an offsite corridor need to be established? These routes should be evaluated with regard to biological impacts, particularly potential impacts to the desert tortoise

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Site Security and Fencing Impacts

Perimeter fencing will prevent the movement of medium and large animals across and through the site. In a desert environment where resources are usually in short supply, forcing animals to move longer distances to locate food can result in significant stress and even mortality. This has particular significance with regard to the officially threatened desert tortoise. Fencing the site with tortoise-proof fencing may keep tortoises off the project site but does not address the loss of foraging habitat for tortoises surviving on lands surrounding the project site. The BLM needs to address the issues resulting from restricted wildlife movement.

Vegetation Treatment and Weed Management

The use of any chemical dust control agent or weed eradication compound should be prohibited unless it can be shown that independent field studies have been completed indicating the chemicals are harmless to wildlife. Since it is highly unlikely that such studies have been done, the use of such chemicals should be strictly prohibited. Though certain herbicides and pesticides may be approved, rarely have studies been conducted indicating they are harmless. All to often they are used until there is a cancer outbreak in humans living near the site, the applicators contract leukemia, or serious mutations in wildlife appear. Herbicides and pesticides, although approved, should not be used until they have been tested in real world situations.

Decommissioning The Facility

A Restoration Plan should be prepared at the time the EIS is prepared so that all aspects of the project can be evaluated before it is approved. For example, revegetation of a project site inevitably impacts native species. Applicants sometimes revegetate with creosote bushes from Arizona or Texas. However, creosote bushes from other states are genetically different and may adversely impact California creosote bushes when they produce a first generation of cross-pollinated plants. The restoration/decommissioning plan should be made available to the public before approval, not after, so that impacts such as this can be assessed.

Impacts to Underground Aquifer

As described on page ES-5, significant quantities of water would be used for dust suppression during constructing and to clean solar panels when the facility is operational. Presumably there would be additional water use for employee needs and landscaping though there is no mention of these latter uses in the DEIS.

Whether or not the water comes from wells on site or from off site sources, it can be expected that there will be impacts to the local underground aquifer. (According to a company brochure available on the internet at http://www.gswater.com/customer_guide.pdf, Golden State Water Company, the utility that provides water in the Lucerne Valley area, operates 250 wells in the state including wells in the Lucerne Valley area.) There is no mention of impacts to the local aquifer as a result of this project in the DEIS.

Overdraft of the groundwater aquifer may impact area mesquite plants. Mesquite plants are important to wildlife as food and shelter (Stevens and Meretsky, 2009). No mention of this issue and its ramifications to plant and animal life was found in the DEIS. The issue needs to be acknowledged and addressed.

Auditory Disturbances

Compared with the no project alternative and the existing conditions, there will be a significant increase in noise levels during both construction and operation of the LVSP. Yet the DEIS makes

scant mention of the impact increased noise levels will have upon wildlife. A body of literature exists indicating that even rare and minor novel sounds can negatively impact wildlife (Dimmitt and Ruibal, 1980; Pavlik, 2008). This issue needs to be acknowledged and addressed.

Confusion on Disturbance

The DEIS states that the entire project area, 516 acres, has been "previously disturbed" but does not mention the extent or nature of the disturbance. Satellite imagery from Google Earth does not reveal previous disturbance and climax vegetation appears to dominate the site. In addition, the plant and animal species lists indicate the expected native biota is present. Evaluation of impacts cannot be thoroughly addressed when the existing conditions are erroneously described. An undisturbed site has maximum value for native species. A disturbed site has far less value to native plants and animals.

Mohave Ground Squirrel

The analysis of presence or absence of the State Threatened Mohave Ground Squirrel is inadequate. No trapping was done within the project boundaries, the species is known to occur within 5 miles of the project site, and it is not possible to distinguish the Mohave Ground Squirrel from the very similar Round-tailed Ground Squirrel in the field even with binoculars. I consider this issue unresolved. Because of its status as a state-threatened species, a focused study on the presence or absence of the Mohave Ground Squirrel is warranted.

Deficiency of Burrowing Owl Surveys

Burrowing owls surveys were conducted concurrently with desert tortoise surveys. Owl surveys are conducted with binoculars and frequently involve looking upward and listening for owl calls. Tortoise surveys do not normally involve the use of binoculars and would not involve the participating biologist to glance upward or listen for calls. In addition, many biologists are specialists in either tortoise surveys or owl surveys. For these reasons I question the reliability of either survey but particularly the owl survey when the biologist is attempting to do the two surveys simultaneously. There is also no specific mention as to the hours in which the owl surveys were conducted.

Rare Plant Surveys

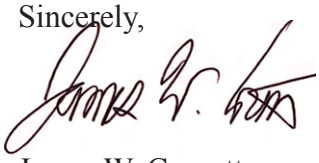
It appears that rare plant surveys were done on only two days and no methodology was presented. In addition, precipitation for 2009 was far below average for the region which would result in many ephemeral plant species not germinating and, therefore, not detected. Since the biological report indicates that up to 12 sensitive plant species might occur in the vicinity of the project site, a more intensive search in a year of average or above average precipitation seems warranted.

Golden Eagle Survey

The United States Fish & Wildlife Service is currently developing protocols for golden eagle surveys, a fully protected species under both federal and state laws. Golden eagles are known to occur in the area (Garrett and Dunn, 1981), nesting sites are within 10 miles of the project site, and typical prey species occur on the project site as shown in the biological species list in the DEIS. It should be expected the project site lies within the hunting territory of a golden eagle pair. A focused survey for this species should be undertaken.

I appreciate the opportunity to comment on the deficiencies and omissions in the project design as well as the DEIS. Please do not hesitate to contact me should you require additional clarification or analysis.

Sincerely,



James W. Cornett

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JAMES W. CORNETT - CURRICULUM VITAE - 2010

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Assistant Curator of Natural Science, Palm Springs Desert Museum

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Natural Science Instructor, Palm Springs Desert Museum

January, 1973 - Present
Environmental Columnist (weekly), Desert Sun-Gannett Newspapers, P.O. Box 2734, Palm Springs, California 92263.

JAMES W. CORNETT - CURRICULUM VITAE (continued)

January, 1981 - Present
Biology Instructor, University of California Extension, Riverside, California 92521, 909-787-4105. Courses taught include: Mammals of the Colorado Desert, Endangered Species of the California Deserts, The Desert Tortoise, Desert Bighorn Sheep, Ecology of Joshua Tree National Park, Ecology of The North American Deserts, Ecology of The Colorado Desert and Ecology of the Coachella Valley.

October, 1975 - June, 1983
Biology and Natural Resources Instructor (part-time), College of The Desert, 43500 Monterey Road, Palm Desert, California 92260, 760-346-8041.

January, 1973 - June, 1974
Assistant Naturalist (part-time), The Living Desert, 47900 Portola Avenue, Palm Desert, California 92260, 760-346-5694.

Professional Affiliations

American Society of Mammalogists
Bureau of Land Management Colorado Desert Advisory Committee
California Botanical Society
California Native Plant Society
Ecological Society of America
Herpetologists League
International Palm Society
Joshua Tree National Park Association, Board Member
Southern California Academy of Sciences
Southern California Botanists
Southwestern Naturalists' Society
Western Field Ornithologists

May 17, 2010

Ms. Robyn Purchia
Adams Broadwell Joseph & Cardozo
520 Capitol Mall, Suite 350
Sacramento, CA 95814

Subject: Comments on the Water Resources/Hydrology Assessment and Wetland and Jurisdictional Delineation Prepared for the Lucerne Valley Solar Project

Dear Ms. Purchia:

This letter summarizes my review of the proposed Lucerne Valley Solar Project as it relates to hydrology and jurisdictional drainages [Exhibits 1 and 2]. My comments are based on a review of **Section 4.5 Water Resources/Hydrology of the Draft Environmental Impact Statement (DEIS)** prepared by Ecology and Environment, Inc. and **Section 3.4 Wetland and Jurisdictional Delineation of the Comprehensive Biological Assessment** prepared by Chambers Group, Inc, for the proposed Lucerne Valley Solar Project (Project).

I am an environmental ecologist with experience in water resources and hydrology. I have 19 years of professional experience in ecology, hydrology, conservation biology, and natural resource management. For the past seven years, I have served as an environmental consultant focusing on ecological resources and open space planning. As a biologist and regulatory specialist, I have a strong background with and working knowledge of regulatory issues such as Sections 404 and 401 of the Clean Water Act, Section 1602 of the California Fish & Game Code, the Endangered Species Act, and CEQA/NEPA Compliance. My regulatory specialist experience includes training and certification in *Wetland Delineation with Emphasis on Hydric Soils* and *Arid West Supplement Wetland Delineation; Hydrogeological Site Characterization and Monitoring Well Construction; and Stormwater Pollution Prevention for Construction Sites.* In addition, I have working knowledge of the recently implemented EPA and Corps *Clean Water Act Jurisdiction Following Rapanos v. United States* and the northern, central and southern California counties Natural Community Conservation Plan (NCCP) & Habitat Conservation Plan (HCP), western Riverside County Multiple Species Habitat Conservation Plan (MSHCP), and several other scientific, biological, and regulatory issues pertaining open space planning and the acquisition of regulatory permits. My educational background includes a B.S. in Zoology/Chemistry and a M.S. in Biology/Ecology from Howard University in Washington, DC.

For the proposed Project, I have concerns regarding impacts to the water resources that occur within and adjacent the proposed Project site. These concerns are based after reviewing the environmental documents prepared for this Project.

BACKGROUND

The Project proposes to develop a 45-megawatt photovoltaic solar plant and associated facilities on 516 acres of federal land managed by the Bureau of Land Management (BLM). The proposed Project is located on unincorporated land in the Mojave Desert, approximately eight miles east of Lucerne Valley. The project would connect to an existing Southern California Edison distribution line located north of the site. The Lucerne Valley Solar Project is located south of Foothill Road and is bordered by Donaldson Road on the west and a drainage that runs approximately 1,300 feet east of Santa Fe Fire Road on the east. The site is specifically within the Cougar Buttes, California USGS 7.5-minute topographic quadrangle map in Sections 19, 20, 29, and 30 of Township 4 North, Range 2 East and in Section 24 of Township 4 North, Range 1 East [Exhibits 1 and 2].

Modifications to Natural On-Site Drainages

The project proposes to alter the natural drainage patterns onsite[1] but fails to mention 1) which drainages would be altered, 2) where specific modifications will occur, and 3) to what extent the drainages will be modified. To enable an adequate understanding of the project's impacts the documents must indicate whether upstream drainages would be altered and whether off-site impacts may result from on-site alterations.

The documents also did not mention what type of material the applicant would use to fill the drainage streambeds within and outside of the project boundary. Specifically, it is not clear whether natural substrate, cement, soil cement, and/or a different fill material will be used for bank stabilization and protection for transition and curve segments of the drainage reaches.

Natural substrate, consisting of compacted earthen material along with rip rap, would be beneficial to plants and wildlife. Wildlife and plant species require natural substrates and adequate vegetation to establish metapopulations and species richness and abundance. In drainage reaches that run along a linear or meandering course, the use of natural substrate instead of cement would be especially beneficial for wildlife species. The natural substrate on the drainage bottom and side slopes would provide an opportunity for vegetative establishment, food source, cover, and refugia for the Desert tortoise, Desert kit fox, Burrowing owl, small mammals, amphibians and reptiles.

If cement is proposed for grade control structures and bank protection the DEIS should specifically say so and provide detailed accompanying diagrams. Because the use of cements is not beneficial to wildlife species it should only be used within the project site, immediate surroundings, dry washes, and outlet drainage areas to reduce impacts to wildlife species in the surrounding area. By replacing the existing natural bottom substrates and side slopes with cement the project would have a significant impact on wildlife species.

[1] Biological Assessment for the Chevron Solar Project Site Lucerne Valley California. p. 6.

Any impacts to water resources and species should be mitigated where feasible. However, the DEIS and supporting documents do not describe any mitigation measures. Feasible mitigation measures include compensation to restore and enhance bioswales and downstream drainages. As flows exit the project site downstream beneficial uses for wildlife species should be enhanced and appropriate mitigation measures taken due to the upstream impacts.

Storm Drainage

Storm water will either be drained from the site through designated drainages or through natural onsite drainages. The Project's environmental impacts will vary depending on which method is used to convey storm water. For example, installing designated drainages would require additional grading. In addition, if natural onsite drainages are used, they may not have sufficient carrying capacity to move the water offsite. The DEIS and the supporting documents fail to show the proposed storm drain system. Without information regarding the storm drain system, I am unable to analyze grading for the project and how flood events would be managed onsite and offsite. This information is normally included in a Hydrology Report.

No Hydrology Report or Finalized Storm Water Pollution Prevention Plan

The appendices to the DEIS do not include a Hydrology Report and final Storm Water Pollution Prevention Plan (SWPPP). The BLM's failure to provide a Hydrology Report and SWPPP results in a lack of information regarding water resources. The BLM must provide a Hydrology Report that provides information on flows within the Project site and describes best management practices for implementing restoration and enhancement mitigation measures. The BLM must also provide a finalized SWPPP so that mitigation measures are fully disclosed to the public.

A Hydrology Report would provide the essential information regarding the water table and natural flow pattern onsite and offsite. It also typically includes a description of how silt and pollution would be removed from surface runoff water, impacts to refugia, cover and food sources for riparian birds, small mammals, amphibians and reptiles, and whether native vegetation could occur in existing locations for restoration or enhancement measures. All of the information normally contained in a Hydrology Report is essential to determine the best management practices for implementing restoration and enhancement mitigation measures.

The SWPPP has also not been completed. Mitigation measures to address flooding impacts cannot be implemented without a SWPPP. The SWPPP ensures adequate steps are taken to keep storm water from picking up pollutants or sediment and creating problems downstream.

The Potential for Flooding Onsite

The potential for flooding onsite and in the surrounding area has not been adequately discussed nor does it appear that a mitigation plan has been prepared to address the possibility if flooding was to occur.

The DEIS[2] (Effect WATER-1: Increase the potential for flooding hazard. p. 4.5-2) states, *"… the Proposed Action would not significantly increase the potential for flooding in the watershed or its subbasin."* but makes no mention that the project site and local vicinity have been prone to flooding. According to BLM (2009), *"residents and resource agencies have noted that this area is subject to intense flooding events, including flash floods."* The statement above is misleading and does not provide information regarding local flooding events and occurrences.

The BLM must provide a complete description of the Project's propensity to flood. Specifically, the BLM should discuss the flooding history on the proposed project site. Information on the "potential for flooding" should be relevant to the actual project site and not only address the larger waterbodies (i.e., watershed and subbasins). In addition, the DEIS should disclose whether the drainages overflow during heavy rain events or only convey water within their reaches.

The use of large amounts of water for cleaning the solar panels may also cause flooding events. To mitigate impacts associated with runoff from the solar panels, mitigation measures addressing sheet flow and runoff water must be discussed and implemented. These measures do not appear to have been adequately addressed in the DEIS.

To mitigate flooding impacts the BLM must consider planting native emergent vegetation in locations where flows will exit the project site. Water flowing from the project site could potentially create ephemeral ponding locations and/or locations for flooding. By planting native emergent vegetation within the surrounding drainage outlet locations beneficial cover and refugia for wildlife species, such as riparian birds, the Desert tortoise, the Desert kit fox, small mammals, amphibians, and reptiles could occur.

The BLM must also consider implementing bioswales and/or catchment basins in order to capture and contain water flowing from the project site and mitigate flooding impacts.. An adequate design and use of bioswales could provide beneficial uses for the removal of silt and pollution from surface runoff water and provide a source of refugia, cover and food source for riparian birds, small mammals, amphibians and reptiles. The bioswales and catchment basins could capture flows from natural rain events and washing of the solar panels.

[2] Draft Environmental Impact Statement. Lucerne Valley Solar Project. 4.5 Water Resources/Hydrology, p. 4.5-2.

Jurisdictional Delineation

The wetland jurisdictional delineation (JD) states the soils data has limitations due to the lack of ground truthing. Based on the last sentence of each paragraph for Group 1, 2, and 3 it is unclear whether all of the drainage features on the project site have been ground truthed during the delineations. These statements lead me to question if further surveys are required to determine the actual soil profiles for the proposed development region of the project. The JD may be providing information on soil series that may not be accurate. If the information is not accurate, impacts to waters of the United States and the State may be more or less than what was identified in the Comprehensive Biological Assessment.

The BLM Must Consider an Alternate Site Design

Based on the diagram provided in the JD report it appears that no effort or consideration was made to avoid impacting the drainage features. In my opinion environmental impacts could be reduced if BLM were to approve an alternative site plan and/or site layout (see Exhibits 3 and 4). By avoiding the blue-line drainages and arranging the solar panels in a manner that does not impact drainages, every CDFG jurisdictional feature impact would be reduced.

Two alternative site plans have been provided to illustrate how realignment of the site plan could be accomplished to avoid impacting the drainage features (Exhibits 3 and 4). Moving the solar panels around the drainages or avoiding the drainages towards Donaldson Road altogether will allow the water to pass through the area with minimal impacts to sensitive biological resources. Additionally, an onsite drainage plan could be designed that would allow water from project activities to be captured in bioswales and/or catchment basins as a first-flush measure prior to being discharged into the dry washes that surround the project site. An additional option would be to retain the nuisance flows entirely within the project site in low growing vegetative basins. Exhibits 3 and 4 depict examples of how natural occurring drainages can be avoided on 516 acreages of land for the solar energy project.

The Applicant Has Not Received the Necessary Approvals and Permits from State Agencies

Based on a review of the permitting requirements, the Regional Water Quality Control Board (RWQCB) will need to issue a Waste Discharge Requirement (WDR) and the California Department of Fish and Game (CDFG) will require a 1602 Streambed Alteration Agreement (SAA) for this project.

Based on the topography of the proposed Project site and the beneficial uses associated with blue-line drainages, such as aquatic resources and refugia for wildlife and plant species, a CDFG 1602 SAA should be required. However, there is no mention in any of the referenced documents that a 1602 SAA is being submitted to the CDFG. Project implementation without a 1602 SAA could jeopardize downstream drainages and wildlife species to include the Desert tortoise, Desert kit fox, Burrowing owl, small mammals, amphibian and reptile species that benefit from natural rain events resulting in flows in the drainages and across the project site.

The lack of adequate mitigation measures to protect beneficial wildlife uses would be an error in resource management planning.

A SAA would include mitigation measures to prevent further degradation and impacts to drainage features downstream of the project site. In the absence of a SAA the project applicant will avoid providing compensation for impacts to natural drainage features and wildlife species . In order to ensure implementation of appropriate mitigation measures for the protection of Desert tortoise, Desert kit fox, Burrowing owl, small mammals, amphibians and reptiles, the applicant should be required to submit a 1602 SAA permit application. A 1602 SAA permit approval would prevent further degradation of streambed and wash vegetation that is functionally beneficial for wildlife species.

CONCLUSION

As a result of the issues discussed herein, and because adequate information has not been presented, it is my professional opinion that the BLM did not take a harder look at the Project environmental consequences. In particular, the Project could have significant impacts to:

- Wildlife species that utilize the onsite drainage features during heavy rain events.
- An increase in the natural flow regime of the project area.
- Increased potential of flooding onsite and in the surrounding area.
- Downstream drainage patterns.
- The existing storm drain system.

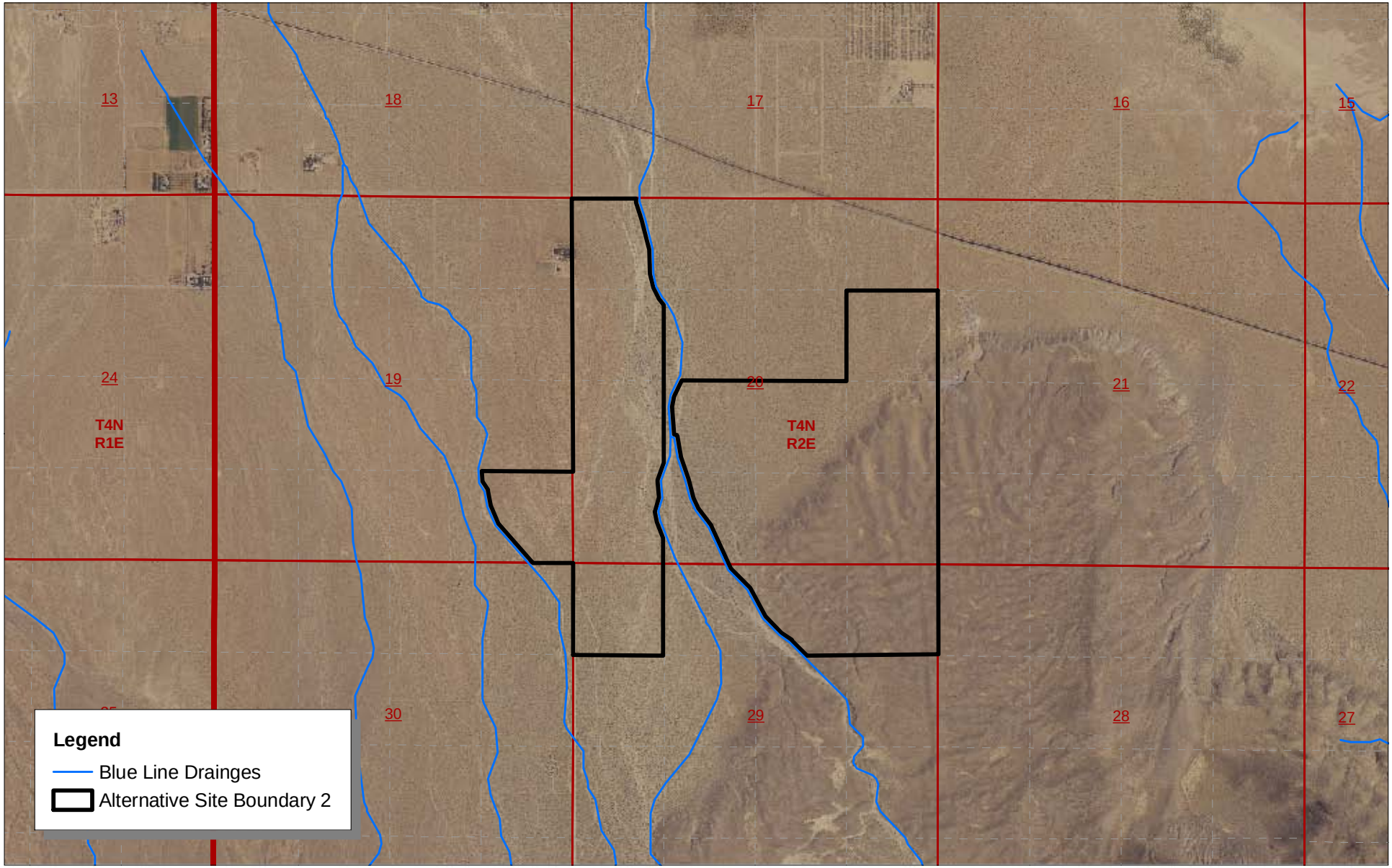
Additionally, from a regulatory permitting perspective:

- The lack of a CDFG 1602 SAA could further jeopardize wildlife species by not ensuring measures are taken to protect wildlife species that benefit from the onsite drainage features.
- The lack of a CDFG 1602 SAA would not ensure that impacts to the onsite drainage features area properly mitigated, if impacted.
- A completed Hydrology Report would be required for submission with the WDR and 1602 SAA application packages.
- The site plan does not represent a footprint that could avoid some of the drainage features.

Further review and strengthened alternatives will be required to determine whether sensitive water resources may be reduced to a level of less than significant. As such, strengthening of the proposed alternatives, further review of soil series, and a detailed flow pattern (tentatively proposed) are required before the Project can be adequately reviewed and analyzed.

Sincerely,

T'Shaka Touré, M.S.
Senior Ecologist



Touré Associates

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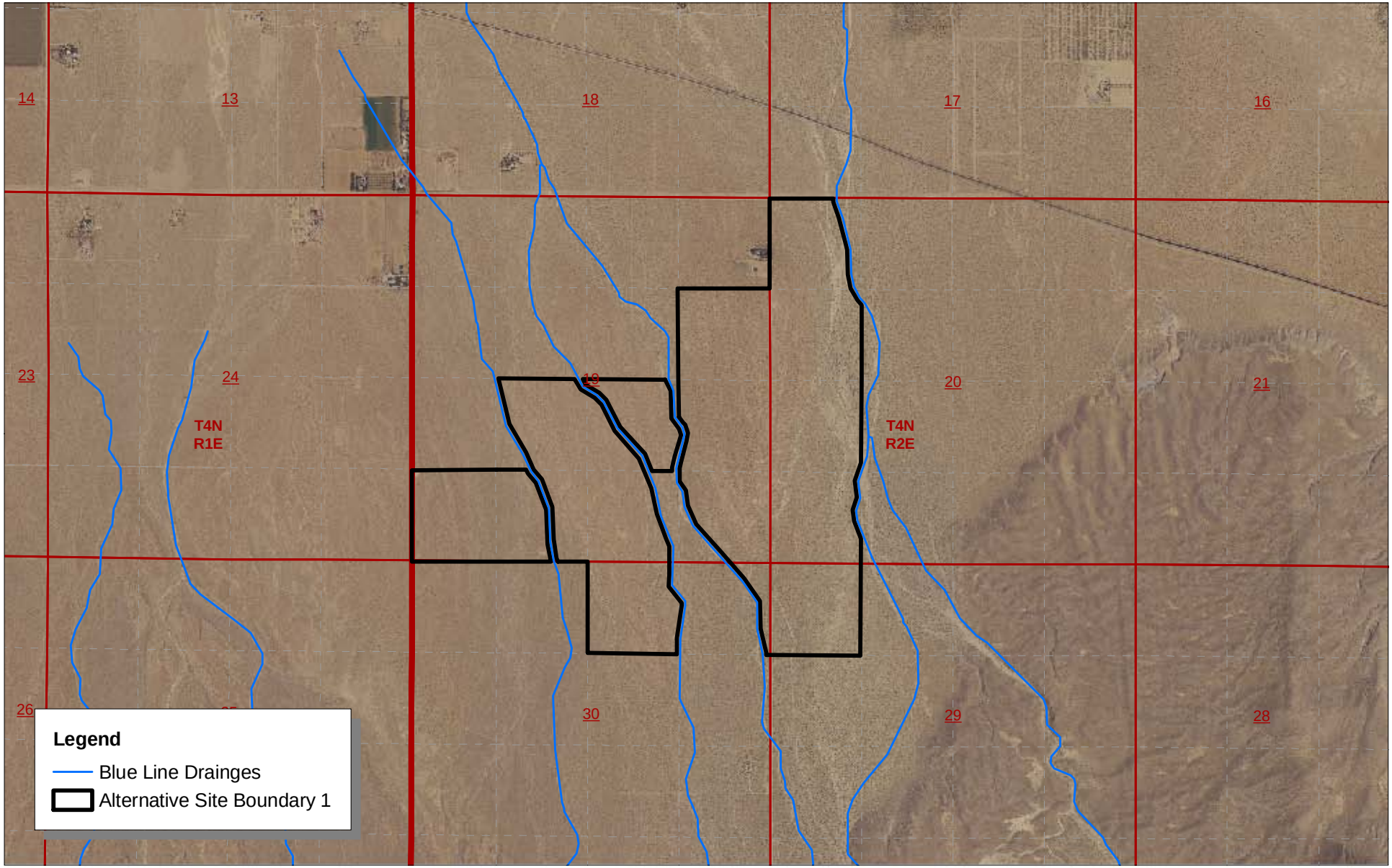
Exhibit 4
Alternative Site Plan 2

Lucerne Valley Solar Project
Water Resources / Hydrology Review



Toure Associates

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Exhibit 3
Alternative Site Plan 1

Lucerne Valley Solar Project
Water Resources / Hydrology Review

T'SHAKA TOURE
tshaka@toureassociates.com

I've worked in the field of science and have 19 years of diverse experience in research biology with an emphasis in wetland and restoration ecology, open space planning, wildlife monitoring and surveys, and regulatory permitting. I've conducted wildlife studies on ants, aquatic insects, bats, birds, bees, small mammals, amphibians and reptiles. In addition, I've designed, conducted and supervised studies on vernal pools, created ponds and wetlands, environmental assessments, and impacts of urbanization to wildlife populations for open space and urban planning. Prior to my entry into environmental consulting in 2004, I served as a research ecologist for the U.S. Geological Survey (Western Ecological Research Center, San Diego Field Station, Carlsbad Office), where my primary focus was on restoration ecology and developing protocols for monitoring aquatic and terrestrial wildlife populations in fragmented regions of southern California. I've also worked as a museum specialist and principal investigator for the Division of Vertebrate Zoology while at the Smithsonian Institution (Washington, D.C.).

During the last ten years of my career, I have had extensive working experience in the areas of wildlife biology, wetland and vernal pool creation, conservation and restoration ecology, hydrology, hydrogeology, open space planning, jurisdictional delineations, and regulatory permitting. I have a diverse background on working with environmental conservation groups, developers, and urban planners. I've also conducted seminars to instruct and train scientists/biologists employed by state and federal agencies. As a biologist and regulatory specialist, I have a strong background and working knowledge of regulatory issues such as Sections 404 and 401 of the Clean Water Act, Section 1602 Streambed Alteration Agreements, Endangered Species Act, and CEQA/NEPA compliances. My regulatory specialist experience includes training and certification in *Wetland Delineation with Emphasis on Hydric Soils* and *Arid West Supplement Wetland Delineation; Hydrogeological Site Characterization and Monitoring Well Construction; and Stormwater Pollution Prevention for Construction Sites.* In addition, I have working knowledge of the recently implemented EPA and Corps *Clean Water Act Jurisdiction Following Rapanos v. United States* and the northern, central and southern California counties Natural Community Conservation Plan (NCCP) & Habitat Conservation Plan (HCP), western Riverside County Multiple Species Habitat Conservation Plan (MSHCP), and several other scientific, biological, and regulatory issues pertaining open space planning and the acquisition of regulatory permits.

My career experience expands working on CEQA/NEPA, Corps, USFWS, CDFG, USGS, city, county, and private sector projects. Your company and/or agency would gain an experienced consulting staff knowledgeable in addressing and resolving a variety of complex to standard environmental issues. I have a positive track record of professional and responsive coordination with city, county, state, and federal agencies and the private sector in providing technical studies, field research, scientific analysis and recommendations, regulatory permitting, and multi-tasking of projects.

Professional Experience

- Coordination and preparation of regulatory permit applications ranging from Sections 404/401 of the CWA, Section 1602 of CDFG, and CEQA compliant biological assessments. Conducted jurisdictional delineations and *Rapanos v United States* evaluations for preparation and submission to clients, responsible agencies, city municipalities, state and federal regulatory agencies.

- Conducted general and focused biological surveys and provided biological reports such as Biological Technical Reports, Resource Habitat Assessment, Determination of Biologically Equivalent or Superior Preservation (DBESP), and Conceptual Mitigation and Monitoring Plans (CMMP). Conducted field studies and project manager for the implementation of restoration conservation and creation of wetlands, vernal pools, and riparian habitats. Conducted and reviewed studies for aquatic resources to include pond and vernal pool design for amphibians, reptiles, and other wildlife species. Responsibilities included restoration ecology and development of resource management plans for public recreation and hiking, native wildlife species assemblage, eradication and control of nuisance and exotic plant and wildlife species to include, peer-reviewed scientific publications, technical reports, and field guide contributions.

- Coordinated numerous wetland and habitat enhancement-planning protocols with federal, state, and local agencies such as the United States Geological Service (USGS), United States Fish and Wildlife Service (USFWS), California Department of Fish and Game (CDFG), Maryland Game and Fish Department (MGFD), and non-government environmental groups.

- Supervised and managed restoration and habitat enhancement projects. The geographic areas of responsibility included California, Arizona, Nevada, Utah, Virginia, Washington DC, and Maryland.

- Supervised and trained federal, state, and other agencies natural resource staff of biologists, ecologists, and fisheries in fieldwork sampling and data collection.

- Preparation of environmental documents in the areas of biology, hydrology, and geology (EIR/EIS, scientific publications, popular magazines, technical reports, seminars, and presentations) to include project proposals and budgets.

- Research biologist/museum specialist and principal investigator at the Smithsonian Institution (National Museum of Natural History) Department of Vertebrate Zoology, Division of Mammalogy and Herpetology.

- Participated in numerous consultations and preparation of Biological Opinion pursuant to the Endangered Species Act and Section 7 Consultation.

- Adjunct Professor of Biology at the Rancho Santiago Community College District lecturing in molecular biology, cellular biology, human anatomy/physiology, and general biology.

Professional History

01/2009 – present	Touré Associates, Fresno, CA. Project Director
12/2007 – 01/2009:	Michael Brandman Associates, Fresno, CA. Project Manager/Regulatory Specialist.
07/2004 – 12/2007:	Glenn Lukos Associates, Inc. Lake Forest, CA. Biologist/Regulatory Specialist
01/2006 – Present:	Rancho Santiago Community College. Orange, CA. Adjunct Professor of Biology
08/2000 – 07/2004:	U.S. Geological Survey, Western Ecological Research Center, San Diego Field Station, Carlsbad Office, Research Ecologist
06/1993 – 08/2000:	Smithsonian Institution, National Museum of Natural History, Washington, D.C., Museum Specialist/Principal Investigator

Education

Master of Science (MS): Biology (Emphasis in Ecology). Howard University, Washington, D.C.

Bachelor of Science (BS): Zoology/Chemistry. Howard University, Washington D.C.

N/A. Zoology/Chemistry Long Beach State University (transfer to Howard Univ.)

Additional Training

- Stormwater Pollution Prevention for Construction Sites. Fresno Metropolitan Flood Control District, 2009.
- Applied Hydrogeological Site Characterization & Monitoring Well Construction. Northwest Environmental Training Center, 2009.
- Arid West Supplement Wetland Delineation. Wetland Training Institute, 2007.
- Wetland Delineation with Emphasis in Hydric Soils. Wetland Training Institute, 2005.
- Boat Navigation and Safety Training. U.S. Geological Survey, 2002.
- Helicopter and Aviation Safety Training. U.S. Geological Survey, 2001.
- Geographical Information Systems (GIS) and PC Arc/Info. Smithsonian Institution, 1994.

Professional Publications

Touré, T. *et al* 2005. Common Reptiles, pp. 82-87, *In* Schoenherr, A., D. Clarke, and E. Brown. 2005. Docent Guide to Orange County Wilderness, 142 pp.

Touré, T.A., 2004, Checklist of amphibians and reptiles of Arroyo Seco and Los Angeles River Basin: U.S. Geological Survey Fact Sheet prepared for Los Angeles River–Arroyo Seco Confluence Park Project.

Touré, T.A., Backlin, A.R., and Fisher, R.N., 2004, Eradication and control of the African clawed frog (Xenopus laevis) on Irvine Ranch Land Reserve, Orange County, California, 2003: U.S. Geological Survey Final Report prepared for Irvine Ranch Land Reserve, Irvine, Calif., 31 p.

Touré, T.A., and Fisher, R.N., 2003, Quarterly Report – African clawed frog, pond turtle and spadefoot toad project: U.S. Geological Survey Technical Report prepared for The Nature Conservancy.

Touré, T. A. and G. A. Middendorf. 2002. Colonization of herpetofauna to a created wetland. Bulletin of the Maryland Herpetological Society 38(4): 99-117.

Touré, T. A. 2001. A report on the population status and conservation of Rosy boa (*Charina trivirgata*): A two-year study in Anza Borrego State Park and Joshua Tree National Monument, 19 pp.

Touré, T.A., and Fisher, R.N., 2001, Monitoring program for amphibians and reptiles in the Nature Reserve of Orange County, Summary Report 2001: U.S. Geological Survey Technical Report prepared for Nature Reserve of Orange County, Calif.

Touré, T. A. 1999. Herpetofauna of a constructed wetland and adjacent forest. Howard University, Washington DC. 20 tbs., 7 figs., 63 pp. [Also catalogued at the Smithsonian, U.S Natural History Museum, Washington, D.C.]

McDiarmid, R. W., J. C. Campbell, and T. A. Touré. 1999. Snake Species of the World Catalogue. A Geographical and Taxonomic Reference. Volume 1. The Herpetologist' League. Washington, DC. 511 pp.

McDiarmid, R. W., J. S. Savage, and T. A. Touré. 1997. The proper name of the tropical tree boa (*Hortulanus corallus*). J. Herpetology 30(3): 320-326.

Touré, T. A. 1995. Snakes: Suborder Serpentes, pp. 204-261, *In* Frank, N. and E. Ramus. 1995. A complete guide to scientific and common names of reptiles and amphibians of the world, 377 pp.

Professional Presentations

2007. Wetland and aquatic habitats of Orange County. [Education Series: Donna O'Neill Land Conservancy]
2006. Aquatic and riparian restoration ecology. [Seminar: Orange County Natural History Museum/Acorn Naturalist Center]
2004. Floral and faunal species conservation and management [Seminar: Santa Ana Park Naturalist Program, Department of Parks and Recreation]
2004. Spadefoot toad habitat enhancement training [Education Series: Laguna Coast Wilderness Park]
2003. Amphibian management: Concerns and opportunities. [Seminar: Nature Reserve of Orange County]
2003. Vernal pool ecology and spadefoot toads (*Spae hammondii*) of Orange County. [Seminar: Orange County Natural History Museum/Acorn Naturalist Center]
2003. Long-term monitoring of fragmented habitats in coastal southern California. [George Wright Society and ASIH, annual meeting]
2003. Exotic amphibians, current status and possible impacts. [Western Division of the American Fisheries Society, annual meeting]
2002. What's a herp? [Education Lecture Series: The Nature Conservancy of Orange County]
2001. Vertebrate abundance and diversity in fragmented habitats of coastal southern California. [Society for Conservation Biology, annual meeting]
2000. Constructed wetland and its ability to sustain amphibian and reptile populations. [Society of Wetland Scientists, annual meeting]
2000. Herpetofauna of a constructed wetland and adjacent forest. [ASIH, annual meeting]
2000. Reptiles and amphibians of the Sands Road Wetland Sanctuary. [ASIH, annual meeting]
1996. Snake species of the world: A taxonomic view. [ASIH, annual meeting]

Professional Affiliations

Association of Environmental Professionals
American Society of Ichthyologists and Herpetologists
Herpetologist League
Partners in Amphibian and Reptile Conservation
Declining Amphibian Task Force
Society of Conservation Biology
Society of Wetland Scientist
Southern California Wetland Recovery Project

Awards

2000. U.S. Geological Survey, Scientific Achievement Award, Patuxent Wildlife Research Center, Maryland
1999. Smithsonian Institution Libraries, Distinguished Subject Award
1998. Graduate Symposium Award, Howard University
1990. Smithsonian Tropical Research Institution, Research Internship Award, Republic of Panama

Professional Job References

Robert Francisco, Michael Brandman Associates, Vice-President (619) 764-9934
Tony Bomkamp, Glenn Lukos Associates, Senior Regulatory Specialist (949) 837-0404
Trish Smith, The Nature Conservancy, Senior Project Ecologist (714) 955-2810
Dr. Robert Fisher, USGS San Diego Field Station, Research Zoologist (619) 225-6436
Dr. Roy McDiarmid, Smithsonian Institution Museum of Natural History (202) 357-2778

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May 18, 2010

Robyn C. Purchia
Adams Broadwell Joseph & Cardozo
520 Capitol Mall, Suite 350
Sacramento, CA 95814

Subject: Comments on the Chevron Energy Solutions Lucerne Valley Solar Project Environmental Impact Statement

Dear Ms. Purchia:

I have reviewed the January 2010 Draft Environmental Impact Statement and California Desert Conservation Area Plan Amendment for the Proposed Chevron Energy Solutions Lucerne Valley Solar Project (EIS) for possible impacts associated with surface mining at the project site.

The EIS describes a number of prospect pits within the project area (p. 3.7-9):

Table 3.7-2 Summary of Newly Identified Archaeological Sites in the Proposed Action Area

Site Number	Site Description
SBR-13262 H, 36-020583	Historic debris scatter (mid-twentieth century)
SBR-13263 H, 36-020584	Rock cairn
SBR-13264 H, 36-020585	Rock cairn
SBR-13265 H, 36-020586	Historic debris scatter and a mechanically excavated prospect (mid-twentieth century)
SBR-13266 H, 36-020587	Historic debris scatter (mid-twentieth century)
SBR-13267 H,36-020588	Historic debris scatter (mid-twentieth century)
SBR-13268 H, 36-020589	Historic debris scatter with prospecting features (mid-twentieth century)
SBR-13269 H, 36-020590	Historic debris scatter (mid-twentieth century)
SBR-13270 H, 36-020591	Historic debris scatter with prospecting features (early to mid-twentieth century)
SBR-13271 H, 36-020592	Historic debris scatter (mid-twentieth century)
SBR-13272 H, 36-020593	Historic debris scatter (mid-twentieth century)
SBR-13273 H, 36-020594	Large historic debris scatter with 15 features (mechanically excavated prospect pits and trenches)
SBR-13274 H, 36-020595	Historic debris scatter (mid-twentieth century)
SBR-13275 H, 36-020596	Historic debris scatter with one mechanically excavated prospect pit
SBR-13276 H, 36-020597	Historic debris scatter, a two-track road, and a mechanically excavated prospect (mid-twentieth century)
SBR-13277 H, 36-020598	A mechanically excavated prospect pit
SBR-13278 H, 36-020599	Historic debris with one cairn feature (early to mid-twentieth century)
SBR-13279 H, 36-020600	Historic can scatter with one mechanically excavated prospect
SBR-13280 H, 36-020601	Historic debris scatter (mid-twentieth century)
SBR-13281 H, 36-020602	Historic debris scatter (mid-twentieth century)
SBR-13282 H, 36-020603	Historic debris scatter (mid-twentieth century)
SBR-13283 H, 36-020604	Historic debris scatter (mid-twentieth century)
SBR-13284 H, 36-020605	Historic debris scatter (early to mid-twentieth century)

Table 3.7-2 Summary of Newly Identified Archaeological Sites in the Proposed Action Area

Site Number	Site Description
SBR-13285 H, 36-020606	Historic debris scatter (mid-twentieth century)
SBR-13286 H, 36-020607	Historic debris scatter (mid-twentieth century)
SBR-13287 H, 36-020608	Historic debris and prospecting features (mid-twentieth century)
SBR-13288 H, 36-020609	Historic debris and prospecting features (mid-twentieth century)
SBR-13289 H, 36-020610	Historic debris and one mechanical prospecting feature (mid-twentieth century)
SBR-13290 H, 36-020611	One mechanical prospecting feature
SBR-13291 H, 36-020612	One mechanically excavated prospect trench
SBR-13292 H, 36-020613	Sparse historic debris scatter with four prospecting features (mid-twentieth century)
SBR-13293 H, 36-020614	One historic rock cairn feature
SBR-13294 H, 36-020615	One mechanically excavated trench
SBR-13295 H, 36-020616	One mechanically excavated pit
SBR-13296 H, 36-020617	One mechanically excavated trench
SBR-13297 H, 36-020618	One prospecting feature, a claim post, and glass fragments
SBR-13298 H, 36-020619	Collapsed rock cairn
SBR-13299 H, 36-020620	Historic debris scatter (mid-twentieth century)
SBR-13300 H, 36-020621	Two mechanically excavated features and sparse historic debris
SBR-13301 H, 36-020622	Historic debris scatter (mid-twentieth century)

Source: Chambers Group 2009

The table shows 12 features associated with prospecting. Mechanical prospecting is associated with nine of the features identified in the table. However, other than to consider the cultural resources of the mining debris, the EIS only briefly discusses the mining related debris, stating (p. 3.5-4):

> sediment berms appear to be remnants of historic hand-dug mining activity.

Despite the identification of the 12 prospecting features the EIS did not evaluate the potential health risks associated with the mining activities. The EIS only considered the mining debris to be hand-dug which is at odds with the findings of the cultural resources survey as tabulated above.

Hazards to construction workers and future site workers from mining debris include dermal contact and ingestion of dust with soils that may contain metals at concentrations that are hazardous to human health. The EIS should be revised to include a Phase I Environmental Site Assessment to evaluate potential human health risks associated with the mining debris. If the Phase I finds the mining debris to represent potential human health risks, a Phase II Environmental Site Assessment should be conducted to include sampling of the mining debris. Additionally, the Phase I Environmental Site Assessment should evaluate illegal dumping activities in the project area as described in the EIS on p. 3.14-4.

Sincerely,

Matt Hagemann, P.G.

SWAPE Technical Consultation, Data Analysis and Litigation Support for the Environment

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Matthew F. Hagemann

Geologic and Hydrogeologic Characterization
Investigation and Remediation Strategies
Regulatory Compliance
CEQA Review
Expert Witness

Education:

M.S. Degree, Geology, California State University Los Angeles, Los Angeles, CA, 1984.
B.A. Degree, Geology, Humboldt State University, Arcata, CA, 1982.

Professional Certification:

California Professional Geologist, License Number 8571.

Professional Experience:

Matt has 25 years of experience in environmental policy, assessment and remediation. He spent nine years with the U.S. EPA in the RCRA and Superfund programs and served as EPA's Senior Science Policy Advisor in the Western Regional Office where he identified emerging threats to groundwater from perchlorate and MTBE. While with EPA, Matt also served as a Senior Hydrogeologist in the oversight of the assessment of seven major military facilities undergoing base closure. He led numerous enforcement actions under provisions of the Resource Conservation and Recovery Act (RCRA) while also working with permit holders to improve hydrogeologic characterization and water quality monitoring.

Matt has worked closely with U.S. EPA legal counsel and the technical staff of several states in the application and enforcement of RCRA, Safe Drinking Water Act and Clean Water Act regulations. Matt has trained the technical staff in the States of California, Hawaii, Nevada, Arizona and the Territory of Guam in the conduct of investigations, groundwater fundamentals, and sampling techniques.

Positions Matt has held include:

- Founding Partner, Soil/Water/Air Protection Enterprise (SWAPE) (2003 – present);
- Senior Environmental Analyst, Komex H2O Science, Inc (2000 -- 2003);
- Executive Director, Orange Coast Watch (2001 – 2004);
- Senior Science Policy Advisor and Hydrogeologist, U.S. Environmental Protection Agency (1989–1998);
- Hydrogeologist, National Park Service, Water Resources Division (1998 – 2000);

- Adjunct Faculty Member, San Francisco State University, Department of Geosciences (1993 – 1998);
- Instructor, College of Marin, Department of Science (1990 – 1995);
- Geologist, U.S. Forest Service (1986 – 1998); and
- Geologist, Dames & Moore (1984 – 1986).

Senior Regulatory and Litigation Support Analyst:

With SWAPE, Matt's responsibilities have included:

- Manager of a project to evaluate numerous formerly used military sites in the western U.S.
- Lead analyst in the review of numerous environmental impact reports under CEQA that identify significant issues with regard to hazardous waste, water resources, water quality, air quality, greenhouse gas emissions and geologic hazards.
- Lead analyst in the review of environmetal issues in applications before the California Energy Commission.
- Technical assistance and litigation support for TCE vapor intrusion concerns.
- Manager of a comprehensive evaluation of potential sources of perchlorate contamination in Southern California drinking water wells.
- Manager and designated expert for litigation support under provisions of Proposition 65 in the review of releases of gasoline to sources drinking water at major refineries and hundreds of gas stations throughout California.
- Expert witness on MTBE litigation.
- Expert witness and litigation support on the impact of air toxins and hazards at a school.

With Komex H2O Science Inc., Matt's duties included the following:

- Senior author of a report on the extent of perchlorate contamination that was used in testimony by the former U.S. EPA Administrator and General Counsel.
- Senior researcher in the development of a comprehensive, electronically interactive chronology of MTBE use, research, and regulation.
- Senior researcher in the development of a comprehensive, electronically interactive chronology of perchlorate use, research, and regulation.
- Senior researcher in a study that estimates nationwide costs for MTBE remediation and drinking water treatment, results of which were published in newspapers nationwide and in testimony against provisions of an energy bill that would limit liability for oil companies.
- Research to support litigation to restore drinking water supplies that have been contaminated by MTBE in California and New York.
- Expert witness testimony in a case of oil production-related contamination in Mississippi.
- Lead author for a multi-volume remedial investigation report for an operating school in Los Angeles that met strict regulatory requirements and rigorous deadlines.
- Development of strategic approaches for cleanup of contaminated sites in consultation with clients and regulators.

Executive Director:

As Executive Director with Orange Coast Watch, Matt led efforts to restore water quality at Orange County beaches from multiple sources of contamination including urban runoff and the discharge of wastewater. In reporting to a Board of Directors that included representatives from leading Orange County universities and businesses, Matt prepared issue papers in the areas of treatment and disinfection

of wastewater and control of the dischrge of grease to sewer systems. Matt actively participated in the development of countywide water quality permits for the control of urban runoff and permits for the discharge of wastewater. Matt worked with other nonprofits to protect and restore water quality, including Surfrider, Natural Resources Defense Council and Orange County CoastKeeper as well as with business institutions including the Orange County Business Council.

Hydrogeology:

As a Senior Hydrogeologist with the U.S. Environmental Protection Agency, Matt led investigations to characterize and cleanup closing military bases, including Mare Island Naval Shipyard, Hunters Point Naval Shipyard, Treasure Island Naval Station, Alameda Naval Station, Moffett Field, Mather Army Airfield, and Sacramento Army Depot. Specific activities were as follows:

- Led efforts to model groundwater flow and contaminant transport, ensured adequacy of monitoring networks, and assessed cleanup alternatives for contaminated sediment, soil, and groundwater.
- Initiated a regional program for evaluation of groundwater sampling practices and laboratory analysis at military bases.
- Identified emerging issues, wrote technical guidance, and assisted in policy and regulation development through work on four national U.S. EPA workgroups, including the Superfund Groundwater Technical Forum and the Federal Facilities Forum.

At the request of the State of Hawaii, Matt developed a methodology to determine the vulnerability of groundwater to contamination on the islands of Maui and Oahu. He used analytical models and a GIS to show zones of vulnerability, and the results were adopted and published by the State of Hawaii and County of Maui.

As a hydrogeologist with the EPA Groundwater Protection Section, Matt worked with provisions of the Safe Drinking Water Act and NEPA to prevent drinking water contamination. Specific activities included the following:

- Received an EPA Bronze Medal for his contribution to the development of national guidance for the protection of drinking water.
- Managed the Sole Source Aquifer Program and protected the drinking water of two communities through designation under the Safe Drinking Water Act. He prepared geologic reports, conducted public hearings, and responded to public comments from residents who were very concerned about the impact of designation.
- Reviewed a number of Environmental Impact Statements for planned major developments, including large hazardous and solid waste disposal facilities, mine reclamation, and water transfer.

Matt served as a hydrogeologist with the RCRA Hazardous Waste program. Duties were as follows:

- Supervised the hydrogeologic investigation of hazardous waste sites to determine compliance with Subtitle C requirements.
- Reviewed and wrote "part B" permits for the disposal of hazardous waste.

- Conducted RCRA Corrective Action investigations of waste sites and led inspections that formed the basis for significant enforcement actions that were developed in close coordination with U.S. EPA legal counsel.
- Wrote contract specifications and supervised contractor's investigations of waste sites.

With the National Park Service, Matt directed service-wide investigations of contaminant sources to prevent degradation of water quality, including the following tasks:

- Applied pertinent laws and regulations including CERCLA, RCRA, NEPA, NRDA, and the Clean Water Act to control military, mining, and landfill contaminants.
- Conducted watershed-scale investigations of contaminants at parks, including Yellowstone and Olympic National Park.
- Identified high-levels of perchlorate in soil adjacent to a national park in New Mexico and advised park superintendent on appropriate response actions under CERCLA.
- Served as a Park Service representative on the Interagency Perchlorate Steering Committee, a national workgroup.
- Developed a program to conduct environmental compliance audits of all National Parks while serving on a national workgroup.
- Co-authored two papers on the potential for water contamination from the operation of personal watercraft and snowmobiles, these papers serving as the basis for the development of nation-wide policy on the use of these vehicles in National Parks.
- Contributed to the Federal Multi-Agency Source Water Agreement under the Clean Water Action Plan.

Policy:

Served senior management as the Senior Science Policy Advisor with the U.S. Environmental Protection Agency, Region 9. Activities included the following:

- Advised the Regional Administrator and senior management on emerging issues such as the potential for the gasoline additive MTBE and ammonium perchlorate to contaminate drinking water supplies.
- Shaped EPA's national response to these threats by serving on workgroups and by contributing to guidance, including the Office of Research and Development publication, Oxygenates in Water: Critical Information and Research Needs.
- Improved the technical training of EPA's scientific and engineering staff.
- Earned an EPA Bronze Medal for representing the region's 300 scientists and engineers in negotiations with the Administrator and senior management to better integrate scientific principles into the policy-making process.
- Established national protocol for the peer review of scientific documents.

Geology:

With the U.S. Forest Service, Matt led investigations to determine hillslope stability of areas proposed for timber harvest in the central Oregon Coast Range. Specific activities were as follows:

- Mapped geology in the field, and used aerial photographic interpretation and mathematical models to determine slope stability.
- Coordinated his research with community members who were concerned with natural resource protection.

- Characterized the geology of an aquifer that serves as the sole source of drinking water for the city of Medford, Oregon.

As a consultant with Dames and Moore, Matt led geologic investigations of two contaminated sites (later listed on the Superfund NPL) in the Portland, Oregon, area and a large hazardous waste site in eastern Oregon. Duties included the following:

- Supervised year-long effort for soil and groundwater sampling.
- Conducted aquifer tests.
- Investigated active faults beneath sites proposed for hazardous waste disposal.

Teaching:

From 1990 to 1998, Matt taught at least one course per semester at the community college and university levels:

- At San Francisco State University, held an adjunct faculty position and taught courses in environmental geology, oceanography (lab and lecture), hydrogeology, and groundwater contamination.
- Served as a committee member for graduate and undergraduate students.
- Taught courses in environmental geology and oceanography at the College of Marin.

Invited Testimony, Reports, Papers and Presentations:

Hagemann, M.F., 2008. Disclosure of Hazardous Waste Issues under CEQA. Presentation to the Public Environmental Law Conference, Eugene, Oregon.

Hagemann, M.F., 2008. Disclosure of Hazardous Waste Issues under CEQA. Invited presentation to U.S. EPA Region 9, San Francisco, California.

Hagemann, M.F., 2005. Use of Electronic Databases in Environmental Regulation, Policy Making and Public Participation. Brownfields 2005, Denver, Coloradao.

Hagemann, M.F., 2004. Perchlorate Contamination of the Colorado River and Impacts to Drinking Water in Nevada and the Southwestern U.S. Presentation to a meeting of the American Groundwater Trust, Las Vegas, NV (served on conference organizing committee).

Hagemann, M.F., 2004. Invited testimony to a California Senate committee hearing on air toxins at schools in Southern California, Los Angeles.

Brown, A., Farrow, J., Gray, A. and **Hagemann, M.**, 2004. An Estimate of Costs to Address MTBE Releases from Underground Storage Tanks and the Resulting Impact to Drinking Water Wells. Presentation to the Ground Water and Environmental Law Conference, National Groundwater Association.

Hagemann, M.F., 2004. Perchlorate Contamination of the Colorado River and Impacts to Drinking Water in Arizona and the Southwestern U.S. Presentation to a meeting of the American Groundwater Trust, Phoenix, AZ (served on conference organizing committee).

Hagemann, M.F., 2003. Perchlorate Contamination of the Colorado River and Impacts to Drinking Water in the Southwestern U.S. Invited presentation to a special committee meeting of the National Academy of Sciences, Irvine, CA.

Hagemann, M.F., 2003. Perchlorate Contamination of the Colorado River. Invited presentation to a tribal EPA meeting, Pechanga, CA.

Hagemann, M.F., 2003. Perchlorate Contamination of the Colorado River. Invited presentation to a meeting of tribal repesentatives, Parker, AZ.

Hagemann, M.F., 2003. Impact of Perchlorate on the Colorado River and Associated Drinking Water Supplies. Invited presentation to the Inter-Tribal Meeting, Torres Martinez Tribe.

Hagemann, M.F., 2003. The Emergence of Perchlorate as a Widespread Drinking Water Contaminant. Invited presentation to the U.S. EPA Region 9.

Hagemann, M.F., 2003. A Deductive Approach to the Assessment of Perchlorate Contamination. Invited presentation to the California Assembly Natural Resources Committee.

Hagemann, M.F., 2003. Perchlorate: A Cold War Legacy in Drinking Water. Presentation to a meeting of the National Groundwater Association.

Hagemann, M.F., 2002. From Tank to Tap: A Chronology of MTBE in Groundwater. Presentation to a meeting of the National Groundwater Association.

Hagemann, M.F., 2002. A Chronology of MTBE in Groundwater and an Estimate of Costs to Address Impacts to Groundwater. Presentation to the annual meeting of the Society of Environmental Journalists.

Hagemann, M.F., 2002. An Estimate of the Cost to Address MTBE Contamination in Groundwater (and Who Will Pay). Presentation to a meeting of the National Groundwater Association.

Hagemann, M.F., 2002. An Estimate of Costs to Address MTBE Releases from Underground Storage Tanks and the Resulting Impact to Drinking Water Wells. Presentation to a meeting of the U.S. EPA and State Underground Storage Tank Program managers.

Hagemann, M.F., 2001. From Tank to Tap: A Chronology of MTBE in Groundwater. Unpublished report.

Hagemann, M.F., 2001. Estimated Cleanup Cost for MTBE in Groundwater Used as Drinking Water. Unpublished report.

Hagemann, M.F., 2001. Estimated Costs to Address MTBE Releases from Leaking Underground Storage Tanks. Unpublished report.

Hagemann, M.F., and VanMouwerik, M., 1999. Potential Water Quality Concerns Related to Snowmobile Usage. Water Resources Division, National Park Service, Technical Report.

VanMouwerik, M. and **Hagemann, M.F**. 1999, Water Quality Concerns Related to Personal Watercraft Usage. Water Resources Division, National Park Service, Technical Report.

Hagemann, M.F., 1999, Is Dilution the Solution to Pollution in National Parks? The George Wright Society Biannual Meeting, Asheville, North Carolina.

Hagemann, M.F., 1997, The Potential for MTBE to Contaminate Groundwater. U.S. EPA Superfund Groundwater Technical Forum Annual Meeting, Las Vegas, Nevada.

Hagemann, M.F., and Gill, M., 1996, Impediments to Intrinsic Remediation, Moffett Field Naval Air Station, Conference on Intrinsic Remediation of Chlorinated Hydrocarbons, Salt Lake City.

Hagemann, M.F., Fukunaga, G.L., 1996, The Vulnerability of Groundwater to Anthropogenic Contaminants on the Island of Maui, Hawaii. Hawaii Water Works Association Annual Meeting, Maui, October 1996.

Hagemann, M. F., Fukanaga, G. L., 1996, Ranking Groundwater Vulnerability in Central Oahu, Hawaii. Proceedings, Geographic Information Systems in Environmental Resources Management, Air and Waste Management Association Publication VIP-61.

Hagemann, M.F., 1994. Groundwater Characterization and Cleanup at Closing Military Bases in California. Proceedings, California Groundwater Resources Association Meeting.

Hagemann, M.F. and Sabol, M.A., 1993. Role of the U.S. EPA in the High Plains States Groundwater Recharge Demonstration Program. Proceedings, Sixth Biennial Symposium on the Artificial Recharge of Groundwater.

Hagemann, M.F., 1993. U.S. EPA Policy on the Technical Impracticability of the Cleanup of DNAPL-contaminated Groundwater. California Groundwater Resources Association Meeting.

Hagemann, M.F., 1992. Dense Nonaqueous Phase Liquid Contamination of Groundwater: An Ounce of Prevention... Proceedings, Association of Engineering Geologists Annual Meeting, v. 35.

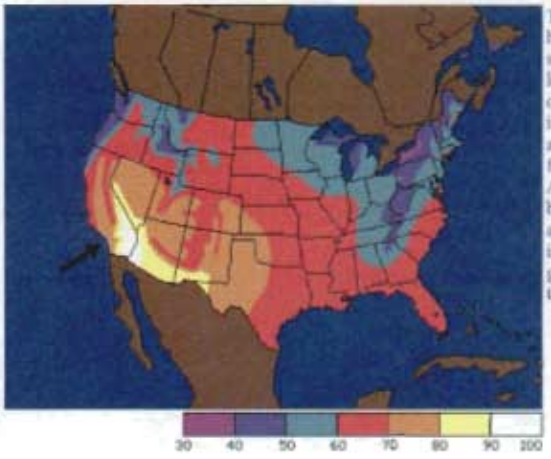
Some Observations on Photovoltaic Cell Panels

by Oliver Seely

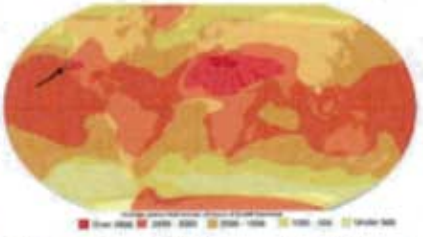
Revised May 6, 2010

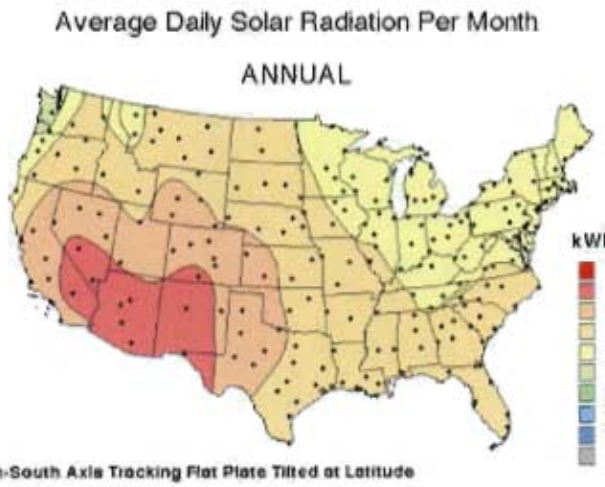
Introduction

For many years I've taught a course on science and technology from a historical perspective. The voracious appetite for energy by advanced societies and particularly the United States figures prominently in the course. I comment each semester that when humans are forced finally to stop using fossil fuels, either because of increasing costs or global pollution, there will still be plenty of energy from the sun, particularly in regions lucky enough to have cloudless days most of the year. One day my wife said to me, "Why don't you put your money where your mouth is?" So I did.



The decision to install photovoltaic cell panels hinges on where one lives. The amount of sunlight as determined by the climate of one's location and the ability to receive the direct rays of the sun when it is shining helps one to decide if it makes sense to install the panels. On the left and right are images showing available sunlight for the United States and the world respectively. Although our location appears to be ideal because of the available sunlight per year, in actual fact our distance from the Pacific Ocean is only 12 km and coastal fog is a problem part of the year. On the average, the amount of sunlight we get is limited to between 5 and 8 hours per day throughout the year (see the blue strip along the coast in the left image in front of the arrow tip).





Her is anc imi of the cor Un Sta wit a leg inc uni of kil hou per squ me per day

A roof sloping toward the south in full view of the sky would be ideal. However, our roof line slopes toward the east and the west. There is a chimney near the peak, as you can see.

The panels have to be installed where there are no shadows during the day, so we installed our 2.5 kilowatt system on the east-sloping roof with an additional tilt toward the south. There are actually 18 panels each rated at 165 watts which brings the system to a theoretical maximum power output of 2970 watts or 2.97 kilowatts. The rating of 2.5 kilowatts may be due to the installing company knowing that the tilt of our panels would be less than ideal. Maximum output occurs around 11 am each day that the sun shines.

energy output per day during the summer is 14 kilowatt hours. A REALLY good day brings 15 and there have been a few exceptional days which brought in 16 kw hours. Cloudless winter days yield around 7.5 kw hours. Rain is something else again. Here is what it looked like on 28 December, 2004 all day. And with more than a little rain. Still, 2.20 kWh wasn't all that bad. There was a day two weeks earlier that achieved only a little more than 0.5 kWh. Note the AC power meter. There may be 271 volts being produced but there isn't enough light to offer even one watt of power.

On some partially cloudy days during the early spring a curious observation can be made as the sun periodically peeks through the clouds. Here are two images on April 22, 2006. Except for the occasional gaps in the clouds, this was NOT a typical sunny day in southern California. But take a look at the meter: 2507 Watts! Is it favorable atmospheric conditions which allow a large amount of UV light to arrive at the panels or is it the added illumination of reflected light from the clouds which increases the power output to an "as advertised" level?

Structural modifications of any kind carry the risk of unintended consequences. Our installation caused a leak through the bathroom vent during heavy rain as a result of runoff onto the roof and subsequent splashing into the vent. The vent was modified by adding a shield, as shown. Ugly though it may be, it did the trick as demonstrated by another rainstorm shortly after its installation.

Each morning the controller goes through its countdown, synchronizing the inverter phase with that of the grid. When it locks into the phase of the grid the system goes online and electricity begins to flow from the panels. We estimate that it will take 14 years to recoup our out of pocket expenses. Richard Corkish of the Photovoltaics Special Research Centre at the University of New South Wales estimates that it will take between 3 and 7 years to produce enough energy to equal that amount contained in the non-renewable fossil fuels used to fabricate the panels in the first place. That estimate can be found in his offering, Can Solar Cells Ever Recapture the Energy Invested in their Manufacture?

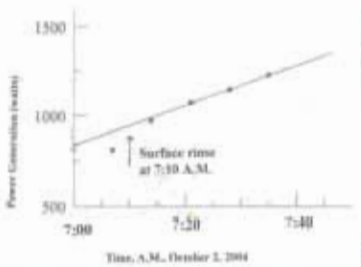
Panel Maintenance

The panels are guaranteed for 25 years. The good news is that the panels work silently with no moving parts, pumping excess electrical energy routinely into the electrical grid when we use less than that which is generated. At those times the meter turns backward.

The bad news is that over time in an urban area where there is a lot of dustfall, the efficiency drops. In the Los Angeles area several months can go by without

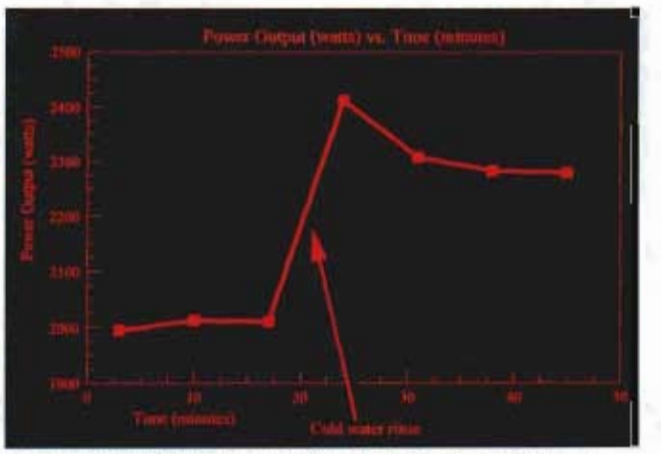
rain. These images show what happens after such a period. We have found it advisable to do a once-a-month rinsing of the panels to make them sparkling clean and to bring them back to maximum efficiency.

Here's an image taken of the panels after two months without rain. My guess is that the drop in power output was somewhere around 10%.



The first point in the graph on the left shows the output from panels which had been allowed to collect dust for a month. After rinsing the panels, the output was monitored in 7 minute increments following the first measurement. The "best fit" line crosses the time of the first measurement at an output of 905 watts. The measured output of the dirty panels at that time was 811 watts or around 10% less than that which might have been generated at that time by clean panels.

Here's another one a bit more dramatic. The minutes from 3 to 45 were minutes following 10am, August 5, 2005. It was a cloudless and hot summer morning. There had been no rain for two months. Readings were taken every seven minutes. The first three readings were taken, the panels were then given a cold water rinse and four additional readings were taken. Note the large increase in output for the fourth reading and the subsequent drop-off. I assume that the larger reading is characteristic of the colder operating temperature immediately after the cold water rinse. There appears to be a 15% increase after the rinse.



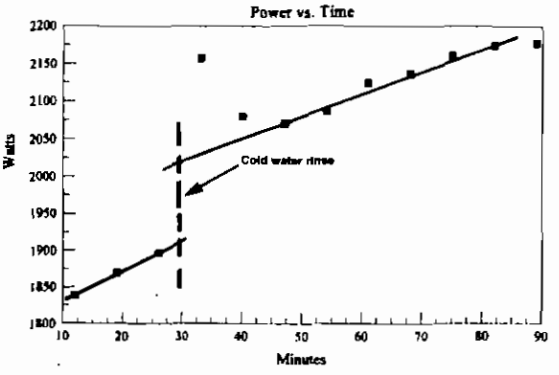
Recently a visitor to this page complained that my claim of a significant increase in power output after rinsing was not convincing. Here is a third set of data which may be copied and used in any manner you wish.

The data were taken starting at 9:12 am on a cloudless midsummer morning, 2006. The cold water rinse was effected between readings taken at 9:26 and 9:33. The previous rinse had been done about a month before this one. There had been no rain between rinses.

Time	Power output (watts)
9:12	1838
9:19	1869
9:26	1896
cold water rinse	xxxx
9:33	2157

9:40	2079
9:47	2070
9:54	2086
10:01	2124
10:08	2136
10:15	2160
10:22	2174
10:29	2177

Here is my graphical spin on the data. I would venture that there was a 5% increase in power output after the rinse.



How much water?

I was asked recently about water needs for panels installed in some of the desert regions of California. The frequency of rinsing depends on the dustfall of the region, so any projection of needs requires a measurement of dustfall and a comparison with areas for which the dustfall and accompanying energy loss is known, but the rinsing frequency is a judgment call based on that energy loss which one is willing to tolerate. My once-per-month rinsing during the dry season in suburban Los Angeles seems to coincide with an energy loss of 5-10%. The "case study" rinsing frequency (below) seems to be based on an energy loss of 15% to trigger a rinse. A typical rinse of my 18 panels using the method shown in the photo above requires 1.21 cu. ft. of water. The rinse consists of a first pass "to soften up" the layer of dust and bird droppings followed by a second pass to remove the softened residue. 1.21 cu. ft. = 9.05 gallons (U.S., liq.) = 34.3 liters. A careful measurement of volume needed and the noble expectation that one will be able to claim that the runoff will go into one's garden is shattered when one observes the runoff lying in the rain gutter behind a pile of leaves and evaporating slowly. I leave it to the reader to make the calculations needed for his or her application. Suffice it to say that my method is just about the most inefficient one could use. An industrial operation would have an advantage of scale and recycling potential.

Rate Games

When our system was first installed we were billed at a flat rate per kilowatt hour. The meter routinely turned backward during the day. We have since switched to "time of use" or TOU metering. For the first two years of TOU billing, instead of a bill each month at the fixed rate, we received a spread sheet, the bottom line for which didn't have to be paid but once each year. The first year the electric company put us on the TOU-D-2 schedule (the one for big users). TOU metering uses four different rates. Those which are established for the TOU-D-2 schedule are:

Period	Cost per kwh ($ U.S.)
Winter On Peak	0.15
Winter Off Peak	0.11
Summer On Peak	0.335
Summer Off Peak	0.1075

The spread sheet for 06/09/05 to 06/09/06 looked like this:

TOU-D-2-NEM Billing Spreadsheet

NEM Start Date: 06/09/05

Billing Period From	To	Net Load - Winter kWh On Pk	Off Pk	Net Load - Summer kWh On Pk	Off Pk	Net Load Total	Net Gen - Winter kWh On Pk	Off Pk	Net Gen - Summer kWh On Pk	Off Pk	Net Gen Total	Delta NET - Winter kWh On Pk	Off Pk	Delta NET - Summer kWh On Pk	Off Pk	Delta NET - Winter $ On Pk	Off Pk	Delta NET - Summer $ On Pk	Off Pk	DWR Bond	Energy Charge Total	Cumul Total
06/09/05	07/11/05	0	0	3	122	125	0	0	-195	-158	-353	0	0	-192	-36	$0.00	$0.00	-$64.86	-$3.87	-$1.05	-$69.78	-$69.78
07/11/05	08/09/05	0	0	28	192	220	0	0	-189	-123	-311	0	0	-161	70	$0.00	$0.00	-$55.22	$7.55	-$0.42	-$48.09	-$117.87
08/09/05	09/08/05	0	0	111	318	429	0	0	-159	-111	-270	0	0	-48	207	$0.00	$0.00	-$16.29	$22.61	$0.73	$7.08	-$110.79
09/08/05	10/07/05	13	46	51	219	329	-29	-15	-125	-77	-246	-16	31	-74	142	-$2.09	$3.17	-$24.56	$15.62	$0.36	-$7.48	-$118.27
10/07/05	11/09/05	27	229	0	0	256	-107	-83	0	0	-190	-80	146	0	0	-$10.49	$14.88	$0.00	$0.00	$0.30	$4.70	-$113.57
11/09/05	12/12/05	39	266	0	0	305	-60	-77	0	0	-137	-21	189	0	0	-$2.76	$19.39	$0.00	$0.00	$0.77	$17.40	-$96.17
12/12/05	01/11/06	27	176	0	0	203	-66	-44	0	0	-110	-39	132	0	0	-$5.20	$13.68	$0.00	$0.00	$0.43	$8.91	-$87.26
01/11/06	02/09/06	23	211	0	0	234	-103	71	0	0	-174	-80	140	0	0	-$11.36	$18.70	$0.00	$0.00	$0.29	$4.83	-$82.63
02/09/06	03/13/06	24	253	0	0	277	-123	-114	0	0	-237	-99	139	0	0	-$14.99	$15.64	$0.00	$0.00	$0.19	$0.84	-$81.79
03/13/06	04/11/06	14	161	0	0	175	-136	-142	0	0	-278	-122	19	0	0	-$18.50	$2.16	$0.00	$0.00	-$0.50	-$16.84	-$98.63
04/11/06	05/10/06	12	189	0	0	201	-145	-92	0	0	-237	-133	97	0	0	-$20.25	$11.04	$0.00	$0.00	-$0.18	-$9.39	-$108.02
05/10/06	06/09/06	17	195	15	72	299	-148	-107	-7	-13	-275	-131	88	8	59	-$19.86	$8.90	$3.34	$7.36	$0.11	$0.83	-$107.19

(Note1: The spreadsheet reflects my monthly energy balancing of net generation kWh and not consumption kWh only.

Note2: Please note, the customer charge, TOU meter charge, and all applicable city and state taxes will be recovered (and/or adjusted accordingly on your Anniversary statement.

Note3: Please refer to the TOU-D-2 tariff (customer charge, meter charges, etc.) for accuracy.)

Energy Charge Owed to SCE:	$0.00
TOU Meter Charge:	$31.60
Customer Charge:	$83.95
Lakewood UUT:	$0.25
State Tax:	$0.20
Total Adjustment:	$116.00

Total Account Balance Due: $116.00

The negative bottom line
within the spread sheet ($-107.19) is a statement of our credit, but according to California law, there is no compensation to the customer for whatever credit might accrue during the year. That is, the electric company never writes us a check for our contribution to the power grid. We do, however, have to pay an annual TOU meter charge and Customer Charge.

There is the added complication of TOU schedules. TOU-D-2 is for big users. Those users pay a lower average kwh rate, but their flat TOU meter charge and Customer Charge are higher than those for customers on the TOU-D-1 Schedule. The first year, shown here, was on the TOU-D-2 schedule. At the end of the year shown, we changed to the TOU-D-1 schedule in the expectation of breaking even again at the end of the next fiscal year and paying lower annual fixed charges.

Here are the four rates charged on the TOU-D-1 schedule. Note the usurious Summer On-peak rate, which as it turns out, worked in our favor - see below:

Period	Cost per kwh ($ U.S.)

Winter On Peak	0.202
Winter Off Peak	0.142
Summer On Peak	0.504
Summer Off Peak	0.147

The spread sheet for 06/09/06 to 06/09/07 looked like this:

TOU-D-1-NEM Billing Spreadsheet

NEM Start Date 6/9/2006

Billing Period		Net Load - Winter kWh		Net Load - Summer kWh		Net Load	Net Gen - Winter kWh		Net Gen - Summer kWh		Net Gen	Delta NET - Winter kWh		Delta NET - Summer kWh		Delta NET - Winter $		Delta NET - Summer $		Bain Cr or Bain Debit	DWR	Energy Charge	Cumul
From	To	On Pk	Off Pk	On Pk	Off Pk	Total	On Pk	Off Pk	On Pk	Off Pk	Total	On Pk	Off Pk	On Pk	Off Pk	On Pk	Off Pk	On Pk	Off Pk		Bond	Total	Total
06/09/06	07/11/06	0	0	51	219	270	0	0	-194	-164	-358	0	0	-143	-55	$0.00	$0.00	-$75.04	$7.99	$0.00	-$0.43	-$67.48	-$67.48
07/11/06	08/08/06	0	0	105	330	435	0	0	-149	-102	-251	0	0	-44	228	$0.00	$0.00	-$23.02	$33.11	-$4.65	$0.89	$6.33	-$61.15
08/08/06	09/08/06	0	0	137	398	535	0	0	-181	-121	-302	0	0	-44	277	$0.00	$0.00	-$22.54	$40.32	-$5.89	$1.13	$13.02	-$48.13
09/08/06	10/06/06	10	48	62	326	446	-30	-12	-107	-73	-222	-20	36	-45	253	-$3.62	$4.86	-$22.72	$37.12	-$5.57	$1.09	$11.06	-$37.07
10/06/06	11/08/06	36	246	0	0	282	-127	-111	0	0	-238	-91	135	0	0	-$16.48	$18.35	$0.00	$0.00	-$1.11	$0.21	$1.97	-$36.10
11/08/06	12/11/06	45	270	0	0	315	-62	-78	0	0	-140	-17	192	0	0	-$3.08	$26.20	$0.00	$0.00	-$4.43	$0.85	$19.62	-$16.48
12/11/06	01/10/07	36	179	0	0	215	-65	-73	0	0	-138	-29	106	0	0	-$5.25	$14.36	$0.00	$0.00	-$1.95	$0.37	$7.53	-$8.95
01/10/07	02/08/07	19	130	0	0	149	-91	-83	0	0	-174	-72	47	0	0	-$13.04	$8.35	$0.00	$0.00	$0.00	-$0.12	-$6.81	-$15.76
02/08/07	03/12/07	13	124	0	0	137	-140	-147	0	0	-287	-127	-23	0	0	-$25.92	-$3.83	$0.00	$0.00	$0.00	-$0.70	-$30.46	-$40.22
03/12/07	04/10/07	10	131	0	0	141	-165	-83	0	0	-248	-155	48	0	0	-$32.71	$8.32	$0.00	$0.00	$0.00	-$0.50	-$24.89	-$71.11
04/10/07	05/09/07	5	140	0	0	145	-192	-131	0	0	-323	-187	9	0	0	-$39.41	$1.56	$0.00	$0.00	$0.00	-$0.83	-$38.68	-$109.79
05/09/07	06/08/07	7	147	1	32	187	-131	-80	-32	-11	-264	-124	57	-31	21	-$26.22	$0.80	-$11.34	$3.82	$0.00	-$0.36	-$24.21	-$134.00

Total Energy Owed to SCE	$0.00
TOU Meter Charge	$30.94
Basic Charge	$10.56
State Tax	$0.07
UUT	-$0.21
Total Adjustment	$41.36
Total Account Balance Due	$41.36

The credit accrued during this year was $134.00, as shown. The fixed charges came to $41.36, which gave us a considerable saving over the previous year. Most unfortunately, the electric company discontinued the spread sheet for their TOU customers several months ago. Instead we receive a short statement which outlines the applieable charges for that month. To those of us who took the time to learn how to read the spread sheet this decision puts us at a decided disadvantage to he able to estimate how we are doing throughout the year. As if to add insult to injury, the short statement offers the customer a labyrinthine summary of the rate schedule with charges for such things as the " Transmission Owners Tariff Charge," the "Nuelear Decommissioning Charge," the "Public Purpose Programs Charge," the "The Public Utilities Commission Reimbursement Fee", and the "California Alternate Rates for Energy Surcharge, where applicable." All of these fees are charged by the kW hour and I have been told by a representative that there is variability from one month to the next as to which are applied to a specific customer's bill so that even if the customer wanted to create a private spreadsheet, it would be impossible because the rate changes slightly from month to month owing to which of the above charges apply. On the other hand, an approximate rate can be determined by using simultaneous equations between pairs of months in which only one rate "season" was involved: winter or summer. Since on-peak and off-peak rates are different, one can then calculate each rate for that particular pair of months. It isn't exact, but it is close. It does however require a passage of six months through the year (summer through fall to winter) to be able to establish a credible estimate. Stay tuned. I have one month yet to go before I'll have a bead on just what I'm being charged for my electricity.

The large credit accrued has at least one misleading characteristic: it largely represents credit at the highest rate, that is, "Summer On Peak." If a rather small balance shift were to occur toward Net Load from Net Generation for this period, **or possibly worse,** if the Summer On Peak rate dropped significantly, a customer would risk receiving a large electricity bill. One implication of this subtlety is that an owner of a new solar electrical generation system which generates at somewhat below the level of use, might be shocked to receive a whopping electrical bill based on the inflated Summer On Peak rate ($0.335 per kilowatt hour for the TOU-D-2 schedule and $0.504 for the TOU-D-1 schedule). However, the matter of credit vs. charge cuts both ways. For the periods 2005-2006 and 2006-2007, our energy use off the grid was positive. That is, more energy was pumped in from the grid than was generated by the solar panels (2005-2006, +443 kw hours; 2006-2007, +312 kw hours), but most of this energy came to us during periods of the low billing rates and was offset by net energy generated during the high billing rate period (Summer On Peak). Had we been able to opt NOT to convert to Time Of Use billing, and had continued receiving a bill calculated at a flat rate, we would have had to pay for our net energy consumption. At $0.13 per kw hour (close to the going flat rate), our bills for those two years would have been $57.59 and $40.56, respectively). Customers at the greatest disadvantage are those who install solar panels to generate some small fraction of electricity used and then switch to Time Of Use billing. Partly for this reason, the California State Senate on May 24, 2007 and the California State Assembly on June 6, 2007 passed Assembly Bill 1714 (and approved by the Governor) which allows the owners of new photovoltaie systems during the year of 2007 to opt NOT to have Time of Use (TOU) metering to be installed. The summary of the bill reads, in part: "This bill would authorize the PUC (Public Utilities Commission) to delay implementation of time-variant pricing for ratepayers with a solar energy system, until the effective date of the rates established in the next general rate case of the state's 3 largest electrical corporations. If the commission delays implementation of time-variant pricing, the bill would require that ratepayers required to take service under time-variant pricing between January 1, 2007, and January 1, 2008, and that would otherwise qualify for flat rate pricing, be given the option to take serviee under flat rate or time-variant pricing."

For the eurrent year in progress, a change in the Summer On-peak rate from $ 0.504 per kWh last year to around $0.35 per kWh this year has occurred for reasons which at this writing are not clear. That will put our domestic system at a decided disadvantage because of the excess of generated energy for the Summer On-peak periods. That is, the cumulative credit received for that period will be less than that granted last year.

All that having been said, any annual credit, whether reflecting rate disparities between summer on-peak generation and winter off-peak consumption or a surplus of generated energy throughout the year will end up making the electric company your favorite charity. "Drat and Blast!" you say. What is to be done? A customer not entirely sympathetic to the hollow-eyed plea for a spirit of giving from the exeeutives of our public utilities needs to find alternative consumption strategies so as to bring the surplus or the credit down to zero. There are a number of amusing and intriguing possibilities which I leave to the creative genius and resourceful diligence of the reader to discover and to put into practice.

Getting a check from the electric company?

Starting in January, 2011, in California, people who generate excess electricity will be able to sell it to their electric company. That is, for the first time in history, the tops of our roofs will have profit potential. But before you go out and plunk down the better part of your family fortune to have solar panels installed, the fine print tells you that a customer must have both a $ eredit at the end of the year and have generated more kwH than were consumed to get a check from the eleetrie company. Moreover, since the advantages of rebates and tax credits are forsaken if an installation greatly exceeds one's need for electricity, very few customers will ever see a check at the end of the year. That's all right, I hear you say, I'll install more panels than I need and not expect to get the rebates or tax credits on the extra ones. I'll cover my roof with those extra solar panels and become rich! Gulp! It turns out that the electric company has practically stonewalled that idea in testimony before the California Public Utilities Commission by presenting the argument that there are many expenses connected with delivering energy to the customer; those added expenses justify that the cheek to the customer be discounted to around 40% of what the customer pays for electricity. That is, if your current flat rate is 13 cents per kwH, you'd get about 5 eents per kwH for your excess generated electricity, hardly enough ever to break even.

An amusingly diabolical opportunity?

Still, many clouds have silver linings, and here is one to think about. You have a computer which monitors your photovoltaic system and estimates on the basis of daily use and generation and past knowledge of annual use and generation how much extra energy you can produce each day. Then there is this guy who shows up each month with an

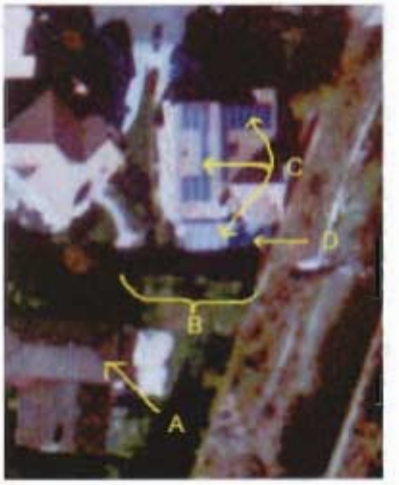
empty black box, unhooks a full black box from the previous month, attaches the empty black box, writes you a check and leaves. He's jolly and wears a white jump suit just like the man who delivers bottled water, except that this guy brings in something empty and leaves with another one which is full. Your assignment, dear reader, is to figure out what will be in the black box to make you rich! Nice idea, huh?

Solar Silliness

When we installed the panels on our house roof I had the expectation that we could allow them to sit there without a worry or care and to generate electricity during daylight hours for the next twenty-five years when the guarantee runs out. That they ought to be exposed to unshaded sunlight was obvious, but my early discovery that in order to achieve maximum output they need also to be rinsed periodically was an early lesson in the maintenance of solar panels. I have been more recently surprised that these two points are not fully appreciated by everyone, not even some "experts."

As more people install PV systems it stands to reason that some will make informed choices and others will not. It is with more than a little amusement then that one can find some rather large but ill-conceived installations carried out by people one would think should know better. Here is an ambitious private installation of approximately 35 kW on an apartment house in Santa Monica, California, consisting of both vertically and horizontally mounted panels. The vertical panels face southwest and do not receive direct sunlight until late each morning. Moreover, neither the vertical panels nor the horizontal panels at the right are tilted toward the south at the angle of latitude. The shadows cast by the 3 palm trees and the eucalyptus tree (right) for the better part of the day almost certainly will have an attenuating effect on the energy output; how much would be a function of the internal series/parallel circuitry but could be determined with a simulated equivalent unshaded system. There does seem to be a cleaning schedule in place judging from the blue crystalline appearance of the panels' surfaces, at left.

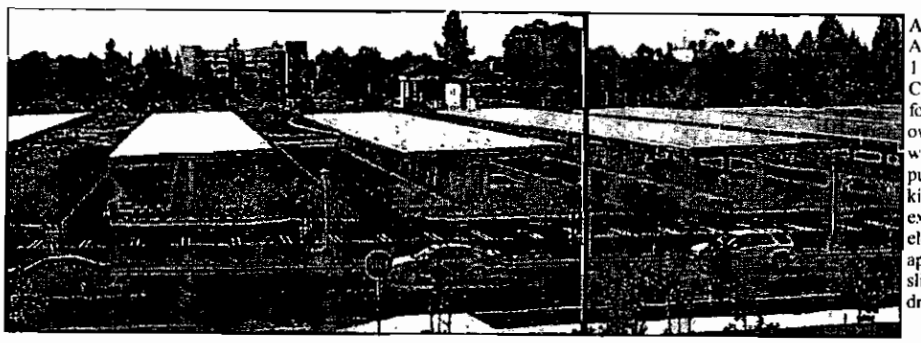
The shading of one's solar panels by a neighbor's trees can rise to a litigious level if one lives in California. The Solar Shade Control Act, signed by the governor in 1978, bans trees or shrubs from shading more than 10 percent of a neighbor's solar panels between 10 a.m. and 2 p.m. and includes shading on panels installed after the trees were planted if the trees grow to such a height to produce shade which exceeds that which is allowed by the law. A recent celebrated case invoking that law involves neighbors in a community near San Francisco. Neighbor A planted eight redwood trees, B, between 1997 and 1999. Neighbor C installed a 10 kW photovoltaic solar panel system, C, in 2001. Redwood trees, B, grew until their shade, D, exceeded that which is allowed by the Solar Shade Control Act. In December 2007, Santa Clara County Superior Court Judge Kurt Kumli ruled that six of the trees can remain and that the two generating the most shade must be removed. It was reported on July 23, 2008 by KGO-TV that Governor Schwarzenegger has settled the conflict by signing a bill which states that a tree which casts a shadow onto a neighbor's solar panel will no longer have to be cut down, as long as the trees were planted before the panels were installed.



The California Department of Transportation building in Los Angeles (right) has a system of panels sandwiched in a casing of bullet-proof glass on the south face, but notice in the close-up that each rank of panels shadows the one below. Moreover, there is no cleaning schedule for the glass surface. If one could depend on frequent inundations blowing from the south then these panels would be periodically cleaned, but that kind of weather doesn't happen in southern California. We have lengthy periods without rain and when the storms do come they're more often in the form of vertical drizzles which will very definitely clean the uppermost rank of panels but do little good for the ones below.

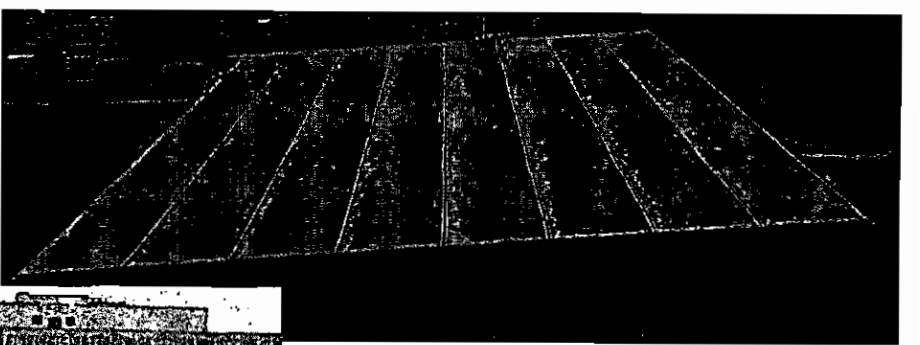
The Los

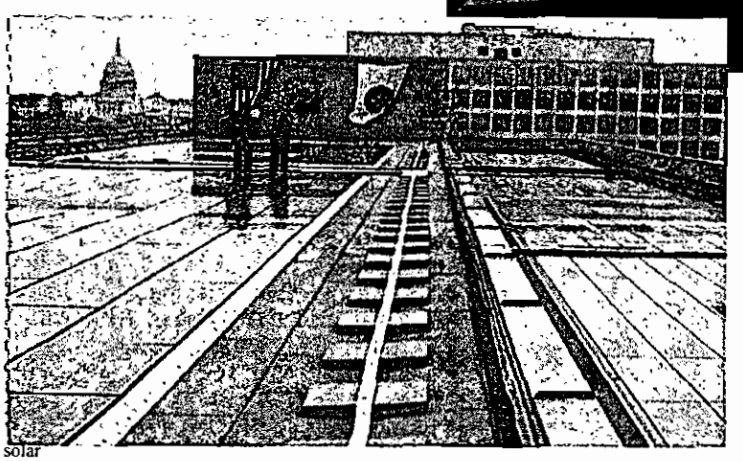
Angeles
Convention Center has a system which was installed by the L.A. Department of Water and Power. The panels were placed around the periphery of the building well below the roof line (I would estimate 4-7 meters). The panels whieh arc mounted on the east and west sides receive no direct sunlight for about half of each day. The ones mounted on the west side and shown in the photograph at the right are in the shade until early afternoon.



A system consisting of 3872 300 watt panels (Schott ASE-300-DGF/50) yielding a rated power output of 1162 kilowatts was reeently installed on the campus of CSU Fresno over Parking Lot V. The general contractor for this installation was Chevron Energy Solutions. The owner of the panels is MMA Renewable Ventures with which the campus has entered into a 20-year power purchase agreement at a starting rate of $0.16 per kilowatt hour and a 2% annual inflation adjustment. An examination of current rates paid by big users of electrieity makes a rate of $0.16 per kilowatt hour appear to be a bit priecy. Note that there seems to be a slight tilt toward the south of 1-2 degrees, possibly with drainage in mind.

However, in the image at the right which has had its brightness reduced and contrast increased, the effect of such drainage where morning dew and occasional drizzles are the only sources of precipitation for several months running is a distinct residue which builds up over the cells at the lowest elevation of each set of panel segments. It is not clear at this writing if there is a program of routine rinsing in place.





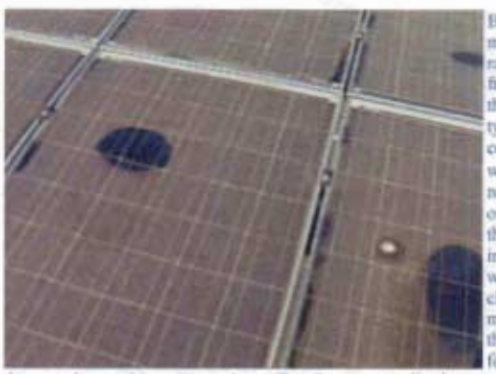
solar
panels. Sure enough, 891 x 230 / 1000 = 204.93 kilowatts. But Washington, D.C. is at latitude 38 ° 53' north which means that at the very best, the rated power output of horizontal panels will be attenuated by an average factor of
cosine(38 ° 53') = 0.78 , decreasing the figure above to 159.6 kilowatts. Judging from the image at the right, it would appear that there isn't the slightest indication of tilt so as to allow the panels to self-elean in the annual rainfall of 39.3 inches. (100 cm). The average solar energy in Washington, D.C. is about 73% that of southern California, so it could be argued that horizontal panels will gain a little from the diffiuse sunlight through the frequent cloud cover over Washington, D.C., but most likely the gain will be morc than offset by the loss duc to thc lack of tilt on sunny days. Moreover, onc would expect the dustfall on these panels to turn to mud on the surface, not unlike some of the other examples in this section, until the panel guys arrive to give them a power rinse. Where is tbis ill-conceived installation. I hear you ask? It is on the roof of the headquarters of the . . . wait for it . . . U.S. Department of Energy.

This installation may be found above the top level of a parking structure on Holliston Avenue at Caltech in Pasadena, California. It consists of

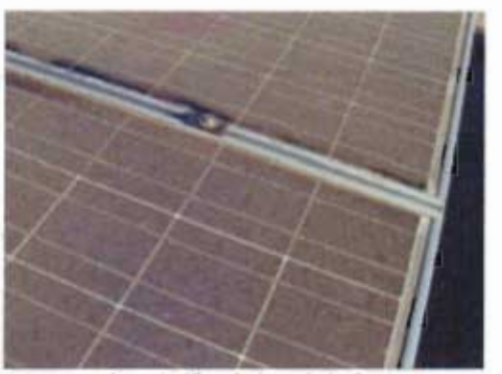
1404 170 watt Suntech STP170S-24/Ab-1 panels, giving a total rated power output of 238.68 kilowatts. The sign in the photo at the driveway claims 199 kilowatts. It was installed by EI Solutions. Note that the panels are mounted horizontally. What is not clear from the image is that the only practical access to the panels for periodic rinsing would have to be by hydraulic lift on the east and west sides. The installation runs nearly the length of the structure and the limited access to the panel surface at the north and south ends would make periodic rinsing of the entire panel surface impractical from those access points. A representative of Suntech Energy Solutions points out that where the realization of installations such as this, including the execution of "power purchase agreements" by investor groups, are concerned, optimizing energy output is only one of a variety of considerations. The others are the level and conditions of any production rebate, time-of-use energy tariffs by the electrical utility, financing requirements for the area available and the stated objectives of the client. That is, given the sometimes conflicting agendas encountered when putting together an investor group to realize an installation such as this, other exigencies have to be considered.

A Case Study

A large system (557 kW) was recently installed on the campus of CSU Dominguez Hills by Sun Edison. There are 3279 panels, each rated at 170 watts, bringing the maximum rated power output to 557,430 watts or 557.43 kilowatts. The panels have been mounted nearly horizontally over Parking Lot 1. At our latitude of 34 degrees north they ought to have been tilted toward the south by 34 degrees if the objective is to maximize the generation of energy. At noon at our latitude on the summer solstice the sun is 10.5 degrees from the vertical. At noon on the winter solstice it is 57.5 degrees from the vertical. Assuming 0% loss if the panels are pointing directly at the sun, horizontal panels suffer a power loss of 1.7% and 46.3% at noon on the summer and winter solstices, respectively, for an average annual loss of 24%. On the other hand, under Time of Use (TOU) billing (discussed above), the On-peak period is from 10am to 6pm when the rate charged is higher and if the objective is to maximize one's $ credit the panels ought to be tilted appropriately in a southwesterly direction. Even though we often get brilliant sunlight in southern California from 7am to 10am, that time period still falls in the category of Off-peak.

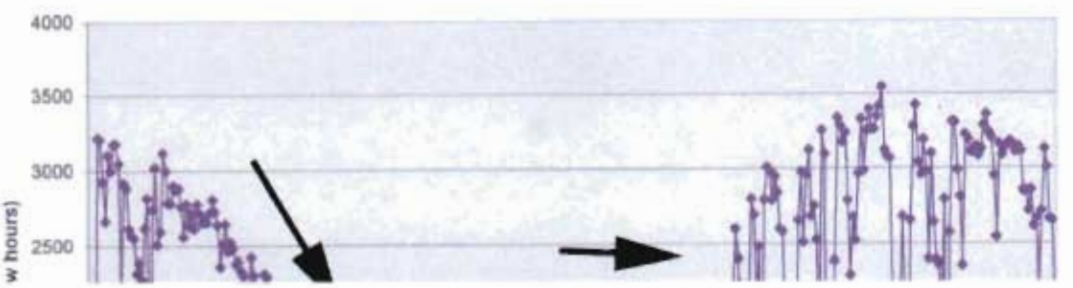


But it gets worse than that. The lack of tilt means that there is no natural gravity runoff for rain or rinse water. If it appears to you that from the acute angle of view in the photo above the surface color is something other than the typical metallic blue of a silicon photovoltaic cell, you would be right. It appears (at this writing in the fall of 2006) that there has been no rinsing service to maintain maximum output. The surface has been allowed to collect the dustfall of greater Los Angeles since installation around four months ago during which time there has been no rainfall. It is not clear at this writing what the dark spots in the middle of several of the panels represent, but the buildup of dirt certainly doesn't bode well for the overall output of the panel array. It is also not clear at this writing who suffers the greatest disadvantage (the university or the power company) if the power output drops significantly due to lack of maintenance. Only knowledge of the specific billing arrangement worked out in the contract would reveal that information.



Do real data support the depressing conclusion expressed above? Well, yes, generally. On February 28, 2007, a cloudless day from 10am to early afternoon, the system on our rooftop peaked at 10:51 am with an average power output of 2271 watts over the 15 minute interval (7 minutes on either side) which bracketed the maximum of 2284 watts. Taking the theoretical maximum power output specification of these panels, the 2271 watt average translates to [2271/(18 x 165)]x100 = 76.5%. On that same day the power of the university system peaked at 12:15 pm, showing a power output of 319,841 watts. Carrying out an equivalent calculation one gets [318,841/(3279 x 170)] x 100 = 57.4%, a value diminished, I would offer, by the lack of tilt of the panels at the angle of our latitude. We are stymied at this point from looking more closely at these figures and trying to establish how much the diminished value is caused by the lack of tilt and how much by dustfall because the tilt of the domestic roof-top system is itself not ideal. One would need to observe the output of at least one 170 watt panel the normal vector of which is pointing directly at the sun at the time of maximum power by the array of 3279 panels to establish a credible attenuation of power owing both to tilt as well as dustfall.

Here is the one-year line chart of energy generated vs. date for the university system.



Note the two discontinuities identified by the arrows. They represent the increased output following rinsing. That we are experiencing the driest year since records have been kept starting in the latter part of the nineteenth century, we've had many cloudless days. All maxima on the chart above are representative of energy output on cloudless days. Taking the highest adjacent maxima before and after cleaning, we have 10/27/2006 and 10/28/2006, 1644 kwh and 1930 kwh. The lower value is 85.2% of the upper value. Again on 3/15/2007 and 3/16/2007 we have 2222 kwh and 2599 kwh respectively. The low value is 85.5% of the higher value, suggesting that the event which triggers rinsing by the maintenance crew is a 15% drop from maximum expected value. The very low energy outputs and those at zero are unexplained. They are either outages of the panel system for part or all of the day or there was a failure of the data collection system. No explanation is available at this writing.

Conclusion

So as to gain maximum advantage from an installed system of photovoltaic panels, the following preliminary conclusions can be made. Most unfortunately, if you are not a resident of the State of California, only (2), (3) and possibly (1) make any sense. Read on:

1. If you are connected to a grid, install a system sufficiently large to generate as much energy as you consume during summer and winter periods, because if your rate varies by time of day and by season, and you take advantage of generating more energy than you consume during summer daylight hours, when the rate is the highest, and consume more than you generate during long winter nights when the rate is lower, there is no guarantee that such a rate schedule will remain to your advantage over the long term. In any case, you need to start thinking about a Plan B to use up the energy credit you build up throughout the year and possibly to install more panels if you find yourself suddenly having to pay for electricity.
2. Tilt your panels toward the south (in the northern hemisphere) or toward the north (in the southern hemisphere) at the angle of your latitude.
3. Regularly rinse your panels to keep them clean and to maximize their output.
4. If the panels meet all of your electrical energy needs, that is, if energy consumption is close to energy generation, then the decision to switch to "Time of Use" metering makes sense only if the Winter Off Peak rate is so much lower than the Summer On Peak rate that some Plan B for using up the accrued credit becomes financially appealing.
5. Don't opt for "Time of Use" metering if your panels produce somewhat less than your electricity requirement during the winter, but more than you use during the summer because a slight change in rate of one period vs. another can make the difference between an annual energy credit and an unwelcome electricity bill. Moreover, if the electric company eliminates the method you have used to track your credit/debit status by introducing a "new and improved" electricity statement and/or a change in rate for one or more periods without prior announcement, you'll be, in our vernacular, up a creek without a paddle.
6. If your panels produce only a small fraction of the electrical energy you use throughout the year then do NOT switch to TOU metering. Doing so would subject you to the inflated "Summer On Peak" rate which at this writing is on the order of three times the flat rate.

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SAN BERNARDINO COUNTY
INITIAL STUDY ENVIRONMENTAL CHECKLIST FORM

This form and the descriptive information in the application package constitute the contents of Initial Study pursuant to County Guidelines under Ordinance 3040 and Section 15063 of the State CEQA Guidelines.

PROJECT LABEL:

APN:	**0491-091-07**
Applicant:	Mr. Cory Ramsel Boulevard Associates, LLC 700 Universe Boulevard Juno Beach, FL 33408 (561) 304-5294
Community:	Kramer Junction
Location:	Highway 395; approximately 2.5 miles north of Highway 58
Project No:	P200900523
Staff:	Doug Feremenga, AICP, Senior Planner
Rep:	Mr. Cory Ramsel Boulevard Associates, LLC 700 Universe Boulevard Juno Beach, FL 33408 (561) 304-5294
Proposal:	A Conditional Use Permit to establish a 20 megawatt Solar Photovoltaic Energy Facility on a 191-acre portion of a 313.8-acre parcel.

USGS Quad:	Saddleback Mountain
T, R, Section:	**T11N R6W Sec. 19**
Thomas Bros.:	P 348 / GRID: H-6
Community Plan:	N/A
LUZD:	RC- Resource Conservation
Overlays:	Biotic Resources Cultural Resources Paleontological Resources

PROJECT CONTACT INFORMATION:

Lead agency:	County of San Bernardino Land Use Services Department 385 N. Arrowhead Avenue San Bernardino, CA 92415-0182
Contact person:	Doug Feremenga, AICP, Senior Planner
Phone No:	(909) 387-0240 Fax No: (909) 387-3223
E-mail:	dferemenga@lusd.sbcounty.gov

PROJECT DESCRIPTION:

Boulevard Associates, LLC ("Boulevard") proposes to construct and operate a 20 Megawatt (MW) photovoltaic (PV) solar energy facility on the west side of U.S. Highway 395; approximately 2.5 miles North of Highway 58, adjacent to the existing NextEra Energy Resources, LLC's Solar Energy Generating Systems (SEGS) III-VII solar energy generation facility near Kramer Junction, in unincorporated San Bernardino County (County). Specifically, the project area is situated on the west half of Section 19, Township 11 North, Range 6 West of the U.S. Geological Survey (USGS) Saddleback Mountain, CA 7.5-minute topographic quadrangle at approximately Latitude 117 33'27.744"W and Longitude 35 2'5.183"N (See **Figure 1: Vicinity Map**).

Adjacent tracker units would share a north ballast. The tracker unit ballasts would be approximately nine (9) feet long by two (2) feet wide and six (6) inches to one (1) foot above grade.

In addition to the panels and tracking structures, the proposed project shall have an intermediate voltage collection system, direct current-to-alternating current (DC-AC) inverters, switchyard, and step-up transformer(s). Each panel converts solar energy to electrical energy at 600 Volts. The electricity flows to the inverters through a rack mounted cabling system connected to underground collection lines in conduits that shall terminate at the end of each 72 tracker unit row at a combiner box and is converted from direct to alternating current and output at 34.5 kV (kilovolts). The electricity is then collected by a dedicated collection system that terminates at the facility switchyard, where the voltage is stepped-up to 115-kV. The energy is then transported to the regional grid via an interconnect to the existing Kramer 115 kV overhead transmission line owned and operated by Southern California Edison.

The proposed project shall only produce energy when sufficient sunlight is available and shall be completely idle when the sun is insufficient to generate electricity. Project staff shall perform all work and maintenance during normal business hours Monday through Friday between 6am and 6pm. Once operational, the onsite staff is expected to be limited to a one (1) -to- two (2) person maintenance team with supplemental staff added when needed for site maintenance, panel washing, or electrical repairs. Additionally, it is anticipated that up to ten (10) additional individuals (general labor) may be mobilized to clean the PV panels over a two (2) -to- four (4) week period. No habitable structures are planned as part of the project, and therefore no water, sewer, or gas utilities would be necessary. No signs, landscaping, or parking areas are planned. An open-air switchyard would be constructed on the eastern border of the solar array adjacent to the existing SCE transmission line; the equipment shall be mounted on a concrete pad measuring 190' x 390'. The project shall consume minimal amounts of water for the occasional cleaning of panels as they become dusty throughout the year. Water shall be trucked in from the adjacent SEGS facility or an offsite municipal source. Applicant expects to wash the PV panels at least once per year using approximately 150,000 gallons (0.43 acre-feet) of water that shall be trucked to the site from the nearby SEGS facility.

It is anticipated that construction of the proposed project would take approximately eight (8) months commencing in November 2010. It is estimated that the number of onsite workers will average 104 per day and the peak will be 127 per day. Worker commute vehicles will account for the majority of traffic trips to the site. It is estimated that there will be approximately 20 pieces of construction equipment onsite each month. Construction equipment would include the following:

Las Vegas Sun

Dirty detail: Solar panels need water

How much is the question, as developers downplay frequency of cleanings

By *Stephanie Tavares* (contact)

Friday, Sept. 18, 2009 | 2 a.m.

Southern Nevada may pose more of a dirty little problem for some solar plant developers than they realize or are letting on.

Solar photovoltaic developers say not to worry about how much water their plants will use because they need only enough water to run the office bathrooms and wash the arrays of panels a couple of times a year.

But people who live near proposed plants or maintain solar panels in the desert guffaw at that last bit and are willing to bet the panels will need to be hosed down more frequently.

Dust on solar panels can decrease their efficiency by about 3 percent, solar photovoltaic experts said. The larger the solar array, the more electricity lost.

"On a home that doesn't mean much of anything, but on a huge solar power plant that could mean real money," said Nevada solar panel installer Chris Brooks, director of renewable energy for Bombard Electric.

Most photovoltaic arrays are cleaned with tap water sprayed with a hose or from a water truck. So solar array managers have to add in the cost of labor, truck rental and gasoline. In a water-starved desert, the additional consideration is how much of the region's most critical natural resource will wind up evaporating or dripping into the desert.

Solar photovoltaic developers say their plants don't use much water, but "much" is relative. True, they use a fraction of what a water-cooled solar thermal power plant consumes annually — about a 16,689 gallons per megawatt for photovoltaics compared with 2.61 million gallons per megawatt for wet-cooled solar thermal — but a large photovoltaic array can still easily use more water in a year than an entire residential block.

The array planned for Primm, for example, is expected to annually require at least as much water as 10.5 average Las Vegas households. NexLight North and NexLight South, which have been combined in the first industrial-scale solar photovoltaic array planned the Bureau of Land Management land in Nevada, would need to truck in about 6.8 million gallons of water a year, developers reported in planning documents. That's enough, they say, to clean the thousands of acres of solar panels about twice a year.

Although that is the industry standard for washing large arrays of solar panels, few large solar arrays in the Mojave get away with so few cleanings.

UNLV's photovoltaic arrays are washed about monthly. NV Energy washes the panels at the Clark Generating Station about four times a year. Other NV Energy owned solar panels are washed three times a year.

When NexLight disclosed plans for biannual cleanings at BLM scoping meetings, locals scoffed. If the dust on the cars in the parking lot was any indication, the developers would be cleaning those panels a lot more than twice a year. The dust in the Ivanpah Valley can be brutal under normal circumstances, residents said. But the area is also a popular spot for large multiday off-road races that can stir up even more dust.

The NexLight plants are planned smack dab in the middle of a popular off-road raceway, which the company proposes rerouting around the solar plant.

Just washing the panels more often is not the easy solution it sounds like. If the increase in electrical output won't generate more money than it costs to wash the panels, they can just stay dirty.

"Efficiency does drop off with time," said Bob Boehm, director of UNLV's Center for Energy Research. "But you really have to balance the loss in efficiency from the dust with the cost of the water and labor."

So solar array managers try to keep the panels cleanest when the solar panels are operating at maximum efficiency in the long days of spring and summer. Unfortunately, that's when demand for water is the highest, putting even more strain on a scarce resource.

When they can, operators of solar arrays let Mother Nature do the work for them. Though Southern Nevada gets only about 4 inches of rain in a good year, the weather is relatively predictable. That gives solar array managers time to get the panels ready for cloudy weather and, they hope, a free cleaning.

That preparation is a must. Cold water on a very hot solar panel usually means shattered glass, so managers have to power down arrays well before either a cleaning or rainfall. If the storm produces rain that falls in a torrent, they've hit the jackpot.

"A really good rainstorm means you don't need to worry about washing your panels for a while," Boehm said. "But if you get this typical Las Vegas rainstorm with tons of wind and dust and forty-five drops of rain, that's the worst kind of thing. It just plasters the dirt to the panel."

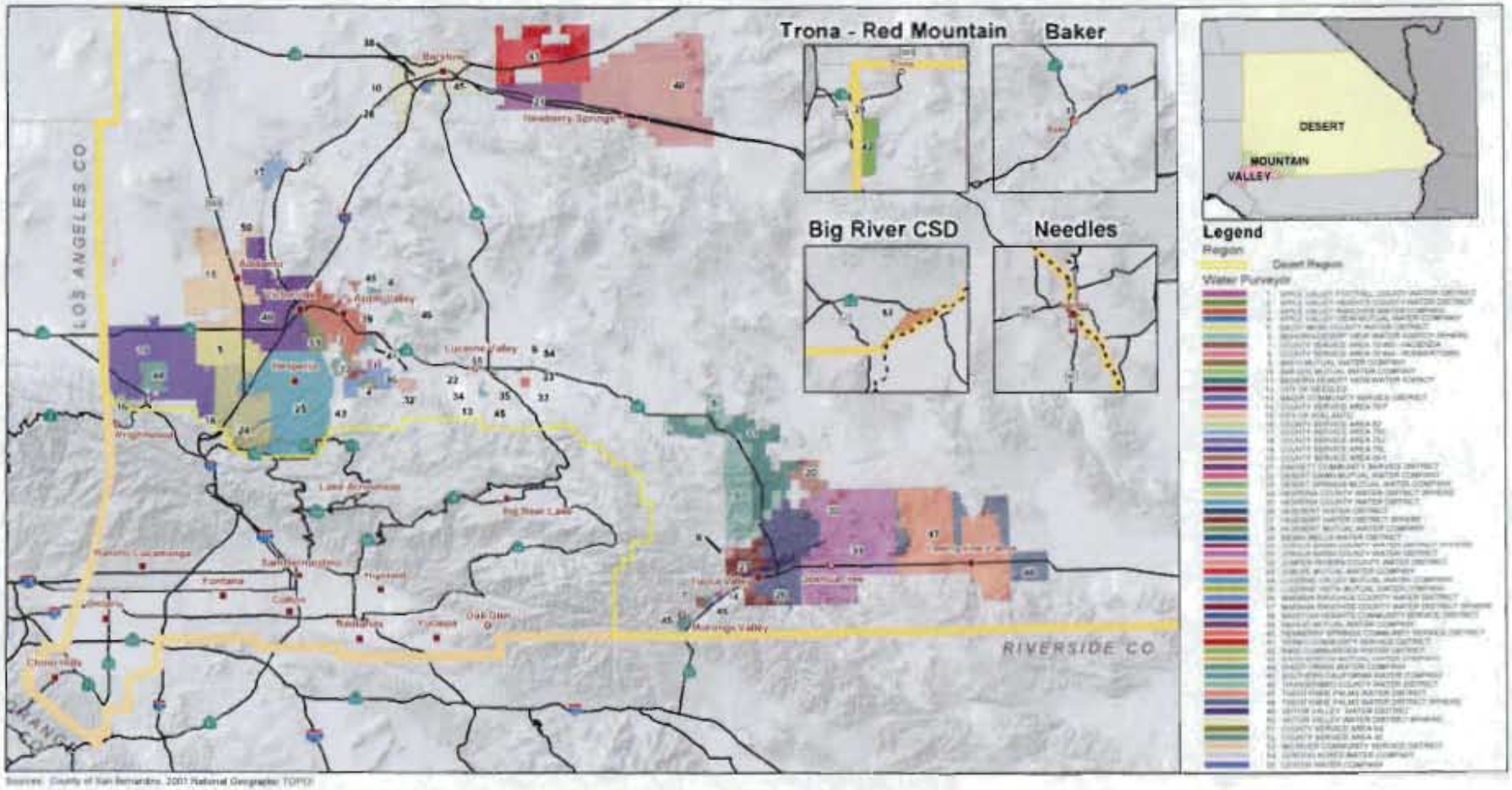


FIGURE 2-14C:
WATER PURVEYORS - DESERT REGION

MOJAVE BASIN AREA WATERMASTER

FOR
CITY OF BARSTOW, ET AL, VS. CITY OF ADELANTO, ET AL,
CASE NO. 208568 - RIVERSIDE COUNTY SUPERIOR COURT

May 1, 2010

TO: **Clerk of the Superior Court**
of Riverside County, California

RE: **Watermaster Annual Report for Water Year 2008-09**

Pursuant to Judgment After Trial in the case of City of Barstow, et al., vs. City of Adelanto, et al., Case No. 208568 entered January 10, 1996, submitted herewith is the Sixteenth Annual Report of the Mojave Basin Area Watermaster, dated May 1, 2010, setting forth the activities and determinations of the Watermaster for Water Year 2008-09.

Respectfully submitted,

MOJAVE BASIN AREA WATERMASTER

By: V. Wiegenstein
Valerie L. Wiegenstein
Watermaster Services Manager

22450 Headquarters Drive • Apple Valley, California 92307-4304
(760) 946-7000 • 1-800-254-4242 • FAX (760) 240-2642 • E-Mail: Watermaster@mojavewater.org

Subarea Water Levels

Water levels within each of the five Subareas were reviewed as part of the Watermaster's investigation into Subarea conditions and recommendations on Free Production Allowance. The Judgment does not specifically require that Watermaster consider changes in water levels in its investigation but Paragraph 24 (o) of the Judgment requires Watermaster to consider changes of water in storage. Rising and falling water levels within the Basin Area are indications of changes in storage over time. Annual changes in storage are indicated by Table 5-2. While the amount of water level data collected and maintained by MWA is extensive, it is not sufficient to determine changes in storage in each Subarea by using changes in water levels. However, the data is sufficient to make generalizations about the conditions in each Subarea.

Hydrographs of wells generally representative of Subarea conditions are maintained by MWA for public review at:

Alto:	www.mojavewater.org/Subareas/Alto/Maps.aspx
Baja:	www.mojavewater.org/Subareas/Baja/Maps.aspx
Centro:	www.mojavewater.org/Subareas/Centro/Maps.aspx
Este:	www.mojavewater.org/Subareas/Este/Maps.aspx
Oeste:	www.mojavewater.org/Subareas/Oeste/Maps.aspx

The hydrographs were presented for inspection at the March 2010 Watermaster meeting and discussed in detail by the Engineer. Figures 3-10 through 3-16 are reduced copies of the exhibits available on the MWA website. A summary of the water levels for each Subarea is presented below.

Alto Subarea

Water levels in Alto are presented on three maps depicting hydrographs that represent conditions throughout Alto. 1) Western portion is generally west of the Mojave River (the river is included in the western portion); 2) Eastern portion is generally east of the Mojave River; and 3) Alto Transition Zone. Alto water levels near the river are relatively stable exhibiting seasonal variation, rising in winter and falling in summer. The near river wells also indicate rising and falling water levels consistent with available recharge from storms. It is expected that under current pumping conditions and long term precipitation that near river wells will remain stable. Water levels in the western portion of Alto in the regional aquifer exhibit declines consistent with locally heavy pumping and limited local recharge. Water levels in the eastern portion of

Alto indicate similar trends although to a lesser extent; most likely due to limited pumping in the regional aquifer east of the river. Continued pumping in depleted areas of the regional system may result in long local negative impacts such as declining yields and water quality problems. Watermaster is not aware of wide spread problems in the regional system due to the falling water table. The relative stability of near river water levels and water levels in the Transition Zone indicate hydrologic stability in the relationship between Alto and the downstream Subareas.

Baja Subarea

Baja water levels continue to decline due to over pumping and limited recharge opportunities. Wells near the river in the Daggett area respond to recharge when it is available but continue to fall immediately following storm events. Water levels in the area near the river at Camp Cady indicate relative stability due to water perched in the shallow aquifer, limited pumping and geologic factors such as narrowing of the basin sediments near Camp Cady and downstream. Water levels elsewhere in Baja show declines without indicating recovery after storms.

Centro Subarea

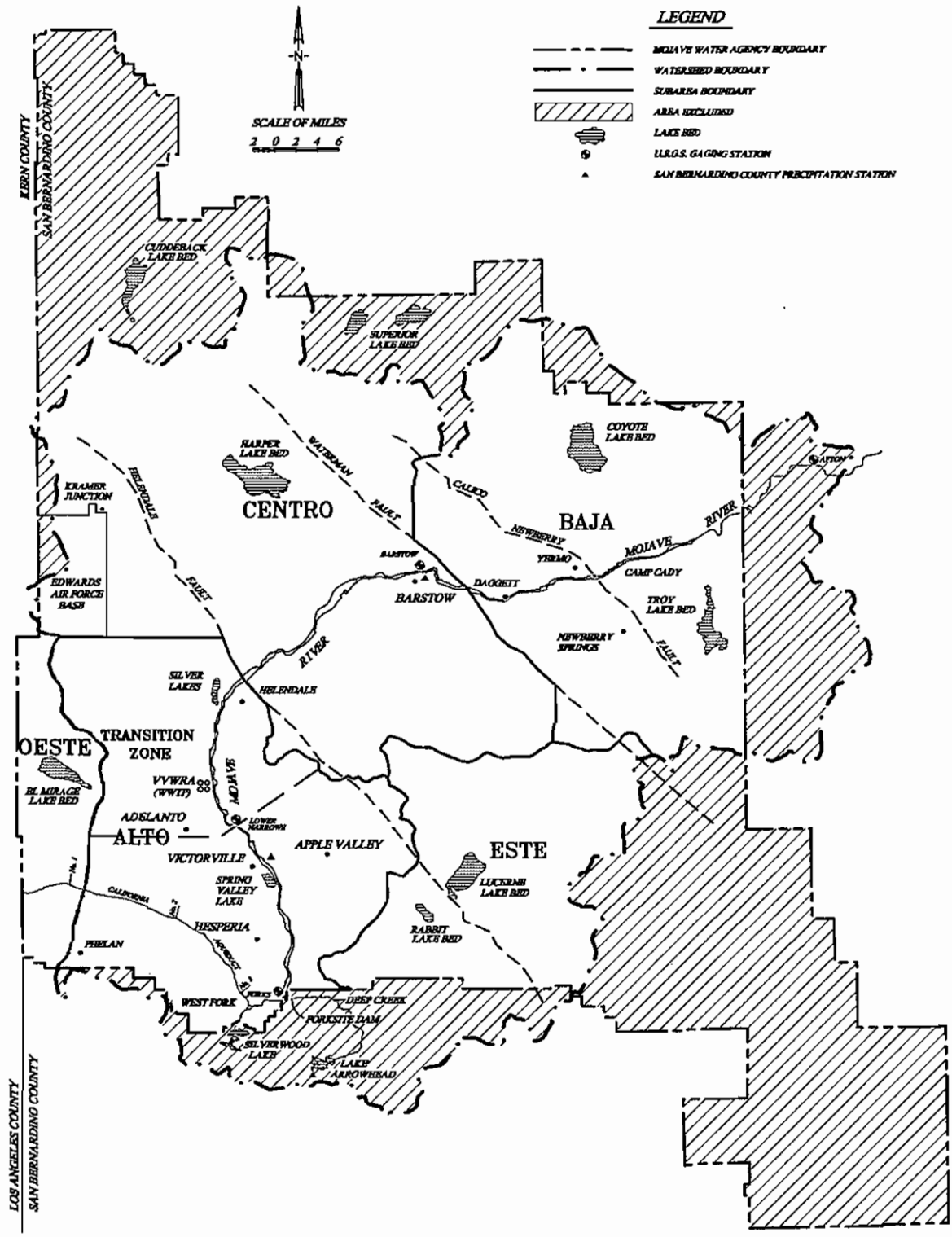
Water levels in Centro have been stable showing seasonal variability and variability during dry years but generally recover during wet periods. Water levels in the Harper Lake area indicate a slow recovery due primarily to cessation of pumping during the past several years. Water levels in wells in the vicinity of Hinkley but away from the river system show the effects of pumping and limited recharge.

Este Subarea

Water levels in Este have remained stable for the past several years indicating a relative balance between recharge and discharge.

Oeste Subarea

Oeste water levels continue to decline and in some areas the declines are significant. Water levels are declining in wells in Los Angeles County near the Phelan Piñon Hills CSD municipal water supply well used to supply water to the CSD's customers in San Bernardino County. Water levels near Sheep Creek Road and Highway 18 indicate significant decline, likely due to heavy pumping nearby. Water levels in the north part of Oeste near El Mirage indicate relative stability. It should be noted that the available water level data in Oeste is limited.



MOJAVE BASIN AREA

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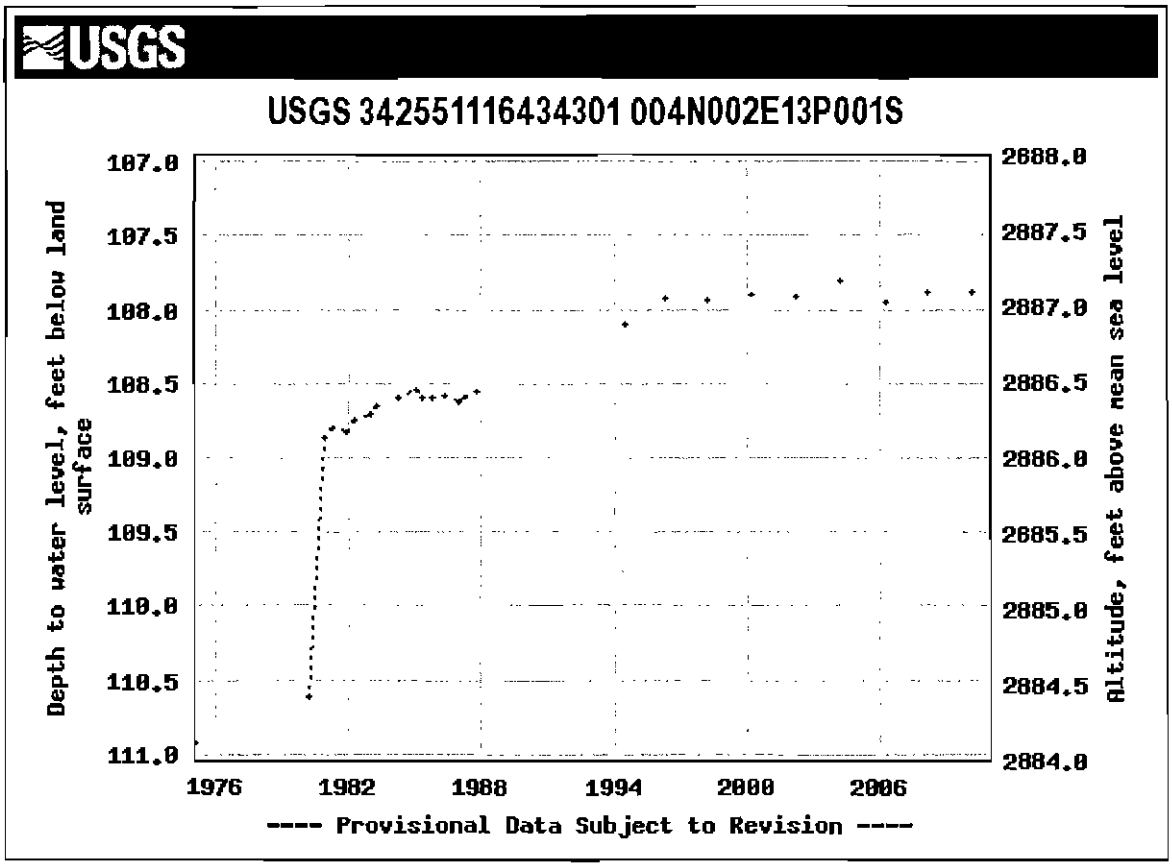
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1988
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2006
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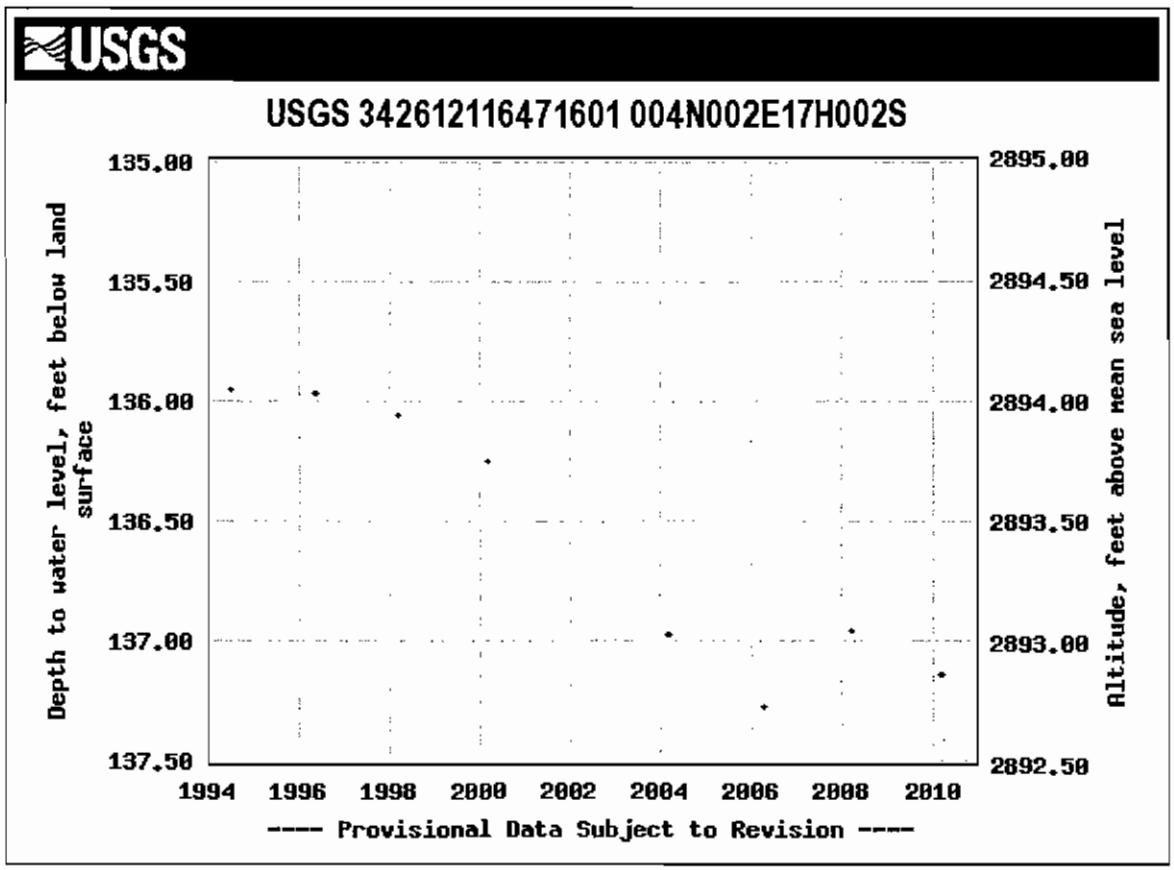
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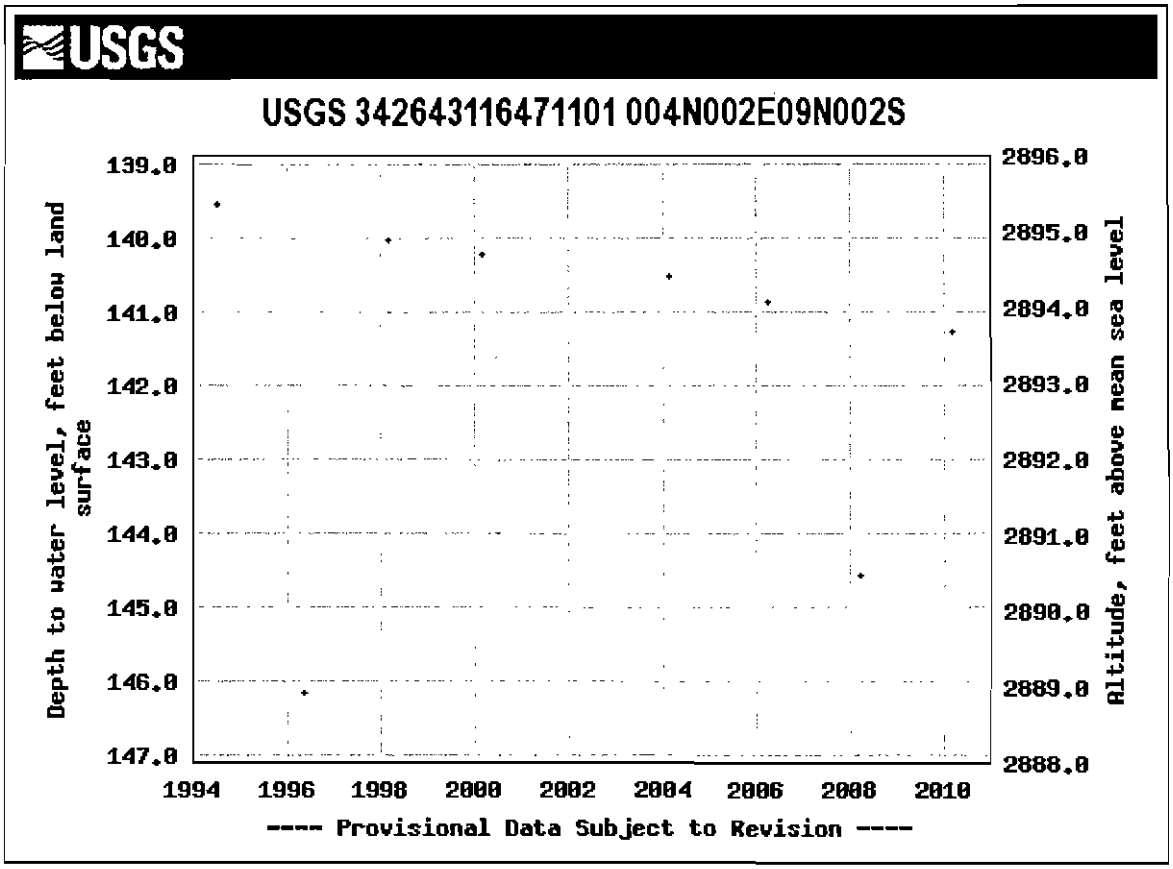
---- Provisional Data Subject to Revision ----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Depth to water level, feet below land surface
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Altitude, feet above mean sea level
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CURRENT STATUS OF THE MOHAVE GROUND SQUIRREL

PHILIP LEITNER,[1] California State University-Stanislaus, Endangered Species Recovery Program, 1900 N. Gateway Boulevard, #101, Fresno, CA 93727, USA

ABSTRACT: The Mohave ground squirrel (*Spermophilus mohavensis*) is found only in the western Mojave Desert of California. Although it is listed as Threatened by the State of California, there is little published information regarding its current distribution and status. I have assembled a comprehensive database covering unpublished field studies, surveys, and incidental observations conducted over the 10-year period from 1998-2007. This database contains records of 1140 trapping sessions, only 102 of which were successful in capturing ≥1 Mohave ground squirrels. In addition, there are 96 incidental observations in which the species was detected. An analysis of these 198 positive records identifies 4 core areas that continue to support relatively abundant Mohave ground squirrel populations and 4 other areas in which there are multiple recent records of the species. Although the southern portion of the range has been most intensively sampled, the only recent occurrences there are from a single core population on Edwards Air Force Base plus an additional 4 detections from Victor Valley. There are extensive areas within the geographic range where the status of the species is unknown, especially on the China Lake Naval Air Weapons Station and Fort Irwin. I present recommendations for surveys in areas where no recent studies have been carried out. I also identify potential corridors between known populations and recommend studies to determine if these connections are actually occupied by the species. Finally, I indicate conservation measures needed to ensure that known populations and corridors are adequately protected from habitat loss and degradation.

TRANSACTIONS OF THE WESTERN SECTION OF THE WILDLIFE SOCIETY 44:11-29

Key words: Mohave ground squirrel, *Spermophilus mohavensis*, California, Mojave Desert, threatened species, core populations, corridors, conservation

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The Mohave ground squirrel (*Spermophilus mohavensis*) is found only in the western Mojave Desert of California (Best 1995). Its historic range (Figure 1) totaled about 20,000 km² (Gustafson 1993). It has been found from the area of Palmdale and Victorville in the south to Owens Lake in the north. The eastern escarpment of the Sierra Nevada forms much of the western boundary of its range, while in the east its distribution extends to the Mojave River Valley and to the Fort Irwin military reservation. This region has experienced rapid growth over the past few decades. Urban development in the Antelope Valley, Indian Wells Valley, and along the Mojave River from Victorville to Barstow has resulted in a human population in excess of 700,000. Three large military bases conduct extensive training and testing operations. Much of the western Mojave Desert is used for motorized outdoor recreation, mining, and livestock grazing. There is an expanding transportation infrastructure, including highways, railroads, airports, pipelines, and electric transmission lines. Recent government policies have stimulated great interest in siting renewable energy facilities in this region, especially wind farms and solar installations.

Because of these multiple development pressures, there has been significant and on-going loss of wildlife habitat in the western Mojave Desert as well as widespread habitat degradation and fragmentation. There has been concern about the conservation status of the Mohave ground squirrel since 1971, when it was first listed as Rare under the California Endangered Species Act (CESA). After the reauthorization of CESA in 1984, the species was classified as Threatened. Its subsequent regulatory history has been highly controversial. In 1993, the California Fish and Game Commission acted to remove it from the list of threatened species, a decision that was set aside in 1997 following judicial review. A petition to list the Mohave ground squirrel under the federal Endangered Species Act (ESA) was rejected by the US Fish and Wildlife Service in 1995. The US Fish and Wildlife Service is currently (2008) reviewing a new petition to list the species as endangered under the ESA.

In 2006, the US Bureau of Land Management (BLM) approved the West Mojave Plan, which was designed to conserve a number of sensitive species throughout the western Mojave Desert, with special emphasis on the desert tortoise (*Gopherus agassizii*) and Mohave ground squirrel (Bureau of Land Management 2006). The alternative version of the plan as adopted established a Mohave Ground Squirrel Conservation Area consisting of 6,988 km² of public lands managed by the BLM. (Fig. 1) These conservation measures do not apply to private and military lands within the historic range of the species.

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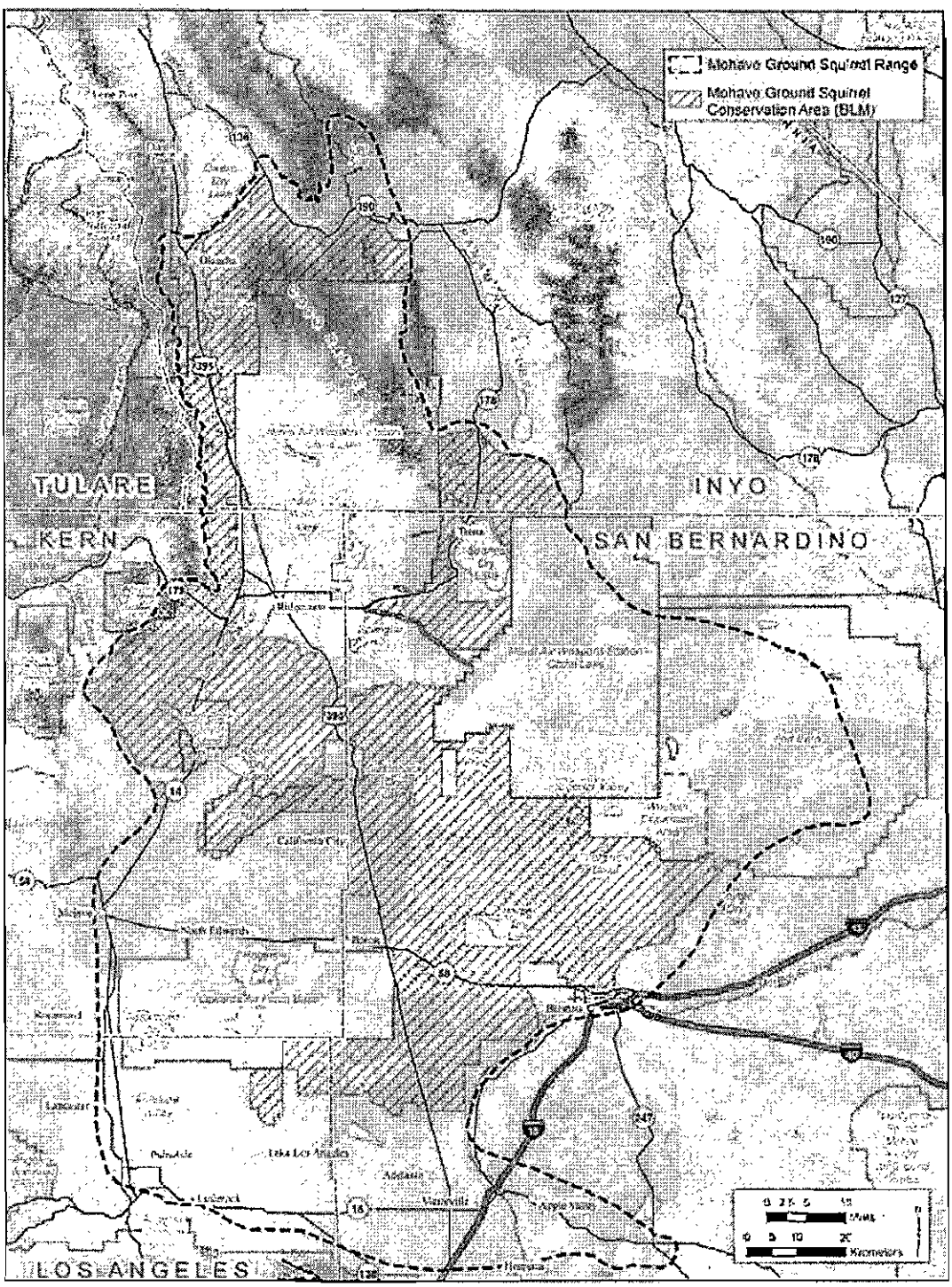

Figure 1. The historic range of the Mohave ground squirrel in the western Mojave Desert of California, with important place names indicated. The Mohave Ground Squirrel Conservation Area is shown as established in the West Mojave Plan (U.S. Bureau of Land Management (2005).

Although the Mohave ground squirrel has been designated as a state-listed species since 1971 and has been the foeus of a major conservation planning effort by the BLM, there is still little published information on its distribution, abundanee, and population trends. Brooks and Matchett (2002) reviewed 19 reported studies of the speeies, eovering the period from 1918 to 2001. Only 2 of these studies were published in seientifie journals. Since this review by Brooks and Matehett, a great deal of new information has become available, most of it unpublished. Two radiotelemetry studies deseribing home range dynamics and juvenile dispersal werc reeently published in peer-reviewed journals (Harris and Leitner 2004, 2005). Sevcral state and federal ageneies, as well as private conservation groups, have sponsored field researeh designed to determine the status of the species in particular areas. In addition, thc California Department of Fish and Game (CDFG) requires trapping surveys at proposed development sites according to a prescribed protoeol (CDGF 2003).

This paper brings together the data from unpublished field studies and surveys eonducted during the 10-year period from 1998-2007. I have obtained reports for all sponsored research surveys and have reeeived information on protocol trapping surveys from many consulting biologists. The information presented here includes both positive records documenting Mohave ground squirrel oeeurrence and negative results from trapping surveys in whieh the speeies was not detected. The objectives of this review are to:

1. Document the geographie distribution of Mohave ground squirrel occurrences,
2. Summarize the distribution and relative intensity of survey efforts,
3. Identify important areas and corridors for eonservation based on available occurrenee data, and
4. Reeommend areas where additional survey effort is needed.

METHODS

I utilized 4 sources of information regarding the distribution and occurrence of the Mohave ground squirrel during the period 1998-2007: the California Natural Diversity Database, regional field studies, protocol trapping at proposed development sites, and ineidental observations as reported by field biologists.

The California Natural Diversity Database (CNDDB) is a state-wide inventory of the status and locations of rare species and natural eommunities. The CDFG produces and regularly updates this computerized catalog, which eontains records of occurrence submitted by state and federal agencies, consulting firms, and individual biologists. It eontains positive records of oeeurrence only and generally does not inelude data documenting the absenee of a speeies from a partieular loeality.

The CNDDB eontainеd a total of 293 oeeurrenee reeords for the Mohave ground squirrel as of August 4, 2007 (CNDDB 2007). Twenty-eight new oecurrenees were submitted during the period from 1998-2007 and there were also 2 new reeords at previously known loeations for the speeies. Thcse reeords were obtained from regional field studies, protoeol trapping, and incidental observations. I incorporated these 30 reeords into the data base used in this analysis.

A number of regional field studies have been eonducted during the past 10 years, many of them funded by publie ageneies and private conservation groups. I have reviewed 19 unpublished reports that deseribe the results of such trapping surveys and have also obtained data from several biologists whose surveys have not been documented in formal reports (Appendix A).

The third source of data was trapping surveys carried out at proposed development sites, as required by the CDFG (CDFG 2003). The CDFG guidelines speeify that surveys be eondueted on proposed project sites that support desert scrub vegetation and are within or adjacent to the Mohave ground squirrel geographie range. Thc surveys must be carried out by a qualified biologist operating under authority of a Memorandum of Understanding (MOU) with CDFG. The protocol mandates an initial visual survey of the project sitc. If no Mohave ground squirrel is detected visually, live-trapping is required for up to 3 sessions of 5 consecutive days eaeh. The trapping sessions must be conducted during the periods March 15-April 30, May 1-31, and June 15-July 15. Trapping grids normally consist of 100 traps arranged in a 4x25 array (linear projects) or in a 10x10 array (other projects).

If a Mohave ground squirrel is deteeted on the site, the projeet proponent must apply to CDFG for an Ineidental Take Permit and provide compensation, usually in the form of mitigation lands. If no Mohave ground squirrel is observed or eaptured, it is not necessarily evidenee that the site is unoccupied or is not potential habitat. Nonetheless, CDFG will stipulate for a period of 1 year that the project site harbors no Mohave ground squirrels. Most protocol surveys carried out in recent years have not resulted in detection of the species.

In order to obtain the results of protocol trapping surveys for the period 1998-2007, I contacted all biologists who were known to possess an MOU authorizing take of Mohave ground squirrels. The great majority responded by providing their survey data, including dates of trapping sessions, coordinates of grid centers, number of trap-days of sampling effort, and

whether or not Mohave ground squirrels were deteeted. Although I have not obtained data for all protoeol trapping efforts, I have eolleeted a total of 943 reeords that represent 426,615 trap-days of sampling. I estimate that I obtained records for >95% of thc total protoeol trapping effort for the period 1998-2007.

I have classified as ineidental observations all reports by biologists who observed or eaptured Mohave ground squirrels incidental to other field studies. This category ineludes visual and auditory deteetions, captures made while trapping for other species, and highway mortalities.

For regional and protocol surveys, a record is defined as a single trapping session, usually consisting of 5 successive days. Records from trapping surveys can be negative, with no Mohave ground squirrel captures, or positive, indicating a session with at least 1 capture. On the other hand, records from incidental observations were always positive, indicating the deteetion of at least 1 Mohave ground squirrel at a specific location. Table 1 lists the number of records obtained for this review from regional surveys, protocol trapping, and incidental observations. The regional and protoeol trapping surveys provided a total of 1,038 negative reeords, as compared to only 102 trapping sessions in which at least 1 Mohave ground squirrel was captured. Although the regional studies involved only 21.6% of the total trapping effort, they aceounted for 69.6% of the positive reeords. On the other hand, the protoeol surveys made up 78.4% of trapping effort, but eontributed only 30.4% of Mohave ground squirrel detections.

Table 1. A summary of the data sourees used for this review. For regional and protocol surveys, a record is defined as a single trapping session (usually 5 days) at a specific grid loeation. If no Mohave ground squirrels were deteeted, such reeords were considered negative, while a positive reeord was a trapping session in whieh >1 Mohave ground squirrels were eaptured. For incidental observations, all records are positive. Each reeord indieates the detection of >1 Mohave ground squirrels at a partieular location. The sampling effort for regional and protoeol surveys is caleulated as the number of traps operated per day times the number of days per trapping session summed over all trapping sessions.

Type of Data	Total	Positive Reeords	Trap-days
Regional Surveys	197	71	111,710
Protocol Surveys	943	31	426,615
Incidental Observations	96	96	N/A
Totals	1,236	198	538,325

I entered data from all sourees into an Excel spreadsheet and then imported that into an Aecess database. This permitted data to be manipulated and extraeted through the query process. A series of base maps covering the geographic range of the Mohave ground squirrel was developed using Geographie Information System (GIS) teehniques. All records, both positive and negative, were plotted on these digital maps for visual analysis. In this way, the distribution of Mohave ground squirrel occurrences for the last 10 years could be visualized in relation to the distribution of sampling effort.

RESULTS

General Distribution of Mohave Ground Squirrel Records

The geographic distribution of both positive and negativc Mohave ground squirrel reeords over the period 1998-2007 is shown in Figure 2. There has been no attempt at either systematie or random range-wide sampling and the records tend to bc concentratcd in certain well-dcfined rcgions. Thc great majority of trapping effort has been condueted in the southern part of the geographic range, south of State Route 58. In spite of this very intensive sampling, Mohave ground squirrels have been deteeted in only 2 areas south of State Route 58, one on Edwards Air Foree Base and the other in the vicinity of Victorville. The northern part of the geographic range is in Inyo County, where almost all trapping has been eondueted in the Coso region on China Lake Naval Air Weapons Stations (China Lake NAWS) and in the vieinity of Olaneha and Haiwee Reservoir. Outside of these 2 areas, there have been only 5 widely scattered detections in the entire northern part of the range over the past 10 years. In the central part of the range, from Ridgecrest south to State Route 58, most positive reeords have been concentrated in 6 distinct regions. Trapping in the vicinity of Ridgecrest has resulted in the eapture of a number of Mohave ground squirrels and there are abundant reeords for the extensive valley (Little Dixie Wash) between Inyokern and Red Rock Canyon State Park. To the south, there is a cluster of deteetions assoeiated with the Desert Tortoise Natural Area (DTNA) and another in the Pilot Knob region east of Cuddeback Dry Lake. There are many records from the broad plateau that lies north of Barstow (Coolgardie Mesa and Superior Valley) and there are also several deteetions in the area just north of Boron.

It is clear that there are extensive areas within the range of the Mohave ground squirrel that have not been

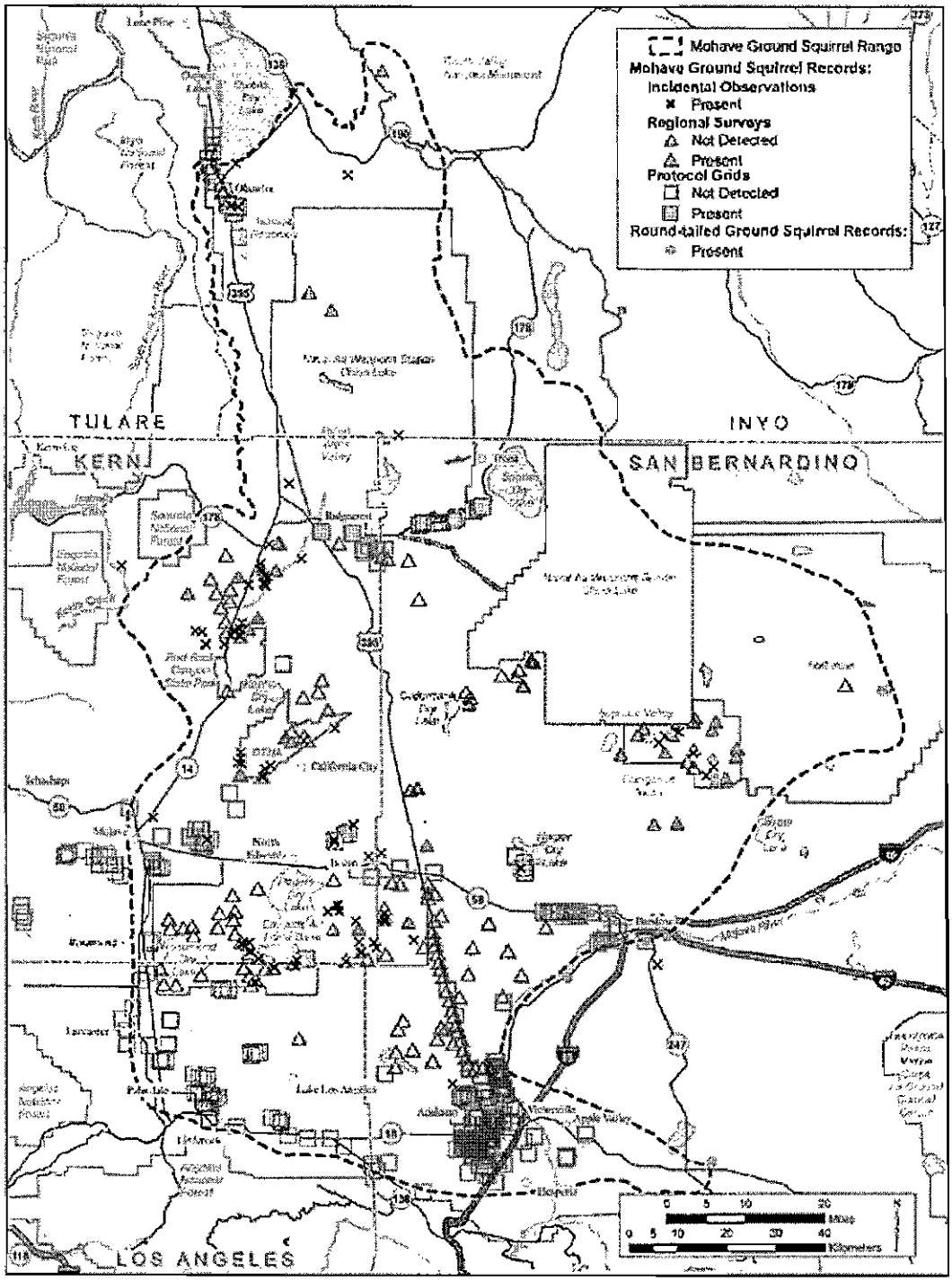

Figure 2. The geographic distribution of all Mohave ground squirrel records for the period 1998-2007. A total of 1,236 records are plotted, which inelude 1,140 trapping sessions eonducted for regional and protocol surveys and 96 incidental observations. Solid triangles and squares represent locations of trapping grids at which >1 Mohave ground squirrels were captured. Crosses show sites of the 96 incidental observations at which >1 Mohave ground squirrels were detected.

effeetively sampled. Figure 3 shows a 10x10 km sampling frame superimposed on the geographic range, with the sampling units eolor-coded to indicate the number of records (both positive and negative) for each unit during the period 1998-2007. It can be seen that sampling efforts have been heavily concentrated in the southern part of the range, especially to the west and north of Victorville, in the Palmdale-Laneaster area, around Barstow, and in the vicinity of the town of Mojave. Approximately 67 of all trapping efforts have been located in the region from State Route 58 south. The lack of reeent data on Mohave ground squirrel occurrence in the northern part of the range is obvious, but there are also large gaps in our knowledge in the central part of the range. Except for the Coso area, there have been no surveys on either the north or south ranges of China Lake NAWS during the past 10 years. The Western Expansion Area of Fort Irwin has been well sampled using a randomized method of selecting trapping sites. However, only 1 trapping attempt has been recorded elsewhere on Fort Irwin over the period 1998-2007. In contrast, Edwards Air Force Base has sponsored extensive surveys on a randomized sampling basis, so that the distribution of the speeies is known there in great detail.

Regional Analysis of Mohave Ground Squirrel Records

In this section, I present detailed information on Mohave ground squirrel distribution and abundance during the period 1998-2007 for a number of regions within the geographic range. This regional analysis is supported by a series of 7 maps that are available as Supplemental Online Material at the website of The Western Section of The Wildlife Society: http://tws-west.org/transactions/TWSWS_Transactions_directory.htm

Inyo County.—Inyo County includes the northernmost region oceupied by Mohave ground squirrels. Reeords are eoneentrated in the area between Olancha and Haiwee Reservoir and in the Coso Range, within the China Lake NAWS. The species has been detected at 5 protocol trapping grids to the south of Olancha, beginning in 2002. Mohave ground squirrel populations at 2 sites in the Coso Range have been monitored by regular spring trapping sessions. Animals have been captured on both grids at every trapping occasion. In 2007, a Mohave ground squirrel was captured at Lee Flat just inside the boundary of Death Valley National Park, which marks the northernmost record for the speeies. The other 4 records for Inyo County are incidental observations, including an individual that was stuck by a vehiele in northern Panamint Valley, several kilometers east of the generally-accepted limits of the range.

Ridgecrest Area.—Trapping has been conducted at 10 grids in the vicinity of Ridgecrest, with Mohave ground squirrels detected at 5 of these sites. In addition, protocol trapping at 10 grids along State Route 178 east of Ridgecrest in 2006 yielded captures at 6 locations. However, no Mohave ground squirrels were captured in 2002 at 2 sites in the Spangler Hills southeast of Ridgecrest.

Little Dixie Wash.—The Little Dixie Wash region is a broad valley extending from Inyokern southwest to Red Rock Canyon State Park. Two extensive trapping studies have detected Mohave ground squirrels throughout this region. In 2002, the species was captured at 6 of 7 grids widely seattered across this valley. There have been more than 20 incidental observations as well, suggesting that Mohave ground squirrels are widely distributed here. In 2007, a visual sighting established the first record to the west of the mountain crest in the Kelso Creek drainage.

Fremont Valley to Edwards Air Force Base.—The Fremont Valley extends northeast from the vicinity of Cantil toward Garloek and Johannesburg. No Mohave ground squirrels have been detected here during the past 10 years, despite trapping efforts at 6 grids. There are 13 positive records around the periphery of the DTNA and out a few kilometers to the east. No trapping has been carried out in the interior of the DTNA, but it is likely that Mohave ground squirrels are present there as well. Two ineidental records exist for the area just to the north and east of the town of Mojave, but repeated protocol trapping efforts here have been unsuccessful. Finally, there are 10 trapping records and incidental observations in the area to the north of Boron and Kramer Junction. These records suggest a fairly widespread population across this region.

Wind Farm Area Southwest of Mojave.—Protocol trapping surveys have been conducted at 24 grids located on wind energy development sites southwest of the town of Mojave. Although this area is outside the generally-accepted boundaries of the geographic range, much of the habitat here seems suitable for the species. To date, no Mohave ground squirrels have been detected during these trapping efforts. Two recent visual observations are listed in the CNDDB, but confirmation through trapping is needed.

Edwards Air Force Base.—Edwards Air Force Base has been carrying out an extensive monitoring program to document the distribution of Mohave ground squirrels within the military reservation. From 2003 through 2007, trapping has been conducted at 40 randomly-located grids across the base, resulting in detection of the species at 6 of these sites. In combination with other trapping efforts and incidental observations, this program has clearly defined the area in which Mohave ground squirrel populations are present.

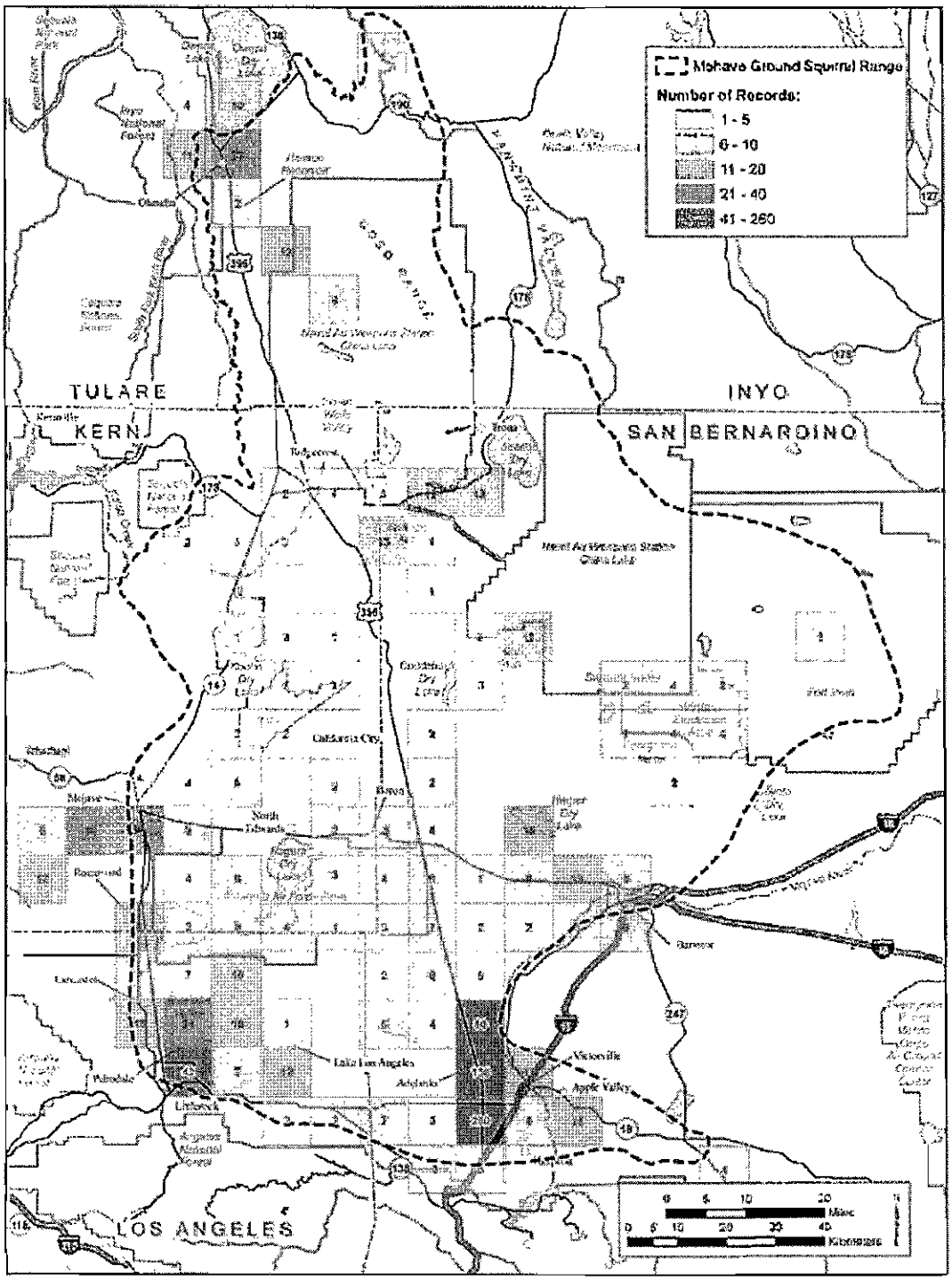

Figure 3. The distribution of sampling effort throughout the historic range of the Mohave ground squirrel for the period 1998-2007. A 10 x 10 kilometer sampling frame is set over the region and the total number of records (both positive and negative) are indicated for each 10 x 10 km block. These records are the trapping sessions conducted for regional and protocol surveys. Incidental observations are not plotted here.

Los Angeles County.—Protocol trapping has been conducted at 52 grid loeations in the desert portion of Los Angeles County during the period 1998-2007, but no Mohave ground squirrels have been detected by this method. The only positive records in Los Angeles County have been 4 deteetions in a small area near Rogers Dry Lake on Edwards Air Force Base.

Victor Valley to Barstow.—Intensive protocol trapping has been eonducted in the Adelanto area and on the western outskirts of Victorville, resulting in the eapture of Mohave ground squirrels at 3 separate locations. The 2 trapping records north of Adelanto plus a visual sighting just to the west suggest the presence of a residual population in this area. Capture of a juvenile female well to the south ncar the interseetion of US 395 and I-15 indieatcs that another population may exist here as well. There have been no rccords east of the Mojave River since 1955 but, as shown in Figure 2, this area has not been effeetively sampled in the last 10 years. Three major trapping studies have been conducted from El Miragc Dry Lake north and east toward Barstow. There have been no deteetions of Mohave ground squirrels over this extensive area.

Barstow Area.—There were only 3 Mohave ground squirrel reeords in the Barstow arca during the period 1998-2007. In 2005, a Mohave ground squirrel was observed about 6 km south of Barstow near the city landfill, in an area outside the generally-aceepted range boundary. Two other occurrenccs were doeumented in 2007 to the west of Barstow. Mohave ground squirrels were detected at the edge of an alfalfa field near Harper Dry Lake and 1 was trapped about 10 km west of Hinkley near State Route 58.

Coolgardie Mesa and Superior Valley.—To the north of Barstow is a broad, gently-sloping plateau that extends from Coolgardie Mesa in the south to Superior Valley in the north. Three trapping studies have been conducted in this region over thc past 10 years and all have documented Mohave ground squirrel occurrences. There have also been at least 7 ineidental observations.

Pilot Knob Area.—Trapping studies in the Pilot Knob area, from Cuddeback Dry Lake cast to the boundary of China Lake NAWS, have detcctcd Mohave ground squirrels at 5 different sites.

Contaet Zone with Round-tailed Ground Squirrel

The Mohave ground squirrel and the round-tailed ground squirrel (*Spermophilus tereticaudus*) are closely related (Hafner and Yates 1983). The 2 species are vcry similar in general appearance, the most obvious difference being the much longer tail of the round-tailed ground squirrel. The round-tailed ground squirrel is found throughout the eastern Mojave Desert of California and its geographic range adjoins that of the Mohave ground squirrel. The contaet zone between the 2 speeies extends from Lucerne Valley along the Mojave River to Barstow and then northeast through Fort Irwin (Fig. 4). During the period 1998-2007, a total of 30 round-tailed ground squirrel occurrences have been recorded in this contact zone. Round-tailed ground squirrels are common in the area around Barstow, especially in disturbed habitats. The species has also been observed in Lucerne Valley, near Hodge on the Mojave River, ncar Coyote Dry Lake, and on the eastern side of Fort Irwin. In addition, round-tailed ground squirrels have been deteeted in 2 areas well within the historic range of the Mohave ground squirrel. There have been 5 reports from the Western Expansion Area of Fort Irwin, as much as 24 km inside the generally-aeeepted boundary of the Mohave ground squirrel range. The other area of interest is west of Barstow along State Route 58, where round-tailed ground squirrels werc trapped at 8 sites in 2006 and 2007. Individuals of both spccies wcre captured on a grid about 20 km west of the range boundary. Laek of historieal baseline data makes it impossible to determine if the round-tailed ground squirrel is actively extending its distribution at the expense of the Mohave ground squirrel.

DISCUSSION

General Distribution of Mohave Ground Squirrel Records

It is important to be clear about the significance of positive rccords that indicate Mohave ground squirrel presence during thc past 10 years. These positive records are highly concentrated in just 8 distinct areas, in whieh 93.4% (185/198) of all Mohave ground squirrel oceurrenees have been documented (Fig. 5). It is of interest that there are at least some Mohave ground squirrel records prior to 1998 in eaeh of these 8 areas, suggesting that reeent trapping effort has focuscd on areas with historie reeords. However, much of the Mohave ground squirrel range has never been surveyed. This is especially true in Inyo County, which includes large areas where no surveys or protocol trapping have ever been earried out. The situation is similar, although not as extreme, in the central part of the range. Thcre are 6 areas here where recent evidenee indicates the presenec of Mohave ground squirrel populations. However, little trapping has been conducted outside the areas that support these known populations. In the southern part of the range, south of State Route 58, there has been much greater trapping effort and the sampling has been much more widely distributed. Even here, there are still a few rclativcly restrieted areas that have not been surveyed since 1998. In all 3 seetions of the Mohave ground squirrel range, additional populations may well

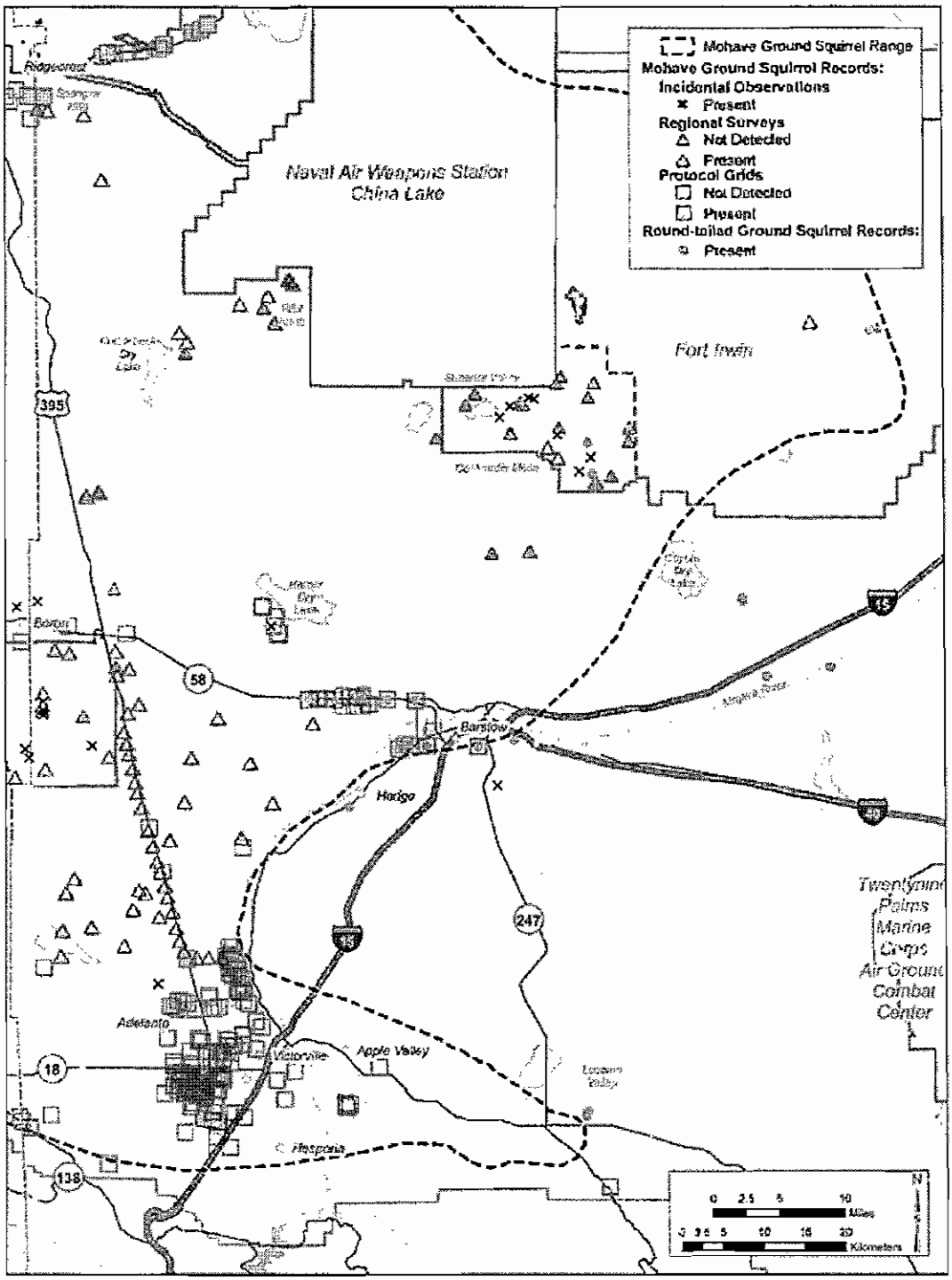

Figure 4. The contact zone between the Mohave ground squirrel and the round-tailed ground squirrel. This shows the distribution of trapping sessions conducted for regional and protocol surveys, as well as incidental observations of Mohave ground squirrels. Circles show sites where round-tailed ground squirrels have observed or captured. These data cover the period 1998-2007.

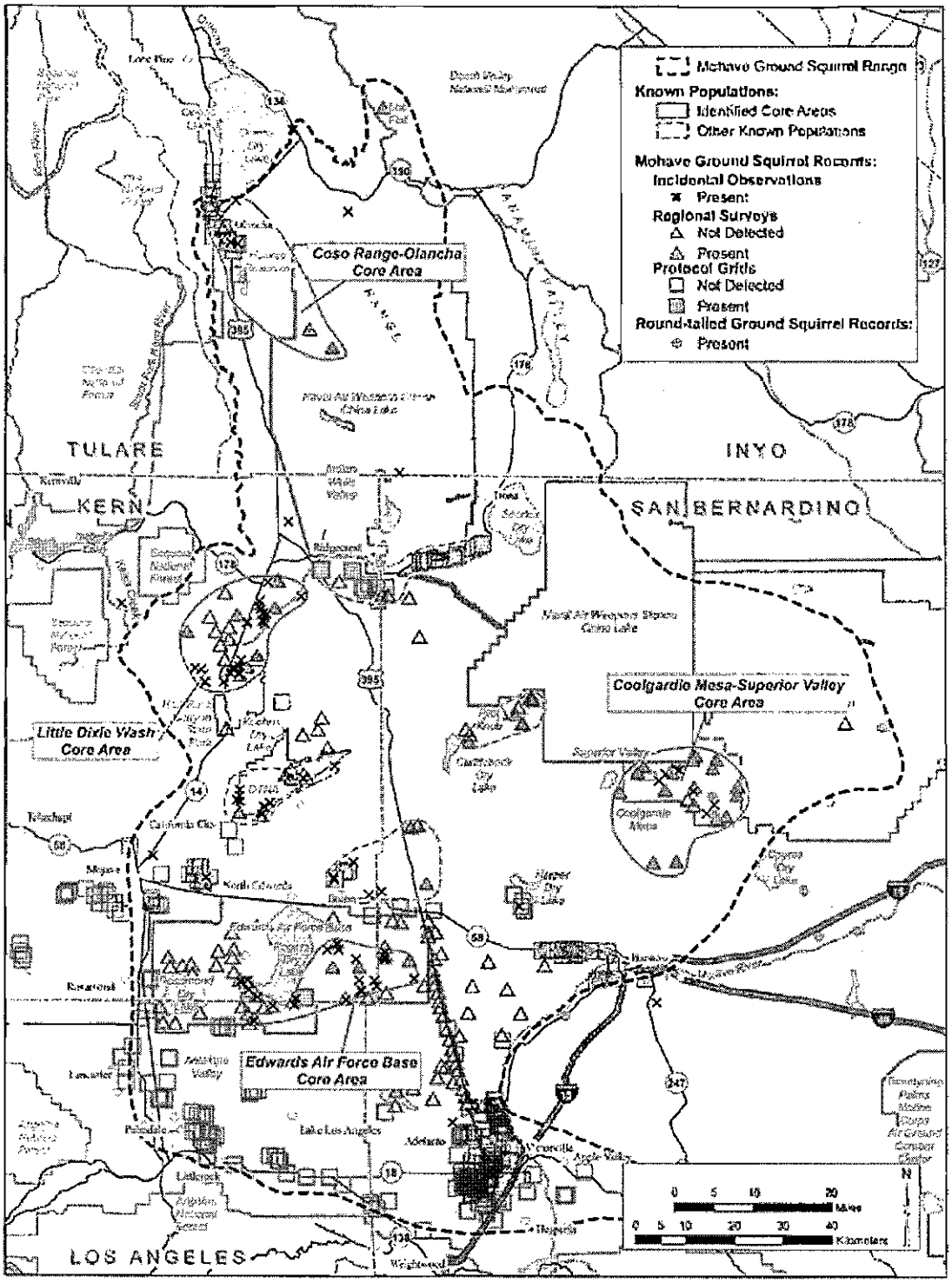

Figure 5. The geographic locations of currently known Mohave ground squirrel populations, including 4 identified core populations and 4 other populations.

exist outside the 8 areas in whieh reeent positive reeords are eoncentrated.

The significanee of negative records must be interpreted earefully as well. When regional surveys or protoeol trapping fail to deteet Mohave ground squirrels, it is important to keep in mind that this in itself eannot be used as evidenee that the speeies is absent or that the area does not provide habitat for the speeies. There are a number of other eireumstanees that could result in laek of eaptures, such as loeating a trapping grid in a small pateh of marginal or unsuitable habitat, abundance of natural foods that reduee the attraetiveness of the bait, low population density due to a scries of dry years, or trapping early in the season before juveniles begin their dispersal movements. If trapping grids are not randomly sited, it is not valid to infer from a lack of captures at the grid sites that Mohave ground squirrels are absent in the surrounding habitat. Any eonelusions would apply only to the grid sites themselves. In general, the most that ean be coneluded from laek of captures is that the negative results provide no evidence that the speeies is present. However, if repeated trapping efforts over a period of several years fail to deteet Mohave ground squirrels, it beeomes more and more probable that the species is very rare, if not absent, from the study area.

The distribution of trapping effort among private, military, and public land ownerships has been distinetly uneven over the past 10 years. Almost all protocol trapping surveys have been condueted on private lands or on highway rights-of-way, beeause of the regulatory requirement to determine presence or absenee of the Mohave ground squirrel on proposed project sites. Military lands make up about 37% of the land surfaee within the range boundaries, but have been the locations for only 7.4% of all trapping reeords (Table 2). While Edwards Air Foree Base and the Western Expansion Area of Fort Irwin have been sampled intensively, very little trapping effort has been expended on the remainder of Fort Irwin or on China Lake NAWS.

Core Areas

Data eollected over the past 10 years has made it possible to identify 4 areas within the range of the Mohave ground squirrel that still support relatively abundant and widespread populations. These core areas are defined by 3 eriteria. First, there must be evidenee that Mohave ground squirrel populations have persisted for a substantial period of time, on the order of 2-3 decades. Seeond, the species must be currently found at a minimum of 6 locations throughout the area. Third, the total number of individuals deteeted since 1998 must be $\geq$30. The 4 areas that are eurrently known to satisfy these eriteria are Coso/Olancha, Little Dixie Wash, Coolgardie Mesa/Superior Valley, and Edwards Air Force Base (Fig. 5). These 4 eore areas total about 1,672 km^2, or about 8.4% of the entire historic range (Table 3). During the period 1998-2007, there have been 135 positive records in core areas, accounting for 68.2% of the total 198 positive reeords. It is important to emphasize that these identified eore areas are simply the only important population centers that have been identified thus far. There are very likely to be other eore areas in parts of the geographie range that have not been adequately sampled in the last 10 years.

Coso/Olancha Core Area.—China Lake NAWS sponsored field studies of the Coso Hot Springs area

Table 2. An analysis of trapping effort on military lands within the range of the Mohave ground squirrel (MGS) during the period 1998-2007. The number of sites refers to the number of distinct trapping grid loeations, while the number of records is the total number of trapping sessions at all sites, regardless of whether Mohave ground squirrels were captured.

Military Base	Area (km^2)	% MGS Range	No. Sites	No. Records	% Records
China Lake NAWS	4400	22%	2	20	1.8%
Fort Irwin	1800	9%	18	19	1.7%
Edwards AFB	1200	6%	43	43	3.9%
Totals	7400	37%	63	82	7.4%

in 1978 that detected 35 Mohave ground squirrels at a number of sites through trapping and visual observations (Zembal and Gall 1980). In the following year, trapping was carried out at 8 sites throughout the Coso Range and in Rose Valley to the west (Leitner 1980). A total of 124 individual Mohave ground squirrels were eaptured at 7 of the 8 trapping grids. A monitoring program in the Coso Range and Rose Valley from 1988 through 1996 resulted in the capture of over 1400 juvenile and adult Mohave ground squirrels (Leitner and Leitner 1998). Aardahl and Roush (1985) failed to trap the species at a site near Olancha in 1980, but did observe several individuals in the same general area.

During eaeh of the past 7 years (2001-2007), Mohave ground squirrels have been trapped at 2 permanent grids in the Coso Range (Leitner 2001, 2006, 2008). A total of 89 adults have been captured over this period. The species has also been deteeted regularly in the Olancha area, where 29 adult eaptures were reeorded at 5 sites from 2002 to 2005. The Coso/Olaneha area elearly qualifies as an important eore area, based upon the persistenee of Mohave ground squirrel populations here for 30 years, the presenee of the species at many sites, and the number of animals deteeted.

Little Dixie Wash Core Area.—Mohave ground squirrels were first recorded in the Little Dixie Wash region in 1931 and 1932, when speeimens were collected at Freeman Junetion and on the east side of Walker Pass (CNDDB Occ. #21 and #52). Trapping surveys by the BLM in 1974 and 1975 resulted in 17 eaptures at 7 loealities in Dove Springs Canyon and Bird Spring Canyon (CNDDB Occ. #84, #174, #175, and #191-194). Aardahl and Roush (1985) reported capturing a total of 94 individuals (both adults and juveniles) at 6 grids in the Little Dixie Wash area from April-July 1980. Finally, trapping at 2 sites in 1994 yielded a total of 12 Mohave ground squirrels (Scarry et al. 1996). Additional occurrences were documented at 10 other loeations in this region during the period 1974-1990. Thus, Mohave ground squirrels were recorded at 27 locations in the Little Dixie Wash area from 1931 through 1996.

Reeent field studies have been condueted in the Little Dixie Wash area during the period 2002-2007. In 2002, a total of 19 adult Mohave ground squirrels were eaptured at 6 of 7 grid loeations (Leitner 2008). This was followed by more intensive studies at the Freeman Guleh site, with a total of 108 adults and 101 juveniles reeorded from 2003 through 2007. Pit-fall trapping for reptiles in the Dove Springs Open Area resulted in the incidental capture of 6 Mohave ground squirrels at 4 different locations. Finally, a trapping survey in 2007 yielded 7 adults at 4 grids near the northern boundary of Red Rock Canyon State Park (Leitner 2008). The Little Dixie Wash core area has supported Mohave ground squirrel populations for over 70 years and recent reeords confirm that the species is abundant and widespread here.

Coolgardie Mesa/Superior Valley Core Area.—Mohave ground squirrels were first discovered in 1977 north of Barstow on the plateau that stretches from Coolgardie Mesa north to Superior Valley (Wessman 1977). The species was deteeted at 9 loeations, with 1-3 individuals reported at eaeh site. In 1980, Aardahl and Roush (1985) trapped 2 grids in Superior Valley, eapturing 24 individuals (both adults and juveniles). A total of 24 Mohave ground squirrels were subsequently reeorded at 5 sites in 1981 and 1982 (CNDDB Oee. #206-210). In 1994, 4 individuals were eaptured at 2 trapping grids in this area (Searry et al. 1996).

Two reeent surveys have been earried out in the Coolgardie Mesa/Superior Valley area. Trapping at 4 sites in 2002 yielded Mohave ground squirrel captures at eaeh loeation for a total of 14 adults. A more extensive survey of the Western Expansion Area of Fort Irwin in 2006 and 2007 resulted in 36 individuals eaptured at 10 of 12 trapping grids. There is elear evidenee that Mohave ground squirrels have persisted here for at

Table 3. The estimated sizes of the 4 identified core areas, as measured in square kilometers and in acres. The number of positive Mohave ground squirrel records for the period 1998-2007 is given for eaeh eore area.

Core Area Name	Area (km²)	Area (acres)	Number of Positive Records
Coso / Olancha	452	111,690	33
Little Dixie Wash	393	97,172	44
Coolgardie Mesa / Superior Valley	516	127,450	23
Edwards Air Force Base	311	76,761	35

least 30 years. Reeent surveys have doeumented that the species was present at 14 of 16 trapping sites and in several eases a substantial number of individuals was captured. This core area is at the eastern edge of thc range and several captures or observations of animals that appear to be round-tailed ground squirrels have been recorded here. The potential for hybridization in this area between these 2 closely related speeies should be earefully investigated.

Edwards Air Force Base Core Area.—A number of surveys have doeumented the past oceurrenee of Mohave ground squirrels on Edwards Air Force Base, with most reeords loeated to the north, east, and south of Rogers Dry Lake. The earliest observations were made during the period 1973-1977 in the area south of Rogers Dry Lake (CNDDB Oec. #265). Seventeen Mohave ground squirrels were trapped in 1988 at 3 sites northeast of Rogers Dry Lake (ERC Environmental and Energy Serviees Company 1989). Additional trapping in 1993 in this same area resulted in eaptures of many adults and juveniles (Deal et al. 1993, Mitchell et al. 1993). Surveys at Mt. Mesa to the southeast of Rogers Dry Lake yielded 9 Mohave ground squirrels in 1992 (U.S. Fish & Wildlife Serviee 1993) and over 30 individuals in 1993 (Deal et al. 1993, Mitchell et al. 1993). A total of 13 Mohave ground squirrels were trapped in 1994 at 4 sites in halophytie saltbush serub to the south and southwest of Rogers Dry Lake (Bueseher et al. 1995). The speeies was reeorded at 4 additional loeations to the east of Rogers Dry Lake during the period 1981-1991.

Recent field studies have elearly delineated a core area on Edwards Air Force Base, with all Mohave ground squirrel reeords sinee 2000 localized to the east and south of Rogers Dry Lake. Trapping surveys were condueted at 19 grids in this area during the period 2000-2005, with a total of 29 adults and 4 juveniles captured at 8 of the study sites (Vanherweg 2000, Leitner 2003, Air Foree Field Test Center 2004 and 2005, Leitner 2008). Although no captures were reeorded at the 8 grids south of Rogers Dry Lake in 2005, Mohave ground squirrels are known to be present here, based upon 6 ineidental observations. Mohave ground squirrel populations have been known in this eore area for over 30 years and the large numbers of reeent records demonstrate that the species is still well-distributed here. To date, this is the only eore area known to exist in the southern part of the range.

Conneetivity between Core Areas

The 4 eore areas are isolated from each other by distanees ranging from 48-80 km. It will be an important conservation goal to ensure suffieient eonneetivity between them to allow gene flow. Figure 6 shows the loeations of the eore areas with possible habitat eorridors illustrated.

The potential corridor between the Coso/Olaneha core area and Little Dixie Wash follows a narrow strip of public land between the Sierra escarpment and the boundary of China Lake NAWS. It is not clear that this corridor is effective because of its minimal width (1-4 km) and beeause there is no firm evidenee that it is eurrently occupied. There may well be an alternative eorridor through China Lake NAWS, but the U.S. Navy eannot guarantee permanent proteetion and, again, there is no proof that continuous Mohave ground squirrel populations exist here.

Connectivity between the Little Dixie Wash eore area and Edwards Air Foree Base is most likely to be aehieved by proteetion of a north-south habitat eorridor along US Highway 395. This linkage appears to provide the highest quality habitat eonnection between these 2 core areas. It would also help to provide eonneetivity among other known populations in the Ridgeerest area, the DTNA, Pilot Knob, and the Boron region. There are no recent Mohave ground squirrel reeords along much of this corridor, so it is not clear that it is eurrently oceupied.

The most effeetive eorridor linking the Coolgardie Mesa/Superior Valley eore area with other populations is probably thorough the Pilot Knob region. This eonnection is relatively short and erosses apparently good quality habitat. Although the most direet route is aeross a eorner of the China Lake NAWS, publie lands just to the south could also provide connectivity. An alternative linkage would be to the southwest toward Edwards Air Foree Base across the broad valley centered on Harper Dry Lake. However, this route is lower in elevation, receives less rainfall, and habitat here is of lesser quality.

The laek of data coneerning the existenee or status of Mohave ground squirrel populations in these potential corridors is a serious problem. While these routes may seem geographically appropriate in providing linkages between populations, it will be important to conduet field studies to determine whether or not they are aetually oeeupied.

MANAGEMENT RECOMMENDATIONS

The database of Mohave ground squirrel reeords that has been assembled for this analysis should be maintained by CDFG or another suitable publie agency and made available for on-line aeeess by interested researehers, ageney staff, consultants, and conservation organizations. An interactive mapping system should be developed in eonjunction with the database, so that

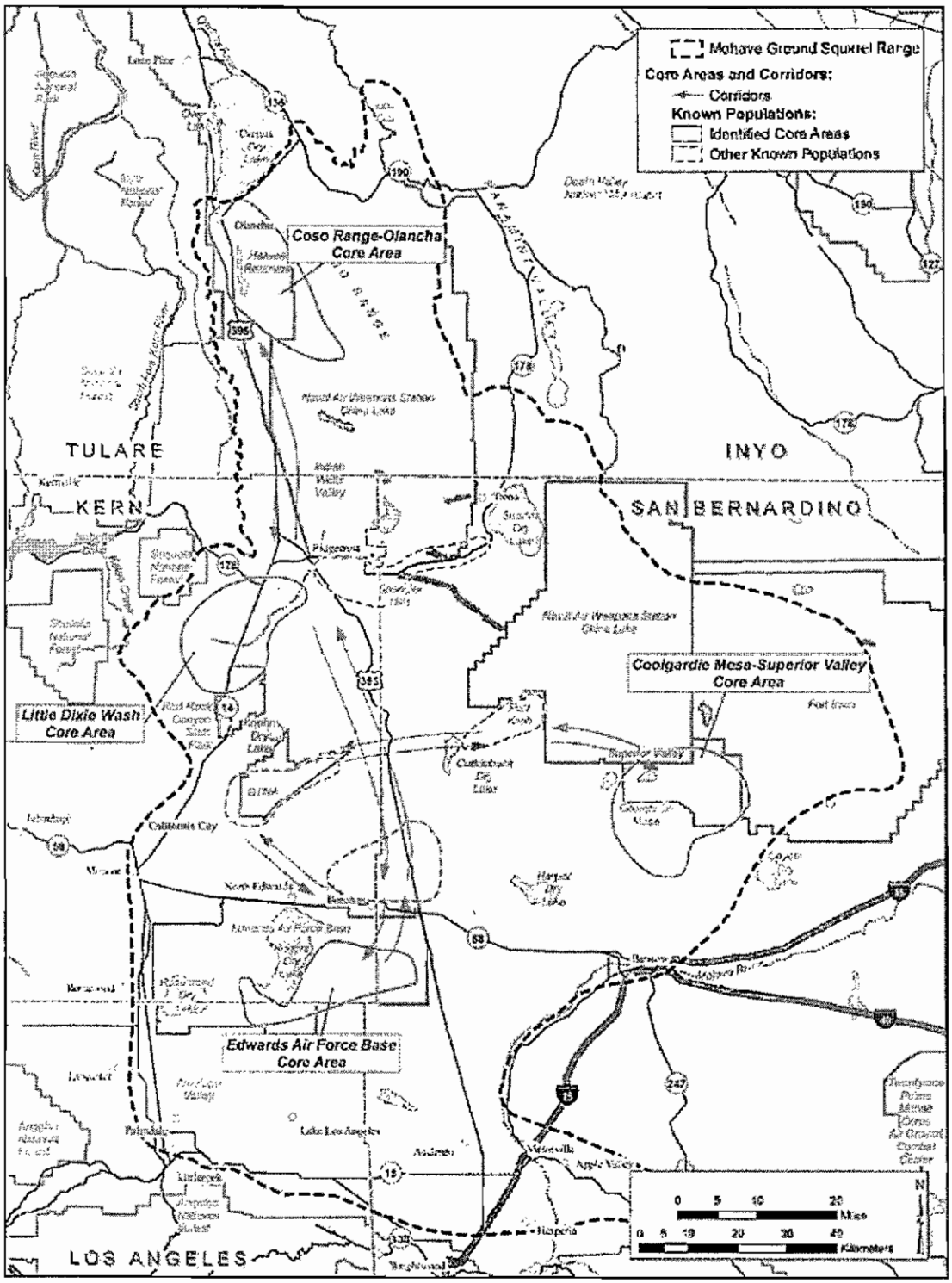

Figure 6. Map of potential habitat corridors that may provide connectivity between identified core areas and other known Mohave ground squirrel populations.

users could obtain map displays of areas of interest. As recommended by Brooks and Matchett (2002), a system should be developed to collect both positive and negative data on a continuing basis from biologists, ageney staff, and consultants. It would be desirable to issue an annual report with appropriate maps to provide updated information on Mohave ground squirrel oceurrences.

It is clear that additional field surveys are urgently needed to provide a more comprehensive picture of Mohave ground squirrel occurrence and status throughout its range. It is also clear that surveys to date have been scriously inadequate in documenting patterns of Mohave ground squirrel distribution because trapping sites have for the most part not been selected according to a randomized seheme. In the absence of a randomized sampling procedure, the results of sueh surveys apply only to the trapping site and cannot be extrapolated to the general region. It is recommended that a range-wide survey be conducted, with sampling locations determined on a randomized basis. Since this would be an expensive and logistically difficult undertaking, it may be more realistic to develop a survey plan that could be implemented gradually over several years as funding becomes available. The first step could be to establish a sampling frame covering the entire Mohave ground squirrel range, with the area divided into sampling units, perhaps 10 x 10 km or smaller. When a survey is planned for a particular region, trapping grids could be sited in sampling units chosen at random. This system would be quite flexible, since it could be implemented at different scales as appropriate for the purposes of the sponsoring organization. It is recommended that the Mohave Ground Squirrel Technical Advisory Group develop such a range-wide randomized sampling plan and submit it to the CDFG, BLM, and military installations for consideration.

It appears to be of critical importanee to acquire more data coneerning the status of the species in the northern and eentral parts of its range (Fig. 7). Surveys should be carried out on both the north and south ranges of China Lake NAWS, on Fort Irwin, and along the eorridor north from EAFB to Ridgecrest. There has

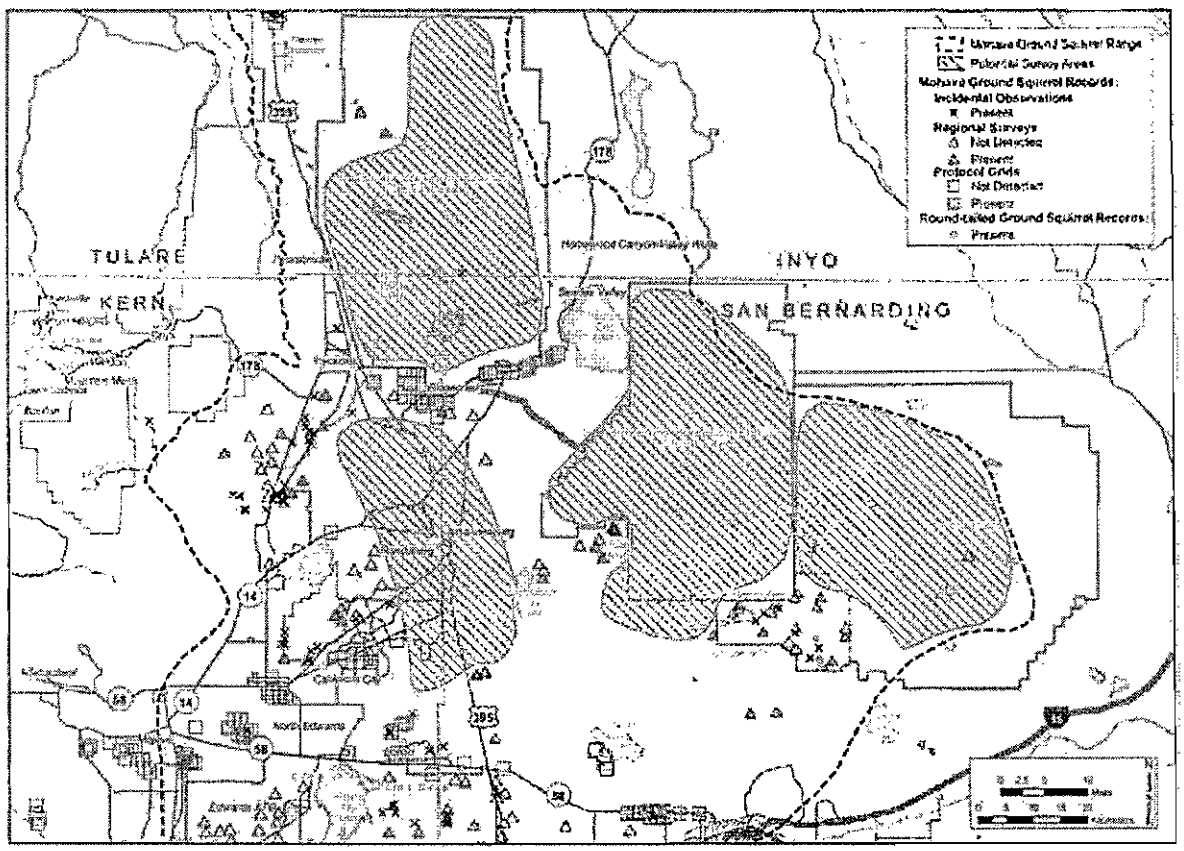

Figure 7. Potential survey areas in the northern and central portions of the Mohave ground squirrel range, showing their geographie relationship to survey efforts during the period 1998-2007.

been little or no sampling during the period 1998-2007 in these 4 extensive areas. A careful study plan should be developed to ensure adequate survey coverage within each area.

It is also recommended that field surveys be conducted in key areas within the southern range of the species in order to determine whether viable populations still remain outside of EAFB (Fig. 8). The trapping surveys could focus on public lands, but a serious attempt should be made to obtain permission for surveys on private lands as well. Because of the pace of development within the southern portion of the Mohave ground squirrel range, this exploratory work needs to be carried out with urgency.

The region southwest of the town of Mojave was identified in the West Mojave Plan (BLM 2003) as the Kern County Study Area. The West Mojave Plan recommended that Mohave ground squirrel trapping surveys be conducted here on public lands. The possibility was left open that the boundary of the Mohave Ground Squirrel Conservation Area could be modified to include these public lands if justified by survey results. A number of protocol trapping surveys have recently been carried out on private land in this area in connection with proposed wind energy projects. Although no Mohave ground squirrels have been trapped thus far, there have been 2 reported visual detections. It is recommended that additional trapping surveys be authorized on both public and private property, especially in areas that have not yet been investigated.

More information is needed about the relationship between the Mohave ground squirrel and its sibling species, the round-tailed ground squirrel. There are recent reports of round-tailed ground squirrel occurrences well inside the historic Mohave ground squirrel range to the west of Barstow and in the Western Expansion Area of Fort Irwin. Round-tailed ground squirrels seem well-adapted to land disturbance in agricultural areas and on the outskirts of towns. It is possible that hybridization is occurring where the 2 species come in contact. It is

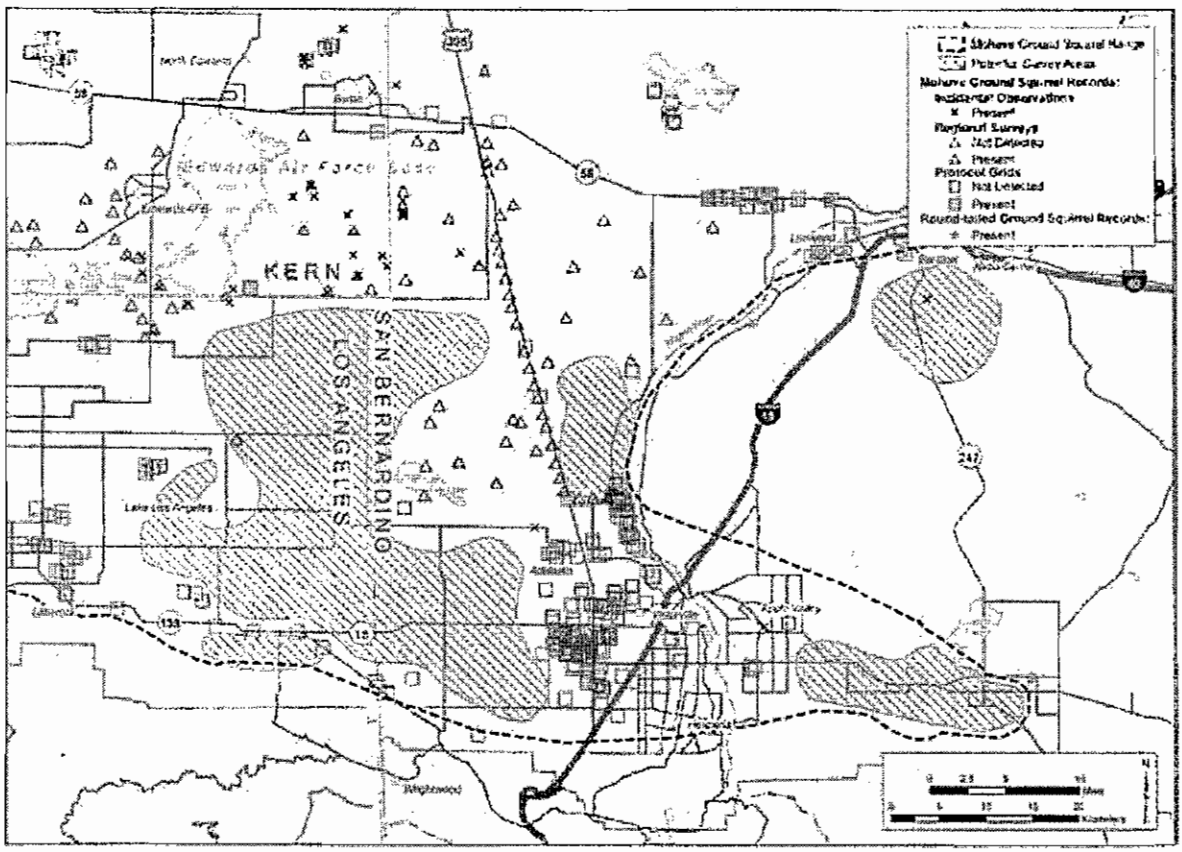

Figure 8. Potential survey areas in the southern portion of the Mohave ground squirrel range, showing their geographic relationship to survey efforts during the period 1998-2007.

reeommended that surveys be earried out to determine the eurrent eastern limits of the Mohave ground squirrel range and establish a baseline so that future westward movement of round-tailed ground squirrels eould be detected. It is also reeommended that genetic studies be undertaken in the contact zone to investigate the extent of hybridization where the 2 species eo-oecur.

Although trapping is the most effective method of identifying areas that support Mohave ground squirrel populations, it is recommended that eertain modifieations of current trapping proeedures be tested. Trained wildlife dogs could be used to screen large areas and help foeus trapping efforts on the most promising sites. Most trapping efforts to date have used large 100-trap grids. It would be of interest to try other trap configurations, such as more numerous small grids (for example, arrays of 20 traps) and long (>1000 meter) linear transeets. Finally, such alternative trap configurations could be used in combination with adaptive cluster sampling (Thompson et al. 1998), whieh would allow for inereased effort adjacent to a sampling unit where a Mohave ground squirrel is deteeted.

It is essential to protect BLM lands within the Mohave Ground Squirrel Conservation Area by enforcing the 1% limitation on ground disturbance (Fig. 1) called for under the West Mojave Plan (BLM 2005). In addition, acquisition of private lands that are included within the boundaries of the Conservation Area should be pursued aggressively, espeeially land that is ineluded within known eore areas. Finally, there may be important Mohave ground squirrel populations outside the Conservation Area that could protected by acquisition of private lands and careful management of BLM lands. The area stretching from the DTNA southeast toward Boron may be a good example of sueh a conservation opportunity.

ACKNOWLEDGMENTS

This review was funded by Edwards Air Force Base through a subcontract with Tetra Tech, Inc. I am very grateful to Shannon Collis and Donald Clark for their support and guidance throughout this project. Carrie Munill provided outstanding assistanee with the GIS mapping effort. A number of biologists generously eontributed their data, ineluding Mark Allaback, Patriek Kelly, Tom Kucera, David Laabs, Denise LaBerteaux, Steven Myers, Michael O'Farrell, William Vanherweg, and Ryan Young. The following agencies and organizations gave permission to inelude data collected in studies that they sponsored: California Department of Fish and Game, California Department of Parks and Recreation, California Department of Transportation, Desert Tortoise Preserve Committee, Edwards Air Foree Base, Fort Irwin, and US Bureau of Land Management. I greatly appreeiate the helpful eomments on the manuseript by B. Cypher, J. Harris, and 1 anonymous reviewer.

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APPENDIX 1
UNPUBLISHED REPORTS OF REGIONAL TRAPPING STUDIES CONDUCTED DURING THE PERIOD 1998-2007

Air Force Flight Test Center. 2004. Inventory for Presenee of Mohave Ground Squirrel at Edwards Air Force Base, California. 26 pp. + appendices.

Air Foree Flight Test Center. 2005. Inventory for Presenee of Mohave Ground Squirrel at Edwards Air Force Base, California. Draft Report. 16 pp. + appendiees.

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Leitner, Philip. 2008. Monitoring Mohave ground squirrel populations in the Coso region, 2002-2005. Prepared for California Department of Fish and Game, Habitat Conservation Planning Branch, Sacramento, CA and Eastern Sierra and Inland Deserts Region, Ontario, CA. Endangered Species Recovery Program, California State University, Stanislaus, Fresno, CA. 20 pp + appendices.

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Starr, Michael J. 2001. Population Distribution and Abundance of Antelope Ground Squirrels (*Ammospermophilus leucurus*) and Mohave Ground Squirrels (*Spermophilus mohavensis*), in the Western Mojave Desert, Spring 2001. 9 pp. + appendix.

Starr, Michael J. 2006. Population Distribution and Abundance of Antelope Ground Squirrels (*Ammospermophilus leucurus*) and Mohave Ground Squirrels (*Spermophilus mohavensis*), in the Western Mojave Desert, Spring 2006. 10 pp. + appendix.

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5. ENVIRONMENTAL CONSIDERATIONS

a. General description of site characteristics and potential environmental issues (existing information)

Special or sensitive species and habitats

The Project site is located outside of Desert Tortoise Wildlife Management Areas (DWMA's), however recent surveys indicate that the potential exists for desert tortoise to occur on the Project site. In addition, a Mojave Ground Squirrel finding has been recorded approximately four miles from this site. Desert tortoise and the Mojave Ground Squirrel are both federal- and state-listed threatened species. Federally-listed species fall under the jurisdiction of the U.S. Fish and Wildlife Service (Service). We will consult with BLM wildlife specialists to determine the nature of any survey and ultimate mitigation requirements.

A variety of state species of special concern have the potential to occur on the Project site, including the burrowing owl, LeConte's Thrasher, several species of bats and prairie falcon. However, these species have not been encountered in recent pedestrian surveys of the site.

Our approach to evaluating the potential for special-status botanical species to occur within or in the vicinity of the proposed project is to conduct an initial habitat assessment with the objective of characterizing the habitats within and adjacent to the Project site and assessing the suitability of these habitats to support special-status plant species. Based on the habitat assessment, protocol-level surveys would be conducted during the blooming period only for targeted special-status botanical species with potential to occur in the suitable habitats identified within or adjacent to the Project site. Targeted botanical surveys in suitable habitats would be conducted as appropriate, until construction of the Project is completed.

Special land use designations

In 1976 Congress passed the Federal Land Policy and Management Act (FLPMA) which directed the BLM to inventory and develop a comprehensive land use management plan for the 25-million acre California Desert Conservation Area (CDCA). Land management in the CDCA is governed by the CDCA Plan (BLM 1980) as amended, which provides the management framework for the BLM's multiple-use mandate. Operating under a multiple-use mandate and as defined by FLPMA, BLM is responsible for managing public land and their various resource values to achieve the following objectives:

- utilize resources in the combination that will best meet the needs of present and future generations,

State of California

Memorandum

: "Div. Chiefs - IFD, BDD, NED, & WMD
Reg. Mgrs. - Regions 1, 2, 3, 4, & 5

Date : October 17, 1995

From : Department of Fish and Game

Subject :
Staff Report on Burrowing Owl Mitigation

I am hereby transmitting the Staff Report on Burrowing Owl Mitigation for your use in reviewing projects (California Environmental Quality Act [CEQA] and others) which may affect burrowing owl habitat. The Staff Report has been developed during the last several months by the Environmental Services Division (ESD) in cooperation with the Wildlife Management Division (WMD) and regions 1, 2, and 4. It has been sent out for public review and redrafted as appropriate.

Either the mitigation measures in the staff report may be used or project specific measures may be developed. Alterative project specific measures proposed by the Department divisions/regions or by project sponsors will also be considered. However, such mitigation measures must be submitted to ESD for review. The review process will focus on the consistency of the proposed measure with Department, Fish and Game Commission, and legislative policy and with laws regarding raptor species. ESD will coordinate project specific mitigation measure review with WMD.

If you have any questions regarding the report, please contact Mr. Ron Rempel, Supervising Biologist, Environmental Services Division, telephone (916) 654-9980.

COPY Original signed by C.F. Raysbrook

C. F. Raysbrook
Interim Director

Attachment

cc: Mr. Ron Rempel
Department of Fish and Game
Sacramento

STAFF REPORT ON BURROWING OWL MITIGATION

Introduction

The Legislature and the Fish and Game Commission have developed the policies, standards and regulatory mandates to protect native species of fish and wildlife. In order to determine how the Department of Fish and Game (Department) could judge the adequacy of mitigation measures designed to offset impacts to burrowing owls *(Speotyto cunicularia;* A.O.U. 1991) staff (WMD, ESD, and Regions) has prepared this report. To ensure compliance with legislative and commission policy, mitigation requirements which are consistent with this report should be incorporated into: (1) Department comments to Lead Agencies and project sponsors pursuant to the California Environmental Quality Act (CEQA); and (2) other authorizations the Department gives to project proponents for projects impacting burrowing owls.

This report is designed to provide the Department (including regional offices and divisions), CEQA Lead Agencies and project proponents the context in which the Environmental Services Division (ESD) will review proposed project specific mitigation measures. This report also includes preapproved mitigation measures which have been judged to be consistent with policies, standards and legal mandates of the Legislature,. the Fish and Game Commission and the Department's public trust responsibilities. Implementation of mitigation measures consistent with this report are intended to help achieve the conservation of burrowing owls and should compliment multi-species habitat conservation planning efforts currently underway. The *Burrowing Owl Survey Protocol and Mitigation Guidelines* developed by The California Burrowing Owl Consortium (CBOC 1993) were taken into consideration in the preparation of this staff report as were comments from other interested parties.

A range-wide conservation strategy for this species is needed. Any range-wide conservation strategy should establish criteria for avoiding the need to list the species pursuant to either the California or federal Endangered Species Acts through preservation of existing habitat, population expansion into former habitat, recruitment of young into the population, and other specific efforts.

California's burrowing owl population is clearly declining and, if declines continue, the species may qualify for listing. Because of the intense pressure for urban development within suitable burrowing owl nesting and foraging habitat (open, flat and gently rolling grasslands and grass/shrub lands) in California, conflicts between owls and development projects often occur. Owl survival can be adversely affected by disturbance and foraging habitat loss even when impacts to individual birds and nests/burrows are avoided. Adequate information about the presence of owls is often unavailable prior to project approval. Following project approval there is no legal mechanism through which to seek mitigation other than avoidance of occupied burrows or nests. The absence of standardized survey methods often impedes consistent impact assessment.

Burrowing Owl Habitat Description

Burrowing owl habitat can be found in annual and perennial grasslands, deserts, and arid scrublands characterized by low-growing vegetation (Zarn 1974). Suitable owl habitat may also include trees and shrubs if the canopy covers less than 30 percent of the ground surface. Burrows are the essential component of burrowing owl habitat. Both natural and artificial burrows provide protection, shelter, and nests for burrowing owls (Henny and Blus 1981). Burrowing owls typically use burrows made by fossorial mammals, such as ground squirrels or badgers, but also may use man-made structures such as cement culverts; cement, asphalt, or wood debris piles; or openings beneath cement or asphalt pavement.

Occupied Burrowing Owl Habitat

Burrowing owls may use a site for breeding, wintering, foraging, and/or migration stopovers. Occupancy of suitable burrowing owl habitat can be verified at a site by detecting a burrowing owl, its molted feathers, cast pellets, prey remains, eggshell fragments, or excrement at or near a burrow entrance. Burrowing owls exhibit high site fidelity, reusing burrows year after year (Rich 1984, Feeney 1992). A site should be assumed occupied if at least one burrowing owl has been observed occupying a burrow there within the last three years (Rich 1984).

CEQA Project Review

The measures included in this report are intended to provide a decision-making process that should be implemented whenever-there is potential for-an action or project to adversely affect burrowing owls. For projects subject to the California Environmental Quality Act (CEQA), the process begins by conducting surveys to determine if burrowing owls are foraging or nesting on or adjacent to the project site. If surveys confirm that the site is occupied habitat, mitigation measures to minimize impacts to burrowing owls, their burrows and foraging habitat should be incorporated into the CEQA document as enforceable conditions. The measures in this document are intended to conserve the species by protecting and maintaining viable' populations of the species throughout their range in California. This may often result in protecting and managing habitat for the species at sites away from rapidly urbanizing/developing areas. Projects and situations vary and mitigation measures should be adapted to fit specific circumstances.

Projects not subject to CEQA review may have to be handled separately since the legal authority the Department has with respect to burrowing owls in this type of situation is often limited. The burrowing owl is protected from "take" (Section 3503.5 of the Fish and Game Code) but unoccupied habitat is likely to be lost for activities not subject to CEQA.

Legal Status

The burrowing owl is a migratory species protected by international treaty under the Migratory Bird Treaty Act (MBTA) of 1918 (16 U.S.C. 703-711). The MBTA makes it unlawful to take, possess, buy, sell, purchase, or barter any migratory bird listed in 50 C.F.R. Part 10, including feathers or other parts, nests, eggs, or products, except as allowed by implementing regulations (50 C.F.R. 21). Sections 3505, 3503.5, and 3800 of the California Department of Fish and Game Code prohibit the take, possession, or destruction of birds, their nests or eggs. To avoid violation of the take provisions of these laws generally requires that project-related disturbance at active nesting territories be reduced or eliminated during the nesting cycle (February 1 to August 31). Disturbance that causes nest abandonment and/or loss of reproductive effort (e.g., killing or abandonment of eggs or young) may be considered "take"' and is potentially punishable by fines and/or imprisonment.

The burrowing owl is a Species of Special Concern to California because of declines of suitable habitat and both localized and statewide population declines. Guidelines for the Implementation of the California Environmental Quality Act (CEQA) provide that a species be considered as endangered or "rare" regardless of appearance on a formal list for the purposes of the CEQA (Guidelines, Section 15380, subsections b and d). The CEQA requires a mandatory findings of significance if impacts to threatened or endangered species are likely to occur (Sections 21001 (c), 2103; Guidelines 15380, 15064, 15065). To be legally adequate, mitigation measures must be capable of "avoiding the impact altogether by not taking a certain action or parts of an action"; "minimizing impacts by limiting the degree or magnitude of the action and its implementation"; "rectifying the impact by repairing, rehabilitating or restoring the impacted environment"; "or reducing or eliminating the impact over time by preservation and maintenance operations during the life of the action" (Guidelines, Section 15370). Avoidance or mitigation to reduce impacts to less than significant levels must be included in a project or the CEQA lead agency must make and justify findings of overriding considerations.

Impact Assessment

Habitat Assessment

The project site and a 150 meter (approximately 500 ft.) buffer (where possible and appropriate based on habitat) should be surveyed to assess the presence of burrowing owls and their habitat (Thomsen 1971, Martin 1973). If occupied habitat is detected on or adjacent to the site, measures to avoid, minimize, or mitigate the project's impacts to the species should be incorporated into the project, including burrow preconstruction surveys to ensure avoidance of direct take. It is also recommended that preconstruction surveys be conducted if the species was not detected but is likely to occur on the project site.

Burrowing Owl and Burrow Surveys

Burrowing owl and burrow surveys should be conducted during both the wintering and nesting seasons, unless the species is detected on the first survey. If possible, the winter survey should be conducted between December 1 and January 31 (when wintering owls are most likely to be present) and the nesting season survey should be conducted between April 15 and July 15 (the peak of the breeding season). Surveys conducted from two hours before sunset to one hour after, or from one hour before to two hours after sunrise, are also preferable.

Surveys should be conducted by walking suitable habitat on the entire project site and (where possible) in areas within 150 meters (approx. 500 ft.) of the project impact zone. The 150-meter buffer zone is surveyed to identify burrows and owls outside of the project area which may be impacted by factors -such as noise and vibration (heavy equipment, etc.) during project construction. Pedestrian survey transects should be spaced to allow 100 percent visual coverage of the ground surface. The distance between transect center lines should be no more than 30 meters (approx. 100 ft.) and should be reduced to account for differences in terrain, vegetation density, and ground surface visibility. To effectively survey large projects (100 acres or larger), two or more surveyors should be used to walk adjacent transects. To avoid impacts to owls from surveyors, owls and/or occupied burrows should be avoided by a minimum of 50 meters (approx. 160 ft.) wherever practical. Disturbance to occupied burrows should be avoided during all seasons.

Definition of Impacts

The following should be considered impacts to the species:

- Disturbance within 50 meters (approx. 160 ft.) Which may result in harassment of owls at occupied burrows;
- Destruction of natural and artificial burrows (culverts, concrete slabs and debris piles that provide shelter to burrowing owls); and
- Destruction and/or degradation of foraging habitat adjacent (within 100 m) of an occupied burrow(s).

Written Report

A report for the project should be prepared for the Department and copies should be submitted to the Regional contact and to the Wildlife Management Division Bird and Mammal Conservation Program. The report should include the following information:

- Date and time of visit(s) including name of the qualified biologist conducting surveys, weather and visibility conditions, and survey methodology;

- Description of the site including location, size, topography, vegetation communities, and animals observed during visit(s);

- Assessment of habitat suitability for burrowing owls;

- Map and photographs of the site;

- Results of transect surveys including a map showing the location of all burrow(s) (natural or artificial) and owl(s), including the numbers at each burrow if present and tracks, feathers, pellets, or other items (prey remains, animal scat);

- Behavior of owls during the surveys;

- Summary of both winter and nesting season surveys including any productivity information and a map showing territorial boundaries and home ranges; and

- Any historical information (Natural Diversity Database, Department regional files? Breeding Bird Survey data, American Birds records, Audubon Society, local bird club, other biologists, etc.) regarding the presence of burrowing owls on the site.

Mitigation

The objective of these measures is to avoid and minimize impacts to burrowing owls at a project site and preserve habitat that will support viable owls populations. If burrowing owls are detected using the project area, mitigation measures to minimize and offset the potential impacts should be included as enforceable measures during the CEQA process.

Mitigation actions should be carried out from September 1 to January 31 which is prior to the nesting season (Thomsen 1971, Zam 1974). Since the timing of nesting activity may vary with latitude and climatic conditions, this time frame should be adjusted accordingly. Preconstruction surveys of suitable habitat at the project site(s) and buffer zone(s) should be conducted within the 30 days prior to construction to ensure no additional, burrowing owls have established territories since the initial surveys. If ground disturbing activities are delayed or suspended for more than 30 days after the preconstruction survey, the site should be resurveyed.

Although the mitigation measures may be included as enforceable project conditions in the CEQA process, it may also be desirable to formalize them in a Memorandum of Understanding (MOU) between the Department and the project sponsor. An MOU is needed when lands (fee title or conservation easement) are being transferred to the Department.

Specific Mitigation Measures

1. Occupied burrows should not be disturbed during the nesting season (February 1 through August 3 1) unless a qualified biologist approved by the Department verifies through non-invasive methods that either: (1) the birds have not begun egg-laying and incubation; or (2) that juveniles from the occupied burrows are foraging independently and are capable of independent survival.

2. To offset the loss of foraging and burrow habitat on the project site, a minimum of 6.5 acres of foraging habitat (calculated on a 100 m {approx. 300 ft.} foraging radius around the burrow) per pair or unpaired resident bird, should be acquired and permanently protected. The protected lands should be adjacent to occupied burrowing owl habitat and at a location acceptable to the Department. *Protection of additional habitat acreage per pair or unpaired resident bird may be applicable in some instances.* The CBOC has also developed mitigation guidelines (CBOC 1993) that can be incorporated by CEQA lead agencies and which are consistent with this staff report.

3. When destruction of occupied burrows is unavoidable, existing unsuitable burrows should be enhanced (enlarged or cleared of debris) or new burrows created (by installing artificial burrows) at a ratio of 2:1 on the protected lands site. One example of an artificial burrow design is provided in Attachment A.

4. If owls must be moved away from the disturbance area, passive relocation techniques (as described below) should be used rather than trapping. At least one or more weeks will be necessary to accomplish this and allow the owls to acclimate to alternate burrows.

5. The project sponsor should provide funding for long-term management and monitoring of the protected lands. The monitoring plan should include success criteria, remedial measures, and an annual report to the Department.

Impact Avoidance

If avoidance is the preferred method of dealing with potential project impacts, then no disturbance should occur within 50 meters (approx. 160 ft.) of occupied burrows during the nonbreeding season of September 1 through January 31 or within 75 meters (approx. 250 ft.) during the breeding season of February 1 through August 31. Avoidance also requires that a minimum of 6.5 acres of foraging habitat be *permanently* preserved contiguous with occupied burrow sites for each pair of breeding burrowing owls (with or without dependent young) or single unpaired resident bird. The configuration of the protected habitat should be approved by the Department.

Passive Relocation - With One-Way Doors

Owls should be excluded from burrows in the immediate impact zone and within a 50 meter (approx. 160 ft.) buffer zone by installing one-way doors in burrow entrances. One-way doors (e.g., modified dryer vents) should be left in place 48 hours to insure owls have left the burrow before excavation. Two natural or artificial burrows should be provided for each burrow in the project area that will be rendered biologically unsuitable. The project area should be *monitored daily for one* week to confirm owl use of burrows before excavating burrows in the immediate impact zone. Whenever possible, burrows should be excavated using hand tools and refilled to prevent reoccupation. Sections of flexible plastic pipe should be inserted into the tunnels during excavation to maintain an escape route for any animals inside the burrow.

Passive Relocation - Without One-Way Doors

Two natural or artificial burrows should be provided for each burrow in the project area that will be rendered biologically unsuitable. The project area should be *monitored daily until the owls have relocated to the new burrows.* The formerly occupied burrows may then. be excavated. Whenever possible, burrows should be excavated using hand tools and refilled to prevent reoccupation. Sections of flexible plastic pipe should be inserted into burrows during excavation to maintain an escape route for any animals inside the burrow.

Projects Not Subject to CEQA

The Department is often contacted regarding the presence of burrowing owls on construction sites, parking lots and other areas for which there is no CEQA action or for which the CEQA process has been completed. In these situations, the Department should seek to reach agreement with the project sponsor to implement the specific mitigation measures described above. If they are unwilling to do so, passive relocation without the aid of one-way doors is their only option based upon Fish and Game Code 3503.5.

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Reproductive Success of Burrowing Owls Using Artificial Nest Burrows in Southeastern Idaho

by Bruce Olenick

Artificial nest burrows were implanted in southeastern Idaho f'or burrowing owls in the spring of 1986. These artificial burrows consisted of a 12" x 12" x 8" wood nesting chamber with removable top and a 6 foot corrugated and perforated plastic drainage pipe 6 inches in diameter (Fig. 1). Earlier investigators claimed that artificial burrows must provide a natural dirt floor to allow burrowing owls to modify the nesting tunnel and chamber. Contrary to this, the artificial burrow introduced here does not allow owls to modify the entrance or tunnel. The inability to change the physical dimensions of the burrow tunnel does not seem to reflect the owls' breeding success or deter them from using this burrow design.

In 1936, 22 artificial burrows were inhabited. Thirteen nesting attempts yielded an average clutch size of 8.3 eggs per breeding pair. Eight nests successfully hatched at least 1 nestling. In these nests, *67 of 75* eggs hatched (59.3%) and an estimated 61 nestlings (91.0%) fledged. An analysis of the egg laying and incubation periods showed that incubation commenced well after egg laying bega. Average clutch size at the start of incubation was 5.6 eggs. Most eggs tended to hatch synchronously in all successful nests.

Although the initial cost of constructing this burrow design may be slightly higher than a burrow consisting entirely of wood, the plastic pipe burrow offers the following advantages: (1) it lasts several field seasons without rotting or collapsing; (2) it may prevent or retard predation; (3) construction time is minimal; (4) it is easy to transport, especially over long distances; and (5) the flexible tunnel simplifies installation. The use of this artificial nest burrow design was highly successful and may prove to be a great resource technique for future management of this species.

For additional information on constructing this artificial nest burrow, contact Bruce Olenick, Department of Biology, Idaho State University, Pocatello, ID 83209.

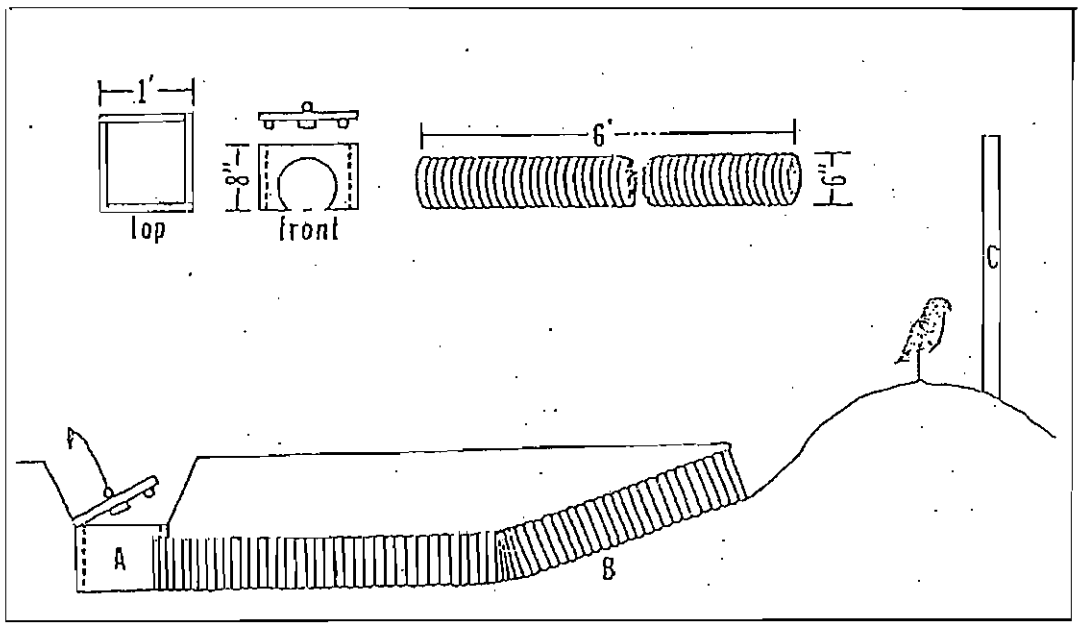
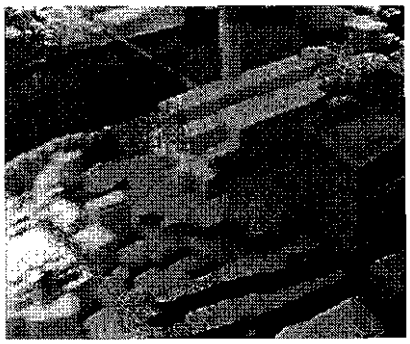


fig. 1 Artificial nest burrow design for burrowing owls Entire unit (including nest chamber) is buried 12" – 18" below ground for maintaining thermal stability of the nest chamber. A= nest chamber, B = plastic pipe. C = perch.

ATTACHMENT A

Related Topics:
Deserts | US Federal Government | Threatened & Sensitive Species | Sustainable Development | Land Use Planning | Solar Energy | Energy Development Programs | Energy & Environment | Electric Power Plants | Oil & Gas Industry

SOLAR ENERGY PROPOSAL CRITICIZED LUCERNE VALLEY: CHEVRON'S PLANS COULD DISTURB THREATENED SPECIES, SOME SAY. OTHERS SAY OLD FARMLAND IS A BETTER CHOICE.



By DAVID DANELSKI THE PRESS-ENTERPRISE
Publication: The Press Enterprise (Riverside, CA.)
Date: Friday, July 31 2009

Outside a Lucerne Valley elementary school auditorium, local resident Chuck Bell pointed to the vast desert to the north and explained that much of it is played-out farmland that would be ideal for solar energy development.

Water is no longer available for farming there because water tables have dropped or farmers have sold water rights, said Bell, a former San Bernardino County official who is now secretary of a Lucerne Valley economic development group.

"It's all disturbed (from farming)," Bell said Wednesday evening. "It's got infrastructure. It's near roads and power lines. ... And it can't be used for anything else."

Inside the auditorium, an official with Chevron Energy Solutions, a subsidiary of the Chevron USA oil company, described plans to blanket 516 acres of undisturbed public land with photovoltaic panels that would generate enough solar electricity for 20,000 homes. The property is north of the San Bernardino Mountains, about eight miles east of the school.

Greg Thomsen, a U.S. Bureau of Land Management program manager, expleined to an audience of about 60 people - mostly desert residents - that the bureau is committed to sustainable energy development on public land, subject to proper environmental review.

Last month, U.S. Interior Secretary Ken Salazar announced that the government would streamline the application process for alternative-energy projects on federal lands in the West to meet new demands for clean power.

The Chevron official, Ralph Hollenbacher, a senior technical service manager based in San Francisco, said it's more expedient for Chevron to develop solar energy on public land because the company can do "one-stop shopping" with the BLM to get access to large amounts of land and get environmental reviews completed.

Buying private land would require dealing with multiple landowners and still require environmental reviews, Hollenbacher said after the meeting. The cost of acquiring private land isn't a factor, he said.

Chevron's Lucerne Valley proposal is one of 159 wind and solar projects proposed on California public land managed by the BLM, a division of the U.S. Department of Interior under Salazar's leadership.

Some people at the meeting said they were concerned about the cumulative effect of a rush to develop energy on undisturbed land that is home to threatened desert tortoises and other wildlife.

Several also agreed with Bell, secretary of Lucerne Valley Economic Development Associates, saying the energy developments should be built on former farms and other private land that has less value as wildlife habitat.

"It's a land rush for renewable energy," said Gary Hatfield of Mountain Home Village, a small community east of Redlands. "Are we going to trade our public resources, places used by animals, for questionable energy technologies that 20 years from now may be obsolete?"

There isn't an endless supply of untouched habitat, one speaker said.

"Mother Nature is not making more pristine lands," said April Sall, a preserve manager for The Wildlands Conservancy, an Oak Glen-based group that protects open spaces through privately funded purchases. "We have to be careful with what we have."

No one in the audience voiced clear support of the project.

The evening meeting at Lucerne Valley Elementary School sought public comments for the Chevron project for preparation of an environmental study expected to be released later this year.

Reach David Danelski at 951-368-9471 or ddanelski@PE.com

In addition, make sure to read these articles:

SOLAR ENERGY PROPOSAL CRITICIZED LUCERNE VALLEY: CHEVRON'S PLANS COULD DISTURB T...
How Can I Use Solar Energy to Power My Office?
Federal solar funds could shine on state
Solar energy incentives spiking in South Walton
Renewable energy development at Fort Irwin would provide enough power for milita...
SHADOW CAST ON DESERT SOLAR ARRAYS
MONUMENT PLAN CREATES RIFT MOJAVE DESERT: THE SCHWARZENEGGER ADMINISTRATION FEAR...

The Detroit News www.detnews.com

March 22, 2010 http://detnews.com/article/20100322/LIFESTYLE14/3220320

California environmentalists, growers agree on farmland reuse for solar

JASON DEAREN AND TRACIE CONE
Associated Press

LEMOORE, Calif. -- Cash-strapped farmers in California's agricultural heartland and environmentalists at odds over water rights and wildlife protections finally agree on something: that thousands of acres of cracked, salty farmland is the perfect site for a sprawling utility-scale solar farm.

The 47 square-miles of land proposed for the Westlands Solar Park in remote Kings and Fresno counties is just one of dozens of unfinished solar projects in California, but renewable energy analysts say it is a rare one that enjoys the broad support of environmental groups such as the Sierra Club, powerful agriculture interests and state government.

Thousands of solar panels would be located on and near the salty-white, fallowed farm land, most of which is owned by the Westlands Water District, the largest such district in the country comprised of 600,000 acres of San Joaquin Valley farmland.

Once completed, the first chunk of solar proposed for the site -- the total size of which is roughly that of San Francisco -- could generate up to 1 gigawatt of power, or enough to energize up to one million homes.

"I think a better fit (for the land) is farming, but we have what we have and you go from there," Westlands spokesman Sarah Woolf said.

The embrace of solar power as a new cash crop comes at a time when the district is struggling with mounting debt.

A decade ago, Westlands floated a bond to buy 100,000 acres of farm land where poor drainage had created a salt buildup called selenium, making the land unusable for growers. But with the salty land came water rights, so Westlands bought it so it could divert the water allocations to more productive farms.

Since then, drought and environmental issues have cut revenue to Westlands by reducing the amount of water it can sell to members, who range from corporate giant Harris Farms to family farming operations. Over the past two years, Westlands has tripled farmers' assessments to repay bonds when they can least afford it.

Westlands now sees solar power as a way to put the land back to work.

"(Solar is) a natural fit, it works," Woolf said. "But the underlying motivation is we need to figure out a way to repay the debt."

Now, with Mojave Desert solar projects shrinking in number because of recent proposed legislation by U.S. Sen. Dianne Feinstein, D-Calif., that would create two new national monuments there, Woolf said the valley has become "the prime location for solar."

The district has said it is also open to other types of energy development, including nuclear.

Environmentalists like the site for solar panels because it had been intensively farmed for decades, so it does not contain habitat for endangered species, an issue that has stalled projects in the sunnier Mojave.

"In this part of the world it's not often you find common ground between the water district, landowners and environmentalists, and this is a project that seems to have this potential," Barry Nelson, senior policy analyst at the Natural Resources Defense Council, said.

Another plus is the project's proximity to transmission lines and substations that could deliver energy produced at the site to homes throughout the state, said Daniel Kim, principal partner at Westside Holdings, the private investment group that has a lease contract with Westlands and neighboring farmers.

Also, as utilities seek renewable energy to meet the state's goal of getting one-third of its power from renewable sources by 2020, the California Energy Commission has identified a number of zones where large-scale projects can be developed. The land that would be used by Westlands Solar Park is included in these identified areas, which means some regulatory hurdles already have been met.

Despite the positive reaction to the project from disparate groups, the solar park has a number of hurdles to overcome, including getting through the regulatory hurdles associated with getting built new power lines and substations that will be needed to deliver the power.

Kim's group is working on negotiations with utility companies, who would need to build the transmission infrastructure upgrades before the site's potential can be realized.

Still, renewable energy experts say the project is promising, partly because landowner Westlands is a public agency operating under state authority, so many of the regulatory issues bogging down other large-scale solar projects do not apply.

The path to the finish line is more clearly defined here than perhaps any other project in the state right now, said Carl Zichella, Sierra Club's director of western renewable programs.

"This particular idea of using retired agricultural land for large scale renewable energy development ... has a lot of interest," he said.

Despite the area's sun potential, large-scale solar projects had largely failed to gain traction in the San Joaquin Valley because of Westlands' disinterest and a focus by developers on the more sunny Mojave.

"The whole idea of farmers letting go of these farms is not easy," Kim said. "When you're a third generation farmer, it's not a decision taken lightly."

But with the more sunny desert sites mired in a political, regulatory and environmental morass, the Valley's solar value has increased.

"Lo and behold, three years later (desert sites) are far less desirable because the desert has tremendous ecological diversity and a lot of stake holders who don't want to see desert with a lot of solar panels," Kim said.

Chemehuevi Indian Tribe

P. O. Box 1976 • Havasu Lake, CA 92363 • (760) 858-4219 • Fax: (760) 858-5400

November 12th, 2009

Doug Feremenga
San Bernardino County Land Use Services Department / Planning Division
385 North Arrowhead Avenue, First Floor
San Bernardino, CA 92415

Ref: Conditional Use Permit on Parcel Number 0491-091-07 Boulevard

Mr. Feremenga:

From the map provided I can not tell exactly where the subject property is located. I can say that it is in the general area of a Chemehuevi campsite discovered by the City of Barstow nearly 14 years ago. Recently, the San Bernardino County Museum – Archaeological Information Center indicated prehistoric lithic scatter, pottery, and a habitation site located at the Mojave Narrows; I know that this is some distance from this project but it shows are ancestral history in the area. That area is today still remembered by some as the "Chemehuevi Swamp". As referenced below we have concerns about the area specifically and of the whole area in general.

The Chemehuevi have a long and well documented history in the desert areas of southern California, southern Nevada, and northern and western Arizona. In fact, we would have originally considered all of San Bernardino County and parts of Riverside, Kern and Inyo Counties as our ancestral, historical homeland. We also considered parts of southern Nevada and western Arizona as within our homeland territories. In the late 1800's the vast majority of this area was declared public domain by the US Federal Government and the various Tribes that had traditionally used this land on an intimate, daily basis lost the ability to freely use it as their ancestors once had. The Chemehuevi were just one of several nations of people whose ancestors freely used the area in question.

At one time we would have called the area between the Tehachapi Mountains to the Colorado River and from Death Valley to nearly Yuma, AZ as our ancestral territory. In addition, we would claim from Ash Meadows and the Pahrump area through Las Vegas and into the Muddy and Virgin Rivers area and on into the Valley of Fire.

The particular area that you speak of is of the utmost importance to the Chemehuevi. I only bring the following facts to your attention to show the obvious ancestral, historical presence of the Chemehuevi Indians in the greater area between Hesperia/Victorville and Barstow.

This particular site is within a major transportation route between the Chemehuevi and our cousins the Kawiaasu, in the Tehachapi Mountains.

All along the length of the Mojave River are found areas of cultural resources; there may be burial sites, camp sites, 'sleeping circles' and village sites. This was a major residential and trade route in ancient times of my people between the coast and the Colorado River areas.

There are petroglyphs scattered across a wide swath of the Mohave and Colorado Deserts. In a publication titled, "Native American Rock Art at Ft. Irwin" distributed in both the Ft. Irwin Archaeology Center and the Mojave River Valley Museum in Barstow, the author states, "*Most likely, the Chemehuevi or Kawaiisu lived at Ft. Irwin*".

Also in, "Native American Rock Art at Ft. Irwin" the author states, "*The Fort Irwin petroglyphs dated by archaeologists so – far, however, are not the oldest examples of rock art in the Mojave Desert. Petroglyphs have been found in the Barstow area that are 12,000 years old, while examples at China Lake date to 19,000 years ago*".

There are also known geoglyphs in the area; many that may not be recognizable from ground level. For that reason I would request that an aerial survey be done of the area.

In a census conducted in the late 1800's of the Victor area (later to become Victorville) there were found 44 Indians. Of that group, 37 were Chemehuevi and 7 were Desert Kawaiisu. In fact, we have a picture taken of two Chemehuevi women and a child in their campground living near the Mojave Narrows in 1898. One of the women has been identified as Maria Chapula, a renowned Chemehuevi basket maker, who was born in Victor in 1856 and who lived there until her death in 1960 at the age of 104 years. This was most likely the ancient village site of Atongiabit.

In the mid 1800's three cowboys were killed by Chemehuevis on what is today 'The Las Flores Ranch' in Hesperia. This was the ancient village site of Guapiabit. This incident later led to the 'Chimney Rock Massacre' in the Lucerne Valley involving up to 200 Chemehuevi.

Several burials were un-earthed at the old 'Lane's Crossing' near what is today Oro Grande. I believe this was the ancient village site of Topiabit.

There is the recognized Chemehuevi Cemetery near Zzyzx.

There are known to be at least nine (9) large permanent village sites along the Mojave River between the Narrows and the city of Barstow. Some of their names are as

follows: Muscumbiabit, Guapiabit, Atongiabit, Najayabit, Guapian, Apiambit, Apiagma, Topiabit and Guaspect.

The question is not if there are artifacts or human remains, but where and when will they be found. I respectfully request notification if artifacts or human remains are found so we might consider repatriation.

While we no longer have intimate daily contact with the specific area in question we do have grave concerns, but we would not oppose the project in general.

However, I strongly request that you contact the San Manuel (Serrano), Vanyume and Kawiaasu peoples for their concerns as well, if you have not already done so. In addition, the Mojave River Valley Museum (in Barstow) has a great amount of history regarding the 'Old Spanish Trail' which followed the Mojave River.

Thank you,

Charles F. Wood, Chairman
Chemehuevi Indian Tribe

LUCERNE VALLEY ECONOMIC DEVELOPMENT ASSOCIATION (LVEDA)

To: Greg Thomsen – BLM (lucernesolar@blm.gov)

Re: **Comments – DEIS - Chevron Energy Solutions – Lucerne Valley Solar**

From: Chuck Bell, Pres. (chuckb@sisp.net)
P. O. Box 193
Lucerne Valley, CA 92356 760 964 3118

Date: 5/27/10

(Please also incorporate by reference our previous scoping comments)

GENERAL

LVEDA provides an "open forum" dealing with major projects and issues affecting/benefiting Lucerne Valley – therefore is not taking a direct "pro or con" position on this project. However we are in general opposition to utility-scale solar projects – especially on public land – preferring the use of pre-disturbed/fallowed private land – but as a first priority – solar panels on rooftops/parking lots/etc. throughout s. Calif. (which the DEIS failed to analyze as a viable alternative to the further commitment of public land resources to subsidize urban areas).

We question the intent of a large corporation or its affiliates going through all the time, expense, permitting, paperwork, mitigation, etc. for a (relatively minor) 45 MW project. If it's a "feel good – we're doing something 'green' endeavor" – we prefer that the applicant partner with SCE and spread out its "good will" on rooftops and parking lots – a bigger public relations benefit.

For whatever reason – to the best of our knowledge - Chevron Energy Solutions reps. have not participated in community meetings – unlike the reps. of every other local solar/wind project currently in the permitting process. Its absence has been noticed.

Before the final decision is made, this project should be assessed via BLM's Programmatic process which will identify the limited areas available and suitable for solar plants – along with an understanding of all the land-uses that Lucerne Valley already provide s. Calif. - to fully understand current conflicts and why we need an "Energy Element" in our current BLM and County Plans.

The DEIS is well written and understandable, however it devotes a lot of pages to extraneous litigation-avoidance stuff – leaving some real, critical issues unresolved.

SPECIFIC COMMENTS/POSITIONS

(Due to time constraints – apologize, but DEIS pages are generally not cited):

Alt 4 – Modified Site Layout – a viable option - would allow a buffer and on-site location and maintenance of transplanted yuccas/joshua trees – more reliable than "availability off-site to the public" – which would likely result in 50% mortality at best.

The "private land" alternative was basically ignored with inadequate rationale. First Solar and Next-Era found large, fallowed parcels in Lucerne Valley – with a lot more existing all the way to Palmdale.

Rated generating capacity vs. actual production is a major issue with desert solar projects. The net benefit is likely marginal. Energy/CO2 emissions/etc. required for making panels, structures, construction, etc. – plus the consumption of 516 acres of public land (@11 ½ acres/MW) – plus the additional loss of "multiple use" on the mitigation/compensation land ----compared to other energy sources – need to be assessed from a more global perspective.

De-brushing/grading will create a long-term dust source, adversely affecting the facility and down-wind receptors. Minimal grading, vegetation mowing and placement of decomposed granite or small gravel will help to stabilize the site and reduce weed infestations – as well as enhancing native re-vegetation if and when facilities are removed. The proposed "mowing" is certainly worth pursuing. However, the perennially-shaded ground will become devoid of vegetation and root structure – and the partially shaded area will likely generate more weeds than natives – thus a hindrance to operations and the need for regular weed abatement. (Note: Mojave rattlesnakes will love the shade on the project's periphery). The "Weed Control Plan" seems to have realistic and effective measures. (The Mojave Desert Resource Conservation District and its affiliated Mohave Weed Management Area group can offer advice if requested).

Construction water might be obtainable from the Mojave Water Agency's "Morongo Pipeline" – generally following Foothill Rd. immediately north of the project site – the use of untreated state water vs. good quality groundwater. Contact: MWA (760 946 7000) for info.and location of connections.

The long-term effectiveness of tortoise relocations to adjacent areas didn't seem adequately addressed.

3.11-3: The statement: "Hunting is not an allowable use on the Proposed Action site" is very likely incorrect. It certainly won't be when construction starts – but currently – the only regulation we know of is "shotgun only".

To fully assess the consequence of the project's effect on biological resources – the DEIS needs a description of the most likely location for the 1:1 ratio mitigation/compensation – the location and ultimate loss of "multiple uses" on said parcel that might be purchased – or to what resource any "in-lieu" fee might be directed. Off-site mitigation/compensation requirements ARE a direct result of this project and need to be fully explained.

Assuming the applicant fully intends to develop both phases, approval of Phase 1 alone is premature w/o knowing the transmission requirements of both phases together (upgrading existing line or a new one). Needs discussion!

New transmission lines or upgrades should include "raven proof" devices to the extent feasible – ravens being the biggest threat to juvenile tortoises.

The "heat sink" and albedo "change" effects need to be assessed, especially for the larger projects and those close to residential uses.

Project decommissioning and recycling of facilities were described – however specific measures for reclamation were sketchy. Bonding or some other means to assure ultimate clean-up and reclamation in case of project abandonment need to be included in the permit.

The "level of service" (LOS) assessments for regional highways/roads don't adequately quantify the actual "on the road" impacts – especially on Hwy 18 through Lucerne Valley's commercial area and 4 way stop. CHP escorting will likely be necessary. The proposed "off-peak" construction travel may not fully suffice in and by itself.

Unless we missed it – there was no mention of a right-turn lane onto Santa Fe Fire Rd. Quote from our scoping letter: "A right-turn lane on Hwy 247 would provide safer egress in this area of high-speed traffic – especially for the construction phase".

The analysis re: the project's future effect on BLM's CDCA Plan's "Contingent Corridor S" is probably correct – but this "corridor" needs to be removed from the Plan in order to preclude another "Green Path North" attempt.

4.6-5: Question: The project description seems to indicate that the panels would be "fixed" in place – thus w/o tracking ability. If so – is this statement correct?: "During precipitation events, solar panels would be placed in the flat horizontal position".

Table 1-1: The statement: "The site chosen is within a 'development corridor' ….." is NOT consistent with the LV Community Plan's locations for "industrial" development and thus misleading. The entire table includes very weak rationale.

The Big Bear hospital is cited as close and available in case of injury, emergency, etc. It might be, but the responding County Fire paramedics – and likely the back-up ambulance service from Victor Valley – normally transport patients to Apple Valley or Victorville hospitals – not Big Bear.

Figure 3.18-1: The Cumulative Projects Map shows a "Cumulative Effects Study Area" (CESA) boundary within a 6 mile "buffer" radius from the project site. However it shows other proposed project locations outside said "buffer". A complete and adequate cumulative impact analysis needs to show and assess all the proposed projects within the larger Lucerne Valley area that is affected. Some of the renewable projects listed may no longer be considered. The ones not shown – all with applications currently being processed by the County and/or BLM – are 2 "First Solar" PV's west on Hwy 18 and another adjacent to Barstow Rd. – Granite Wind west of Barstow Rd. (with DEIR/EIS issued) – Next-Era's PV in n. Lucerne Valley – plus the proposed 29 Palms Marine Base expansion into a major portion of Lucerne/Johnson Valleys northeast of the Chevron site. All these projects will have significant cumulative effects on our community.

Following are responses to various "Social and Economic" statements and issues:

3.15-6: The statement re: LVEDA is correct and appreciated.

4.15-3: The statement: With the project, "the social well-being of LVEDA (and its reps.) would be enhanced because compatible sustainable infrastructure development would be implemented within the Lucerne Valley" is a bit esoteric and certainly not fully consistent with our mission. Some of the residents close to the project site remain opposed and thus seem to be "adversely affected" by the project.

Need more emphasis on "local hiring". Talent and equipment are locally available for a substantial portion of the construction and maintenance work required. It certainly won't look good to import a lot of outside workers – union or not – when a local workforce is available. Would be just another imposition on our community. Cement/concrete/aggregate are locally available and we certainly expect that they be utilized if the project is built.

The project's effect on surrounding private land values is summarily dismissed. At the very least, it could hinder area sales. Empirical data is insufficient to determine "no substantial effect".

These projects aren't necessarily "beneficial" to local communities. We need ways to make them more "friendly and welcomed". Chevron could be the lead in devising a method to "arrange" the purchase of materials in San Bernardino County – with sales tax benefiting the county – and ideally – the ½ cent Measure I (road tax) portion dedicated to Lucerne Valley roads that get hammered by all the truck traffic associated with these projects.

We invite the applicant to a LVEDA meeting to better explain the project's tax revenue benefit – specifically the annual taxes from its "leasehold interest". Property taxes are not generated from public lands. How do these projects' tax incentives affect property tax revenue normally based on the assessed values of the facilities? Would the annual "leasehold interest" revenue be deducted from what the county receives from BLM as "payment in lieu of taxes" (PILT)?

WE REQUEST A MEETING WITH THE APPLICANT AND BLM PRIOR TO FINALIZATION OF THE EIS AND A DECISION ON THE PERMIT.

.

Energy Solutions

Raphael Varieras
Project Development Manager

Chevron Energy Solutions
345 California Street, 18th Flr.
San Francisco, CA 94104
Tel (415) 733-4735
Fax (415) 733-4950
raphael.varieras@chevron.com

May 18, 201

Mr. Greg Thomsen
Bureau of Land Management
California Desert District Office
22835 calle San Juan de los Lagos
Moreno Valley, CA 92553

Draft Environmental Impact Statement and California Desert Conservation Area Plan Amendment for the Proposed Chevron Energy Solutions Lucerne Valley Solar Project

Mr. Thomsen,

Upon review of the above referenced document (distributed January 2010), as applicant we offer the following comments for your consideration and inclusion:

1. Our revised site phasing plan (Figure 2.1) and site layout plans (Figures 2.2a & 2.2b) will be sent out to you on a CD for overnight delivery. The phasing has been revised during detailed engineering to defer construction of the eastern portion of the site until Phase 2. This defers the design and construction costs in the area susceptible to the greatest surface water flows, as well as the potential impacts and mitigation associated with grading and development of this area. Additionally, should the transmission line capacity not be upgraded by SCE, this portion of the site would not be developed, avoiding the potential impacts all together. The revised site layout plans have been revised to reflect both fixed tilt and single axis tracker systems.
2. During detailed engineering, we have concluded that cutting vegetation at 4-inches above the ground would not be practical for construction. In all likelihood, the vegetation would be removed and 420 acres of the site would be rough graded. The DEIS states that the vegetation on the site would be cut to 4-inches above the ground. Since this area would then be shaded by solar panels after construction is complete, this would essential result in the loss of all vegetation on the developed portion of the site (as acknowledged in Section 4.6.2.2 of the EIS). Consequently, the change to rough grading this area would not result in new or different impacts as compared to what has been evaluated in the EIS.
3. We disagree with the conclusion in the water resources section that states: "Therefore, it is not possible at this time to estimate what the potential flood risk is at the site and the possible effects." The project would maintain existing flow patterns and velocity for surface water run-off from the site, and the potential for flooding would not change as a result of the project. The effects related to flooding would most likely be limited to damage to Project equipment placed in areas where high-velocity flooding would occur. A finalized hydrology study will also be included on the CD.

Please accept this as a formal request to revise the above referenced document to reflect these changes. Thank you in advance for your review and consideration. Please contact us with any questions or comments.

Respectfully,

Raphael Varieras

Energy Solutions

Raphael Varieras
Project Development Manager

Chevron Energy Solutions
345 California Street, 18th Flr.
San Francisco, CA 94104
Tel (415) 733-4735
Fax (415) 733-4950
raphael.varieras@chevron.com

May 20th, 2010

Mr. Greg Thomsen
Bureau of Land Management
California Desert District Office
22835 calle San Juan de los Lagos
Moreno Valley, CA 92553

Draft Environmental Impact Statement and California Desert Conservation Area Plan Amendment for the Proposed Chevron Energy Solutions Lucerne Valley Solar Project

Mr. Thomsen,

This letter is to clarify the comments made to the above documents in our previous letter dated May 18, 2010. Where it reads “the site would be rough graded”, as applicant, we would like to explain the intent embodied in the terms “rough graded”: through the grubbing and scarifying process, it is expected that the contours of the site will be modified while the general slope and undulations of the site will be preserved.

Thank you in advance for your review and consideration. Please contact us with any questions or comments.

Respectfully,

Raphael Varieras

From: Jessop.Carter@epamail.epa.gov
To: lucernesolar@blm.gov
Subject: Review of the Chevron Energy Solutions Lucerne Valley Solar Project DEIS
Date: 05/20/2010 06:44 PM
Attachments: EPA_LucerneValleySolarDEISLtr.pdf

The U.S. Environmental Protection Agency (EPA) has reviewed the Draft Environmental Impact Statement (DEIS) and California Desert Conservation Area Plan Amendment for the Proposed Chevron Energy Solutions Lucerne Valley Solar Project. Our review and comments are provided pursuant to the National Environmental Policy Act, the Council on Environmental Quality Regulations (40 CFR Parts 1500-1508), and our NEPA review authority under Section 309 of the Clean Air Act.

Our comment letter is attached below and a hard copy will be mailed to the address indicated in the DEIS cover letter.

Carter W. Jessop
U.S. EPA, Region 9
Environmental Review Office (CED-2)
75 Hawthorne Street
San Francisco, CA 94105
(415) 972-3815
jessop.carter@epa.gov

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

MAY 20 2010

Mr. Greg Thomsen
Bureau of Land Management
California Desert District Office
22835 Calle San Juan de los Largos
Moreno Valley, CA 92553

Subject: Draft Environmental Impact Statement and California Desert Conservation Area Plan Amendment for the Proposed Chevron Energy Solutions Lucerne Valley Solar Project, San Bernardino County, California [CEQ# 20100033]

Dear Mr. Thomsen,

The U.S. Environmental Protection Agency (EPA) has reviewed the Draft Environmental Impact Statement (DEIS) and California Desert Conservation Area Plan Amendment (CDCAPA) for the Proposed Chevron Energy Solutions Lucerne Valley Solar Project (Project). Our review and comments are provided pursuant to the National Environmental Policy Act (NEPA), the Council on Environmental Quality (CEQ) Regulations (40 CFR Parts 1500-1508), and our NEPA review authority under Section 309 of the Clean Air Act (CAA).

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

The Bureau of Land Management (BLM) has identified thirty-four proposed renewable energy projects as "fast track" projects that are expected to complete the environmental review process and be ready to break ground by December 2010 in order to be eligible for funding under the American Recovery and Reinvestment Act. Twenty-eight of these are located in our Region, approximately half of which are in California. We are aware that many more projects that have not been designated "fast-track" are also being considered by BLM. Many, if not all, of these projects, fast track or otherwise, are proposed for previously undeveloped sites on public lands. In making its decisions regarding whether or not to grant rights-of-way for such projects, we recommend that BLM consider a full range of reasonable alternatives to minimize the adverse environmental impacts. Such alternatives could include alternative technologies or altered

project footprints at the proposed location, as well as alternate sites, such as inactive mining or other disturbed sites that may offer advantages in terms of availability of infrastructure and less vulnerable habitats. Given the large number of renewable energy project applications currently under consideration, particularly in the Desert Southwest, we encourage BLM to apply its land management authorities in a manner that will promote a long-term sustainable balance between available energy supplies, energy demand, and protection of ecosystems and human health.

On August 4, 2009, EPA provided extensive formal scoping comments for the Lucerne Valley Solar Project, which included a variety of detailed recommendations regarding purpose and need, range of alternatives, and resource areas of concern. Based on our review of the Lucerne Valley Solar DEIS, we have rated the document as *Environmental Concerns – Insufficient Information* (EC-2). Please see the enclosed "Summary of EPA Rating Definitions." An "EC" signifies that EPA's review of the DEIS has identified environmental impacts that should be avoided in order to provide adequate protection for the environment. A "2" rating signifies that the DEIS does not contain sufficient information for EPA to fully assess environmental impacts that should be avoided in order to fully protect the environment.

In the enclosed detailed comments, we provide specific recommendations regarding analyses and documentation needed to assist in assessing potential significant impacts from the proposed Project. Specifically, EPA is concerned with the: 1) lack of sufficient hydrological analysis and impacts to water resources; 2) impacts to biological resources and special status species; 3) scope of cumulative impacts analysis and the potential impacts from reasonably foreseeable future actions; 4) current justification for the Project purpose, need, and independent utility; 5) range of alternatives; and 6) discussion of climate change.

EPA appreciates the opportunity to provide input on this Project and the multitude of DEISs under preparation for renewable energy projects in our Region. We are available to further discuss all recommendations provided. When the Final EIS is released for public review, please send two hard copies and two CDs to the address above (Mail Code: CED-2). If you have any questions, please contact me at 415-972-3521, or contact Carter Jessop, the lead reviewer for this Project. Carter can be reached at 415-972-3815 or jessop.carter@epa.gov.

Sincerely,

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

Enclosures: Summary of EPA Rating Definitions
Detailed Comments

US EPA DETAILED COMMENTS ON THE DRAFT ENVIRONMENTAL IMPACT STATEMENT AND CALIFORNIA DESERT CONSERVATION AREA PLAN AMENDMENT FOR THE PROPOSED CHEVERON ENERGY SOLUTIONS LUCERNE VALLEY SOLAR PROJECT, SAN BERNARDINO COUNTY, CALIFORNIA, MAY 20, 2010

Project Description

Chevron Energy Solutions (CES) has submitted an application to the Bureau of Land Management (BLM) to construct a 45-megawatt (MW) solar photovoltaic (PV) plant and associated facilities on 516 acres of federal land approximately eight miles east of Lucerne Valley in San Bernardino County. The proposal includes an interconnection to an existing Southern California Edison (SCE) distribution line to the north of the site as well as an amendment to the California Desert Conservation Area (CDCA) Plan designating the site as suitable for renewable energy generation. While EPA is pleased with certain aspects of this Project, including the close proximity to existing infrastructure and maintenance of existing site topography, we recommend that the Final EIS (FEIS) provide additional analyses (including any necessary supporting documentation) and identify specific minimization or mitigation measures, as discussed below.

Hydrology and Water Resources

Ephemeral Washes

Natural washes perform a diversity of hydrologic and biogeochemical functions that directly affect the integrity and functional condition of higher-order waters downstream. Healthy ephemeral waters with characteristic plant communities control rates of sediment deposition and dissipate the energy associated with flood flows. Ephemeral washes also provide habitat for breeding, shelter, foraging, and movement of wildlife. Many plant populations are dependent on these aquatic ecosystems and adapted to their unique conditions. The potential damage that could result from disturbance of flat-bottomed washes includes alterations to the hydrological functions that natural channels provide in arid ecosystems, such as adequate capacity for flood control, energy dissipation, and sediment movement, as well as impacts to valuable habitat for desert species. EPA is concerned about the potential impacts to the ephemeral water segments located within the project area. The DEIS provides basic hydrologic information on the location of washes in the project area, but does not include a detailed map nor analysis of the origin and termini of these ephemeral waters.

Recommendations:

- Include a more detailed discussion and map of the water resources and hydrographic basins surrounding the proposed project.
- Include information on the functions and locations of ephemeral washes in the project area.

Flooding and Drainage

The DEIS states that the project site is prone to intense flooding events, including flash flooding (p. 3.5-5), however no floodplain studies nor mapping exercises have been conducted to assess flood hazards. In addition, the document states that "No hydrologic modeling has been done at this stage." (p. 2-16). Considering the lack of information regarding site hydrology and flood danger, it is impossible to properly assess the risks that the proposed project poses to local and regional hydrology, water quality, and human health.

Recommendations:

- Demonstrate that downstream flows will not be disrupted due to proposed site development.
- Include a functional assessment of the waters on the proposed project site and describe the changes to the function of those waters that would result from the proposed project.

The DEIS does not provide information about fencing (pg. 2-16) nor the effects of fencing on drainage systems. As previously discussed, storms in this region can be sudden and severe, resulting in flash flooding. Fence design must address hydrologic criteria, as well as security performance criteria. The National Park Service recently published an article[1] on the effects of the international boundary pedestrian fence on drainage systems and infrastructure. We recommend that BLM review this article to ensure that such issues are adequately addressed with this project.

Recommendation:

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

The DEIS includes a Modified Site Layout Alternative (Alternative 4). This alternative would redirect drainage on the site to a vegetated screen designed to screen views of the project for nearby residents and drivers on Santa Fe Fire Road (p. 2-24). This alternative is chosen as the BLM "Preferred Alternative" (p. 2-36). By rerouting drainage, this alternative would alter site hydrology, potentially impacting water quality, groundwater recharge, soil erosion, vegetation, and wildlife. The potential for such consequences is not addressed, however. In addition, insufficient information is provided on specifically how and where drainage would be rerouted.

Recommendation:

- Provide details on where and how drainage would be rerouted across the site under Alternative 4: Modified Site Layout.
- Analyze the potential impacts of Alternative 4 in greater detail, in particular considering impacts to hydrology, water quality, groundwater, soil, vegetation and wildlife.

Waters of the United States

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

We are concerned with possible impacts on waters of the U.S. (WUS). We understand the project proponent is re-evaluating whether or not any of the washes flowing through the proposed site may qualify as WUS. We encourage BLM to consult with the Army Corps of Engineers regardless of the outcome of that analysis. A jurisdictional determination of waters of the United States must be completed in order to determine whether waters of the US will be impacted by the proposed project. In addition, we understand from our correspondence with BLM that the washes that flow through the site terminate before reaching any known waters of the US; however, this is not discussed in detail in the document and this information should be provided in the interest of public disclosure.

Recommendation:

- Consult with the Army Corp or Engineers regarding a jurisdictional determination for the proposed project site, and include the results of that determination in the FEIS.

Biological Resources and Special Status Species

Desert Wash Communities

According to the DEIS, construction of the proposed Project is expected to result in direct loss of 18 acres of land characterized as desert wash communities (p. 3.6-7). In addition, the proposed Project will degrade the functions of waters throughout the site through the placement of road crossings, fencing, and photovoltaic cell posts. As noted above (see Hydrology and Water Resources, Ephemeral Washes) natural washes perform a diversity of hydrologic and biogeochemical functions that directly affect the integrity and functional condition of higher-order waters downstream, and ephemeral washes support unique plant populations and provide habitat for breeding, shelter, foraging, and movement of wildlife. Desert wash ecosystems are highly sensitive to disruption, and impacts to their natural state may be impossible to remediate

Recommendations:

- Avoid and minimize direct and indirect impacts to desert washes to the maximum extent practicable. Impacts to be accounted for and minimized include erosion, migration of channels, and local scour.
- Minimize the number of road crossings over washes in order to minimize erosion, migration of channels, and scour. Road crossings should be designed to provide adequate flow through during large storm events.
- Commit to the use of natural washes, in their present location and natural form and including adequate natural buffers, for flood control to the maximum extent practicable.
- Demonstrate that downstream flows will not be disrupted due to proposed changes to any natural washes.

Special Status Species

The proposed project and any of the BLM action alternatives would result in direct impacts to vegetation and wildlife, including a number of special status species. EPA

recommends that the FEIS and ROD contain specific and binding commitments to the mitigation measures put forth in the Biological Assessment (BA) and DEIS. Furthermore, additional details regarding the mitigation measures to be employed would assist in the assessment of impacts to biological resources. For instance, mitigation measure MM BIO-12 (p. 4.6-15) would offset impacts to desert tortoises by preserving off-site desert tortoise habitat. Further details regarding the location and nature of this off-site compensatory mitigation should be provided, as available. In addition, we recommend that the BLM consider applying compensatory mitigation at a ratio higher than the 1:1 ratio put forth in the DEIS. As stated in the DEIS, the impacts to desert tortoise would likely extend beyond the project boundaries due to sensitivity to noise, vibrations, invasive species introduction, and collision with vehicles traveling to and from the site. We therefore recommend that compensatory mitigation be expanded to account for these additional impacts. Lastly, in the interest of full public disclosure, EPA recommends that the FEIS include the most up to date information available regarding the status of consultation with U.S. Fish and Wildlife Service and California Department of Fish and Game.

Recommendation:

- The FEIS and ROD should include specific and binding commitments to mitigation measures put forth in the BA and DEIS.
- Consider the implementation of compensatory mitigation under MM BIO-12 that exceeds the 1:1 ratio discussed in the DEIS.
- The FEIS should include the most up to date information available regarding the status of consultation with the US FWS and CDFG.

The DEIS contains a brief discussion of biological soil crusts or cryptobiotic crusts (p. 3.4-2). The analysis dismisses these crusts as not serving a critical role in dust suppression on the proposed project site, however no further details are provided. EPA recommends that this discussion be expanded to include details regarding the extent of biological soil crusts on the site, the role they play on the site, and any impacts the proposed project may have on these crusts.

Recommendation:

- Expand the discussion of biological soil crusts to include details regarding their extent on the proposed project site, the role they play on the proposed project site, and possible impact resulting from BLM action alternatives.

Cumulative Impacts Analysis

The BLM has received more than 220 ROW applications for utility-scale solar energy projects in California, Nevada, Arizona, New Mexico, Utah, and Colorado. We understand that BLM and the Department of Energy are jointly preparing a Solar Programmatic Environmental Impact Statement (PEIS); however, the DEIS does not include a discussion of the PEIS. The 24 solar energy study areas identified in conjunction with the Solar PEIS encompass 670,000 acres, and that area could be used to generate nearly 100,000 MW of solar electricity.

The DEIS lists 3 solar projects in close proximity to the proposed project, but limits the scope of the cumulative impact analysis to only those projects occurring within 6 miles of the proposed project site. The reasoning for limiting the scope of the cumulative impact analysis to

that radius is not provided. Without further information about projects in the region, it is difficult to conduct a thorough cumulative impacts analysis. The FEIS should include a more extensive analysis that defines the parameters of the analysis and the reasons for the establishment of those parameters.

Recommendations:

- Update the list of reasonably foreseeable projects to include all projects that may have impacts that may cumulatively affect the Lucerne Valley. In particular, the analysis should include discussions of the cumulative impacts on transmission capacity, water resources, and biological resources.
- Evaluate site conditions at locations with existing ROW applications. Determine and disclose whether the ROW applications are active and viable.

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

Recommendation:

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

Project Purpose, Need and Independent Utility

Project Purpose and Need

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

Building upon the comment above, the Purpose and Need for a project should be stated broadly enough to spur identification of the full range of reasonable range of alternatives, regardless of what the future findings of an alternatives analysis may be. The Purpose and Need should focus on the underlying problems to address (e.g., lack of capacity to serve an increasing demand for energy, or the need to develop sufficient renewable energy to meet State renewable portfolio standards). A solar power plant may be an integral component of the potential solution to the problems identified in a Purpose and Need discussion; however, the Purpose and Need statement should allow for the analysis of a full scope of alternatives, including off-site locations, environmentally preferable on-site alternatives or other modes of renewable energy generation.

The DEIS eliminates all off-site and alternative technology alternatives from consideration. In addition, the analysis of potential on-site alternatives was limited to the

proposed action, a single reduced project alternative and a single modified site layout alternative. This somewhat narrow range of alternatives is, in part, influenced by the Bureau of Land Management's (BLM) narrowly defined Purpose. According to the DEIS, BLM's purpose for the CES proposed action is "to approve, approve with modifications, or deny issuance of a Right-of-Way (ROW) grant to CES for the proposed solar project." (at p. 1-2). While this may be the immediate federal purpose of the project, we recommend that the FEIS use a combined BLM and Project Proponent Purpose and Need statement as the foundation upon which later sections, such as the alternatives analysis, are based. It would also be helpful to include a discussion of the types of modifications that BLM could require, the circumstances under which BLM is authorized to deny a ROW grant, and the consequences of such a denial. The purpose statement should be broad enough to allow for a reasonable range of alternatives, including environmentally preferable alternatives.

Recommendation:

- The FEIS should reflect a broader purpose and need statement that allows for a full evaluation of other alternatives, including off-site locations and other environmentally preferable on-site alternatives.
- The FEIS should explain BLM's options for acting upon an application for a right-of-way grant. For instance, it would be helpful if BLM would explain the extent of its authority in regards to requiring the adoption of a "modified" project alternative.

While the DEIS indicates that the need for the proposed action has its basis in Federal orders and laws regarding renewable energy generation, the current Purpose and Need section does not fully describe the specific Federal, State, and individual utility power provider renewable energy targets, timelines, and underlying needs to which BLM is responding. EPA believes this context is imperative for decision makers and the public to have, in light of the large number of renewable energy projects moving forward.

Presumably, some number of renewable energy facilities will be constructed pursuant to the joint Department of Energy (DOE)/BLM Programmatic Solar DEIS effort as well as the Desert Renewable Energy Conservation Plan (DRECP) process. It would be helpful to know the likely locations, construction timing, and generation capacities of such facilities relative to the proposed Project.

Recommendations:

- Fully describe the specific Federal and State renewable energy targets, timelines, and underlying needs to which BLM is responding, and explain how the Project meets those needs in the context of the many renewable energy project applications in the Desert Southwest and California.
- To the extent practicable, the FEIS should discuss how many of the total renewable energy applications received by BLM are likely to proceed pursuant to the joint Department of Energy (DOE)/BLM Programmatic Solar DEIS effort and the Desert Renewable Energy Conservation Plan (DRECP) process, and the level of energy production those applications represent.

- Further describe the utility purchases of power and provide a description of how the power would be bought, sold, and used so that the reader can better evaluate the tradeoffs between resource protection and power generation.

Project Independent Utility

The FEIS should clearly demonstrate the independent utility of the Project within its current geographic limits as it relates to the need for the Project. If the Project need cannot be met without future planned improvements, such as the reconductoring or further upgrading of the Southern California Edison transmission lines proposed to serve the site, the scope of the Project should be expanded accordingly, since these would be considered connected and similar actions (40 CFR 1508.25). In that case, the NEPA evaluation should include the full extent of the planned Project, including the necessary transmission lines and how it will operate. This broader scope should be applied to the identification and evaluation of project alternatives that may be less environmentally damaging. EPA believes this is the most effective way to address indirect and cumulative environmental impacts. The DEIS indicates that a separate environmental analysis would be conducted if further renovation of the SCE transmission lines were necessary; however, if the Project cannot meet its Purpose and Need without the transmission line project (thereby qualifying it as a connected action), the FEIS should address both projects together. Generally, funding or constraints of project staging and construction should not be used as a basis for segmenting the evaluation of environmental impacts under NEPA.

The DEIS indicates that "It has not been determined if upgrades to the existing 33-kV SCE distribution line, beyond the proposed reconductoring, would be required to accommodate Phase II" (p. 2-5). EPA recommends that the FEIS describe the current capacity of the existing transmission line and perform all necessary transmission analyses before the publication of the FEIS. The FEIS should also include a discussion of the existing transmission capacity compared to the future capacity after both reconductoring and any other potentially necessary upgrades. Considering the excess capacity that is stated to exist on the current transmission line (p. 2-15), the FEIS should consider an alternative that does not rely on the upgrade.

Recommendations:

- Demonstrate the independent utility of the Proposed Project within its current geographic limits as it relates to the need for the Project. If the Project need cannot be met without future planned improvements, the scope of the Project should be expanded accordingly by including an analysis of future improvements to the full extent of the planned Project, including the necessary transmission lines and how it will operate, since these would be considered connected and similar actions (40 CFR 1508.25).
- EPA recommends that the FEIS disclose: 1) the current available capacity of the existing Southern California Edison transmission line; 2) the estimated capacity of the transmission line following reconductoring and any other necessary renovation; and 3) to what degree the line is capable and expected to accommodate additional renewable energy generated in the Project's vicinity.

<u>Alternatives Analysis</u>

Reasonable Range of Alternatives

The DEIS presents an unduly limited alternatives analysis. EPA believes that the alternatives analysis needs to be expanded to include a full analysis of a reasonable range of alternatives.

CEQ Regulations for implementing NEPA (40 CFR, Parts 1500 - 1508) state that the alternatives section of an EIS should "*rigorously explore and objectively evaluate all reasonable alternatives, and for alternatives which were eliminated from detailed study, briefly describe the reasons for their having been eliminated*" (40 CFR, part 1502.14). All reasonable alternatives that fulfill the purpose of the project's purpose and need should be evaluated in detail, including alternatives outside the legal jurisdiction of the BLM (Council on Environmental Quality's (CEQ) Forty Questions[2], #2a and #2b). The more alternatives considered, the greater the possibility of avoiding significant impacts. "*Reasonable alternatives include those that are practical and feasible from the technical and economic standpoint and using common sense, rather than simply desirable from the standpoint of the applicant.*" (CEQ Forty Questions, #2a)

The DEIS states that "identifying alternative land is beyond the scope of this EIS" (p. 2-32); however, as stated at 40 CFR 1502.14 (c), the NEPA analysis must include a full range of alternatives, including those that may not be within the jurisdiction of the lead agency. For reasons stated earlier, EPA believes BLM's current Purpose and Need statement is too narrow. Furthermore, when eliminating alternatives from consideration, the DEIS provides insufficient justification. Each alternative was described and a qualitative reason for elimination was provided. This qualitative discussion of the reasons for eliminating alternatives does not identify a clear set of criteria that were used to screen all alternatives in a similar manner. For example, no criteria outlining thresholds for competitively priced renewable energy, minimal plant efficiency rates, and levels of air, water, or habitat impacts were provided. If such criteria were used, the criteria and resulting quantification of impacts should be incorporated into the FEIS. The alternatives analysis should be constrained based upon specific and, as appropriate, quantifiable criteria, such that only those alternatives that do not meet these specific parameters are eliminated from further consideration.

Recommendations:

- Provide a clear discussion of the reasons for the elimination of alternatives that are not evaluated in detail and provide a clear set of criteria to screen all alternatives. The potential environmental impacts of each alternative should be quantified to the greatest extent practicable. For example, the FEIS should include a matrix that rates each of the alternatives on each of the selection criteria and include this information in the Executive Summary.
- Clearly identify the economic criteria used for analyzing alternatives. As appropriate, fully consider alternatives rejected in the earlier analysis. The FEIS should also include a concise summary of any cost-benefit analyses preformed in the evaluation

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

of the Proposed Project and the various alternatives. This information should also be included in the Executive Summary.
- Discuss how unquantified environmental impacts (such as a reduction in visual impacts) have been determined in the environmental analysis.

Consideration of Disturbed Site Alternatives

As additional alternatives are considered for evaluation in the FEIS, as well for future projects, EPA continues to recommend the identification of locations that have been previously disturbed or contaminated. The FEIS should discuss any methods or tools BLM has used to identify and compare locations for siting renewable energy facilities, and to ascertain whether or not any disturbed sites are available that would be suitable for the proposed project. For example, the EPA's Re-Powering America initiative works to identify disturbed and contaminated lands appropriate for renewable energy development. For more information on the project visit http://www.epa.gov/oswercpa/

Recommendations:
- EPA strongly encourages BLM to promote the siting of renewable energy projects on disturbed, degraded, and contaminated sites before considering large tracts of undisturbed public lands.
- The FEIS should include information regarding all criteria used to evaluate the CES site and alternatives.

Consideration of Additional Modified Site Layout Alternatives

The Action Alternatives carried forward for further analysis by BLM include CES's Proposed Action Alternative, a Smaller Project Alternative and a Modified Site Layout Alternative. The Modified Site Layout Alternative is modified so as to reduce visual impacts; however, in order to do so, it increases impacts to hydrology and water resources (see below). EPA recommends that additional alternatives designed to avoid impacts to desert washes be considered in greater detail.

Recommendations:
- Consider additional on-site "Modified Layout" alternatives, particularly those that avoid and/or minimize impacts to sensitive desert washes and their associated communities.

Climate Change

We commend BLM for the attention given to the issue of climate change (Section 3.1). However, the DEIS does not include measures to avoid, minimize, or mitigate the effects of climate change on the proposed project, nor does it discuss the extent to which climate change may alter the impacts of the proposed project on the environment. Scientific evidence supports the concern that continued increases in greenhouse gas emissions resulting from human activities will contribute to climate change. Effects on weather patterns, sea level, ocean acidification,

chemical reaction rates, and precipitation rates can be expected. These changes may affect the scope and intensity of impacts resulting from the proposed project.

Recommendations:

- Consider how climate change could affect the proposed project and the affected environment, specifically within sensitive areas, and assess how the impacts of the proposed project could be exacerbated by climate change.
- Identify strategies to more effectively monitor for climate change impacts in the surrounding area, such as monitoring groundwater change or special status species.
- Quantify and disclose the anticipated climate change-related *benefits* of solar energy. We suggest quantifying the greenhouse gas emissions that would be produced by other types of electric generating facilities (solar, geothermal, natural gas, coal-burning, and nuclear) generating comparable amounts of electricity, and compiling and comparing these values.

Miscellaneous Edits

The DEIS contains numerous inconsistencies. For example, while the text states that no intermittent streams or rivers exist on or adjacent to the site, the figures (such as 3.5-1) label hydrologic features running through the site as "intermittent stream / river". Furthermore, the discussion of the outcome of the desert tortoise survey at 3.6-21 does not agree with the data presented on figure 3.6-3. A number of such inconsistencies exist in the document. Please correct these errors.

SUMMARY OF EPA RATING DEFINITIONS*

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

ENVIRONMENTAL IMPACT OF THE ACTION

"LO" (Lack of Objections)

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

"EC" (Environmental Concerns)

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

"EO" (Environmental Objections)

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

"EU" (Environmentally Unsatisfactory)

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

ADEQUACY OF THE IMPACT STATEMENT

Category "1" (Adequate)

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

Category "2" (Insufficient Information)

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

Category "3" (Inadequate)

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

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

From: O'Shea, Helen
To: LuceneSolar@blm.gov
Subject: Chevron Lucerne Valley DEIS Comments - NRDC, Sierra Club, The Wilderness Society
Date: 05/13/2010 03:04 PM
Attachments: Chevron Lucerne Valley DEIS comments May 13th.pdf
Exhibit 1 - Desert Siting Criteria Memo June 29.pdf
Exhibit 2 Chevron Lucerne Map.jpg

Please accept and fully consider the following comments on the Draft EIS for the Chevron Lucerne Valley solar project on behalf of the Natural Resources Defense Council, the Sierra Club, and The Wilderness Society.

Many thanks.

Helen O'Shea
Deputy Director – Western Renewable Energy Project
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NATURAL RESOURCES DEFENSE COUNCIL
SIERRA CLUB
THE WILDERNESS SOCIETY

May 13, 2010

Mr. Greg Thomsen
Bureau of Land Management
California Desert District Office
22835 Calle San Juan de los Lagos
Moreno Valley, CA 92553

lucernesolar@blm.gov

Re: Draft Environmental Impact Statement and California Desert Conservation Area Plan Amendment for the Proposed Chevron Energy Solutions Lucerne Valley Solar Project (DOI-BLM-CAD008-2008-0030)

Dear Mr. Thomsen:

This letter constitutes the comments on the above-captioned proposed solar project and draft environmental impact statement (EIS) of the Natural Resources Defense Council (NRDC), The Wilderness Society (TWS), and the Sierra Club, national environmental membership organizations with long histories of advocacy on behalf of the lands and resources administered by the Bureau of Land Management (BLM). More recently these organizations have been intensively involved in the Bureau's work to develop a comprehensive solar program as well as its efforts to "fast track" the permitting of individual utility-scale solar projects in California so that they may be eligible for grant funding under the American Recovery and Reinvestment Act of 2009.

Introduction. Our organizations recognize the need to develop the nation's renewable energy resources and to do so rapidly in order to respond effectively to the challenge of climate change. Unique natural resources here in California are already being affected by climate change, including, for example, the pikas of Yosemite National Park and the Joshua trees in Joshua Tree National Park. We also recognize that renewables development can help create jobs in communities that are eager for them, because of the nation's economic crisis. For these and other related reasons, our organizations are working with regulators and project proponents to move renewables projects forward. That said, renewable development is not appropriate everywhere on the public lands and must be balanced against the equally urgent need to protect unique and sensitive resources of the California Desert Conservation Area (CDCA). California is lucky indeed that we have sufficient renewable resources, including solar resources, to do their development in an environmentally and fiscally sensitive way.[1]

As we and our colleagues at sister organizations have repeatedly stated, the best way to develop the solar resources of the CDCA is through comprehensive, pro-active planning by both the federal government and the state to identify the most appropriate areas for such development --

[1] California's Renewable Energy Transition Initiative found, for example, that the state potentially could access 500 GW of renewable energy, an order of magnitude greater than the electric grid in this state could possibly handle.

i.e., solar development zones -- and to guide development to those zones. *See, e.g.,* letter dated June 29, 2009 to Interior Secretary Salazar and California's Governor Schwarzenegger and signed by 11 organizations, including our own, attached as Exhibit 1.

We support the BLM's adoption of zone designation for its forthcoming solar programmatic EIS because of the benefits inherent in this approach, including but not limited to clustering development of large-scale projects in appropriate places, rather than permitting them to be strewn across the landscape. We also applaud the agency's – and the Interior Department's – commitment to work closely with the State of California in the development of the Desert Renewable Energy Conservation Plan which, as you may already know, will designate not only renewable energy development zones, but also zones for conservation as well as include a comprehensive mitigation strategy. The integration and completion of both of these efforts offers the promise of a balanced plan that will facilitate development of renewable resources in the Desert while protecting desert resources.

Despite our fundamental belief in the critical importance of agency-guided development of renewables, rather than developer-initiated development, we have, as indicated, been investing a great deal of time and effort into the fast track projects. We have done so in response to the emphasis the Department, the BLM and the developers place on meeting ARRA deadlines as well as the potential role these projects could play in meeting the economic and renewable generation goals of the state and federal governments. We have also done so because we wanted to make the projects, and especially the utility-scale solar projects, as environmentally sensitive as they can be and because we wanted to ensure, to the extent possible, that their accompanying environmental documents are as sound as they can be. It is now apparent to us that not even the best of the environmental documents being produced for the fast track projects and/or the best projects should be models or precedents for the future.

The fast track project sites were chosen without the benefit of siting criteria developed either by desert activists, environmental organizations, scientists and others, *see* Renewable Siting Criteria for California Desert Conservation Area, attached to June 29, 2009 letter referred to above, or by the Bureau. The Bureau in fact has yet to develop any siting guidance that would help field staff, developers and others identify appropriate sites – i.e., those with relatively low resource values and fewer resource conflicts. Moreover, the projects themselves were designated by Interior and the BLM as fast track projects without consideration of environmental issues. And, equally importantly, the timetable established for review of these projects did not take into account their scale, the agency's lack of experience with the technologies involved, and the agency's lack of experience permitting these kinds of projects.

Regardless of the outcome of the environmental review process for this or any other fast track project, we urge the BLM and the Interior Department to acknowledge publicly the deficiencies of the current process and to commit publicly to improving it. More specifically, we urge both entities to affirm that neither the current process, nor any of the project sites, nor any of the environmental documents, establish any legal or procedural precedents for future decision-making, siting or environmental review. We make this urgent recommendation notwithstanding the fact that this particular project appears to be proposed for an appropriate site and the accompanying DEIS represents an improvement in several respects over other such documents.

The Chevron Energy Solutions (CES) Project. The proposed 45 MW CES project appears to "score" quite well against the Renewable Siting Criteria for the California Desert Conservation Area developed by numerous organizations, including ours. For example, at least some of the lands in the right of way (ROW) application for this project have been genuinely disturbed, see,

e.g., Draft Environmental Impact Statement and California Desert Conservation Area Plan Amendment for the Proposed Chevron Energy Solutions Lucerne Valley Solar Project (hereinafter referred to as "DEIS"), at 2-2,[2] and there are some abandoned buildings on the site, id. at 3.9-2, along with graded roads, id., and evidence of extensive "low level" mineral exploration activity, id. at 4.9-2. The area has low scenic values, id. at 4.5-3 and is located in a "development corridor" within which significant impacting activities have long been contemplated, such as highways, pipelines and transmission lines. See, e.g., id. at ES-11. See also id. at 1-13 (locating renewable projects "in development corridors minimizes environmental effects and avoids desert fragmentation.")

Equally importantly, the lands subject to this ROW application are of comparatively low resource value: for example, it appears that significantly fewer desert tortoise, a federally listed species, were found on the site when protocol-level surveys were conducted, DEIS at 3.6-21 as compared to the large number of desert tortoise found in the study area of the Ridgecrest project proposed by Solar Millennium. See, Ridgecrest Solar Power Project CEC-BLM SA/DEIS 5.3-1. Moreover, while the DEIS identifies suitable habitat for the Mojave Ground Squirrel on the site, there have been "no historical records [of occurrences] within five miles," id. at Table 3.6-3.

Similarly, the number of sensitive plant species found on this site is smaller than the number found at the proposed Ivanpah site. The site includes no critical habitat for any listed species, unlike, for example, one of the wind fast track projects, AES Daggett Ridge, and implicates no Area of Critical Environmental Concern (ACEC) or other special management area designated by the BLM. Although there are desert washes on this site, id. at 3.6-7, they comprise only a tiny fraction of the site (3%), id. at 3.5-4, unlike other proposed solar thermal project sites, e.g. see Blythe Solar Power Project CEC-BLM SA/DEIS B.2-11. Please see map of resource values on the project site attached as Exhibit 2.

In addition, this site is near an urbanized area that has suffered significantly during the "Great Recession," DEIS at 3.15-7, and would welcome employment opportunities for some of its residents, see id. at 4.18-4. It is well-served by roads and is located near existing transmission, id. at 1-13, with sufficient capacity to transmit electricity that would be generated in Phase I of the project and, depending on which alternative is chosen, potentially Phase II as well. See id. at 2-5. Indeed, the DEIS indicates that re-conductoring of the existing transmission line may be sufficient to serve both phases. Id. at 2.5.

Clearly, the "prescreening process [that was] conducted between the applicant and [the Barstow Field Office of the] BLM prior to the CES's submittal of [its] application" was thorough and thoughtful, and led to the selection of a project site without "major [environmental] issues of concern." DEIS at 2-30.

That said, we do have some concerns about the project and its accompanying DEIS.

Our principal concern with this project at this time relates to the source of the water that will be used in its construction and operation. Because this is a photovoltaic project, it is projected to use significantly less water than other solar technologies and most, if not all, of the water used once construction is completed will be for panel washing. DEIS at 3.5-6. The DEIS is notably vague about the amount of water that will be necessary for this particular purpose, saying that it will be

[2] In fact, the DEIS' references to the extent of disturbed lands in the ROW application are inconsistent. Although at one point the text suggests that much if not all the land has been disturbed, see, DEIS at 2-2, at other points the amount of disturbed land is clearly less than all, see, e.g., id. at 3.6-3 ("Some of the site was disturbed…."). At one point, the DEIS states that only five acres or 1% of the site have been disturbed. Id. at 3.6-7

between 10,000 and 20,000 gallons for washing panels once a year in Phase 1 and between 12,000 and 25,000 gallons in Phase 2. Id. at 2-22 – 2-23. Those are very wide margins of uncertainty, and we could find no explanation for them in the draft. Is it because the company has no definite idea how often it will have to wash panels or is it because the amount of panel washing will depend on weather conditions? Or is there another possible reason not presented in the document?

Of even greater concern is that the source of this water is not identified. At one point, the DEIS says the needed water will be acquired from "local large industrial companies or municipal water companies," DEIS at 2-23, at another that it will come "from a permitted off-site source," id. at 4.5-3, and at still another that it might come from new or existing on-site wells or off-site sources, id. at 3.5-6, although subsequently we learn that there are no known on-site wells, see, id., Figure 3.5-1. Section 4.15 at page 372 states that the water will be from "off-site" sources but does not specify what or where those sources are. We also note that at 4.18.1.5 there is an apparent typo in the text regarding the water source which adds to the confusion around this issue: "The Proposed Action **would use** (emphasis added) surface water or groundwater and would instead use off-site and permitted municipal or industrial water sources for dust control and panel cleaning. Therefore, the Proposed Action would not cause an irreversible or irretrievable commitment of water resources in the project area."

The Bureau should not permit a development like this one to go forward without assuring itself – and the public, the owners of these lands – that its proponents can fully satisfy this critical need. Rather than let Chevron lock up what appears to be an appropriate site for solar development, one that possesses "unique and extreme levels of solar radiation," id. at 2-24, without showing that it can actually follow through with the project, the BLM should require the company to prove that it has a contract or some other firm arrangement for the necessary water.

The topic of flood risk raises a somewhat similar concern. Although the DEIS acknowledges that there is a risk of flooding at this site, see, e.g., DEIS at 2-30, it concedes that, due to lack of data, the risk cannot be estimated and, as a result, potential impacts of flooding cannot be assessed, see, e.g., id. at 4.5-2. We appreciate the frankness on this topic and hope that this "hole" will be filled in the final document.

Our concerns with the DEIS relate to three key issues: the purpose and need statement, the alternatives considered, and the cumulative impact analysis, all of which, unfortunately, were problems with the Bureau's first solar DEIS, the Ivanpah DEIS. In all these respects, this document is much better than the Ivanpah draft, but it could – and should – be better yet.

The purpose and need statement for this project is slightly broader than the one in the Ivanpah draft, but it remains too narrow. Ivanpah's purpose and need was explicitly limited to a stark dichotomy: "approve" or "deny" the company's application for a solar project and, as the result, the document addressed only the "no action" option and the "proposed project." A supplemental draft with a revised purpose and need and additional alternatives was recently issued in an attempt to remedy this egregious approach to "the heart" of the process established by the National Environmental Policy Act (NEPA).

The draft states that the BLM's purpose and need is "to respond to" the company's ROW application, see, e.g., DEIS at 1-1, and, that in response, the agency has identified five alternatives, see, e.g., id. at ES-2.2-1. In reality though, the Bureau seems to still be "stuck" in the Ivanpah dichotomy. For example, at several points, the draft states "BLM's purpose and need is to process a ROW application." See, e.g., id. at 2-32, 2-36. The BLM should avoid both this mindset as well as too narrow a statement of purpose and need in order to help ensure that its EISs are legally

defensible documents. In place of the statement that was used here, our organizations urge the adoption of the following to achieve these goals:

> The purpose of the proposed action is to "facilitate environmentally responsible commercial development of solar energy projects"[3] consistent with the statutory authorities and policies applicable to the Bureau of Land Management, including those providing for contributions towards achieving the renewable energy and economic stimulus and renewable energy development objectives under the Energy Policy Act of 2005 (EPAct), the American Recovery and Re-Investment Act, and Presidential and Secretarial orders.
>
> The need for this action is to implement Federal policies, orders and laws that mandate or encourage the development of renewable energy sources, including the Energy Policy Act of 2005, which requires the Department of the Interior to seek to approve at least 10,000 MW of non-hydropower renewable energy on public lands by 2015, and the Federal policy goal of producing 10% of the nation's electricity from renewable resources by 2010 and 25% by 2025; to enable effective implementation of the economic incentives for qualifying projects intended by the American Recovery and Reinvestment Act; and to support the State of California's renewable energy and climate change objectives, consistent with BLM's mandates and responsibilities.

This kind of purpose and need statement would clearly satisfy applicable legal requirements, see, e.g., National Parks Conservation Assn v. BLM, 586 F.3rd 735 (9th Cir. 2009), and thus help ensure that environmentally appropriate projects such as this one appears to be will not only be permitted but will also be built without unnecessary delays.

As indicated above, the draft states that it addresses five alternatives. At the same time, its authors clearly understand that the "real" number is smaller. For example, the DEIS repeatedly points to the similarities between Alternatives 3 and 4. For example, those two options would produce the same amount of MW, have the same construction schedule, features and project components and would use the same amount of water DEIS at 4.4-3, 4.5-4. Alternative 4 is "just" five acres smaller than 3. Id. at 4.4-3 – although the alteration would clearly make a difference to views of the project from SR 247 addressing one of the major local concerns about this project. See, also, id. at 2-24 ("project components, project phasing, energy generated, access roads, transmission interconnect and construction methods would be the same as those previously described for CES's Proposed Action"). Similarly, Alternatives 1 and 2 aren't really different either. See, e.g., Table ES-1, Comparison Summary of Effects of Proposed Action and Alternatives (identical statements for each of the "alternatives" in every single category).

Alternative 5, however, *is* a different option and one that is significantly smaller than the proposed action -- 30 MW vs. 45 MW. See, e.g., DEIS at 2-25. We commend the Barstow Field Office for including such an option. A smaller alternative is key to establishing a real range as well as to providing readers a fuller understanding of the tradeoffs inherent in the other larger "action" alternatives. Thanks to the inclusion of this option here, it appears that a smaller project would not significantly reduce the impacts of the construction and operation of the proposed project while it would definitely reduce the megawatts of renewable energy generated.

[3] This quotation is from Secretary Salazar himself.

As for the draft's treatment of cumulative impacts, we think it could be improved. Currently it seems quite lacking in quantitative information, including quantitative information about proposed utility scale solar projects in the area. There are three applications for large scale solar projects within a six mile radius of the Lucerne Valley project see 3-18.2. Because the Bureau is the permitting agency for those projects, it should have on hand information that could be used to develop estimates to address at least some key topics such as air quality and biological resources for example. The inclusion of such information will strengthen this document and contribute to more informed decision-making.

In addition to the three proposed solar projects within a six mile radius of the project site, there are permitted residential and commercial projects that will also contribute to cumulative impacts. While these projects were not permitted by the Bureau, all reasonable efforts must be made to obtain information regarding their potential impacts and construction timing so that a full picture of cumulative impacts can be presented in the final EIS.

In conclusion, this project appears to be well-sited with regard to impacts on important desert resources. As we have previously noted, renewable development is not appropriate everywhere on the public lands and must be balanced against the equally urgent need to protect unique and sensitive resources of the CDCA. California is lucky indeed that we have sufficient renewable resources, including solar resources, to do their development in an environmentally responsible manner.

Thank you in advance for considering our comments. If you have any questions about them, please do not hesitate to contact us.

Sincerely,

Johanna Wald
Senior Attorney, NRDC
111 Sutter Street, 20th Floor
San Francisco CA 94104

Helen O'Shea
Deputy Director, Western Renewable Energy Project, NRDC
111 Sutter Street, 20th Floor
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Alice Bond
California Public Lands Policy Analyst, The Wilderness Society
655 Montgomery Street, Suite 1000
San Francisco, CA 94111

cc: Jim Abbott, Acting California State Director, BLM

Audubon California
California Native Plant Society * California Wilderness Coalition
Center for Biological Diversity * Defenders of Wildlife
Desert Protective Council * Mojave Desert Land Trust
National Parks Conservation Association
Natural Resources Defense Council * Sierra Club * The Nature Conservancy
The Wilderness Society * The Wildlands Conservancy

Renewable Siting Criteria for California Desert Conservation Area

Environmental stakeholders have been asked by land management agencies, elected officials, other decision-makers, and renewable energy proponents to provide criteria for use in identifying potential renewable energy sites in the California Desert Conservation Area (CDCA). Large parts of the California desert ecosystem have survived despite pressures from mining, grazing, ORV, real estate development and military uses over the last century. Now, utility scale renewable energy development presents the challenge of new land consumptive activities on a potentially unprecedented scale. Without careful planning, the surviving desert ecosystems may be further fragmented, degraded and lost.

The criteria below primarily address the siting of solar energy projects and would need to be further refined to address factors that are specific to the siting of wind and geothermal facilities. While the criteria listed below are not ranked, they are intended to inform planning processes and were designed to provide ecosystem level protection to the CDCA (including public, private and military lands) by giving preference to disturbed lands, steering development away from lands with high environmental values, and avoiding the deserts' undeveloped cores. They were developed with input from field scientists, land managers, and conservation professionals and fall into two categories: 1) areas to prioritize for siting and 2) high conflict areas. The criteria are intended to guide solar development to areas with comparatively low potential for conflict and controversy in an effort to help California meet its ambitious renewable energy goals in a timely manner.

Areas to Prioritize for Siting

- Lands that have been mechanically disturbed, i.e., locations that are degraded and disturbed by mechanical disturbance:
  - Lands that have been "type-converted" from native vegetation through plowing, bulldozing or other mechanical impact often in support of agriculture or other land cover change activities (mining, clearance for development, heavy off-road vehicle use).[1]
- Public lands of comparatively low resource value located adjacent to degraded and impacted private lands on the fringes of the CDCA:[2]
  - Allow for the expansion of renewable energy development onto private lands.
  - Private lands development offers tax benefits to local government.
- Brownfields:
  - Revitalize idle or underutilized industrialized sites.
  - Existing transmission capacity and infrastructure are typically in place.

- Locations adjacent to urbanized areas:[3]
  - Provide jobs for local residents often in underserved communities;
  - Minimize growth-inducing impacts;
  - Provide homes and services for the workforce that will be required at new energy facilities;
  - Minimize workforce commute and associated greenhouse gas emissions.
- Locations that minimize the need to build new roads.
- Locations that could be served by existing substations.
- Areas proximate to sources of municipal wastewater for use in cleaning.
- Locations proximate to load centers.
- Locations adjacent to federally designated corridors with existing major transmission lines.[4]

High Conflict Areas

In an effort to flag areas that will generate significant controversy the environmental community has developed the following list of criteria for areas to avoid in siting renewable projects. These criteria are fairly broad. They are intended to minimize resource conflicts and thereby help California meet its ambitious renewable goals. The criteria are not intended to serve as a substitute for project specific review. They do not include the categories of lands within the California desert that are off limits to all development by statute or policy.[5]

- Locations that support sensitive biological resources, including: federally designated and proposed critical habitat; significant[6] populations of federal or state threatened and endangered species,[7] significant populations of sensitive, rare and special status species,[8] and rare or unique plant communities.[9]
- Areas of Critical Environmental Concern, Wildlife Habitat Management Areas, proposed HCP and NCCP Conservation Reserves.[10]
- Lands purchased for conservation including those conveyed to the BLM.[11]
- Landscape-level biological linkage areas required for the continued functioning of biological and ecological processes.[12]
- Proposed Wilderness Areas, proposed National Monuments, and Citizens' Wilderness Inventory Areas.[13]
- Wetlands and riparian areas, including the upland habitat and groundwater resources required to protect the integrity of seeps, springs, streams or wetlands.[14]
- National Historic Register eligible sites and other known cultural resources.
- Locations directly adjacent to National or State Park units.[15]

EXPLANATIONS

[1] Some of these lands may be currently abandoned from those prior activities, allowing some natural vegetation to be sparsely re-established. However, because the desert is slow to heal, these lands do not support the high level of ecological functioning that undisturbed natural lands do.

[2] Based on currently available data.

[3] Urbanized areas include desert communities that welcome local industrial development but do not include communities that are dependent on tourism for their economic survival.

[4] The term "federally designated corridors" does not include contingent corridors.

[5] Lands where development is prohibited by statute or policy include but are not limited to:

National Park Service units; designated Wilderness Areas; Wilderness Study Areas; BLM National Conservation Areas; National Recreation Areas; National Monuments; private preserves and reserves; Inventoried Roadless Areas on USFS lands; National Historic and National Scenic Trails; National Wild, Scenic and Recreational Rivers; HCP and NCCP lands precluded from development; conservation mitigation banks under conservation easements approved by the state Department of Fish and Game, U.S. Fish and Wildlife Service or Army Corps of Engineers a; California State Wetlands; California State Parks; Department of Fish and Game Wildlife Areas and Ecological Reserves; National Historic Register sites.

[6] Determining "significance" requires consideration of factors that include population size and characteristics, linkage, and feasibility of mitigation.

[7] Some listed species have no designated critical habitat or occupy habitat outside of designated critical habitat. Locations with significant occurrences of federal or state threatened and endangered species should be avoided even if these locations are outside of designated critical habitat or conservation areas in order to minimize take and provide connectivity between critical habitat units.

[8] Significant populations/occurrences of sensitive, rare and special status species including CNPS list 1B and list 2 plants, and federal or state agency species of concern.

[9] Rare plant communities/assemblages include those defined by the California Native Plant Society's Rare Plant Communities Initiative and by federal, state and county agencies.

[10] ACECs include Desert Tortoise Desert Wildlife Management Areas (DWMAs). The CDCA Plan has designated specific Wildlife Habitat Management Areas (HMAs) to conserve habitat for species such as the Mohave ground squirrel and bighorn sheep. Some of these designated areas are subject to development caps which apply to renewable energy projects (as well as other activities).

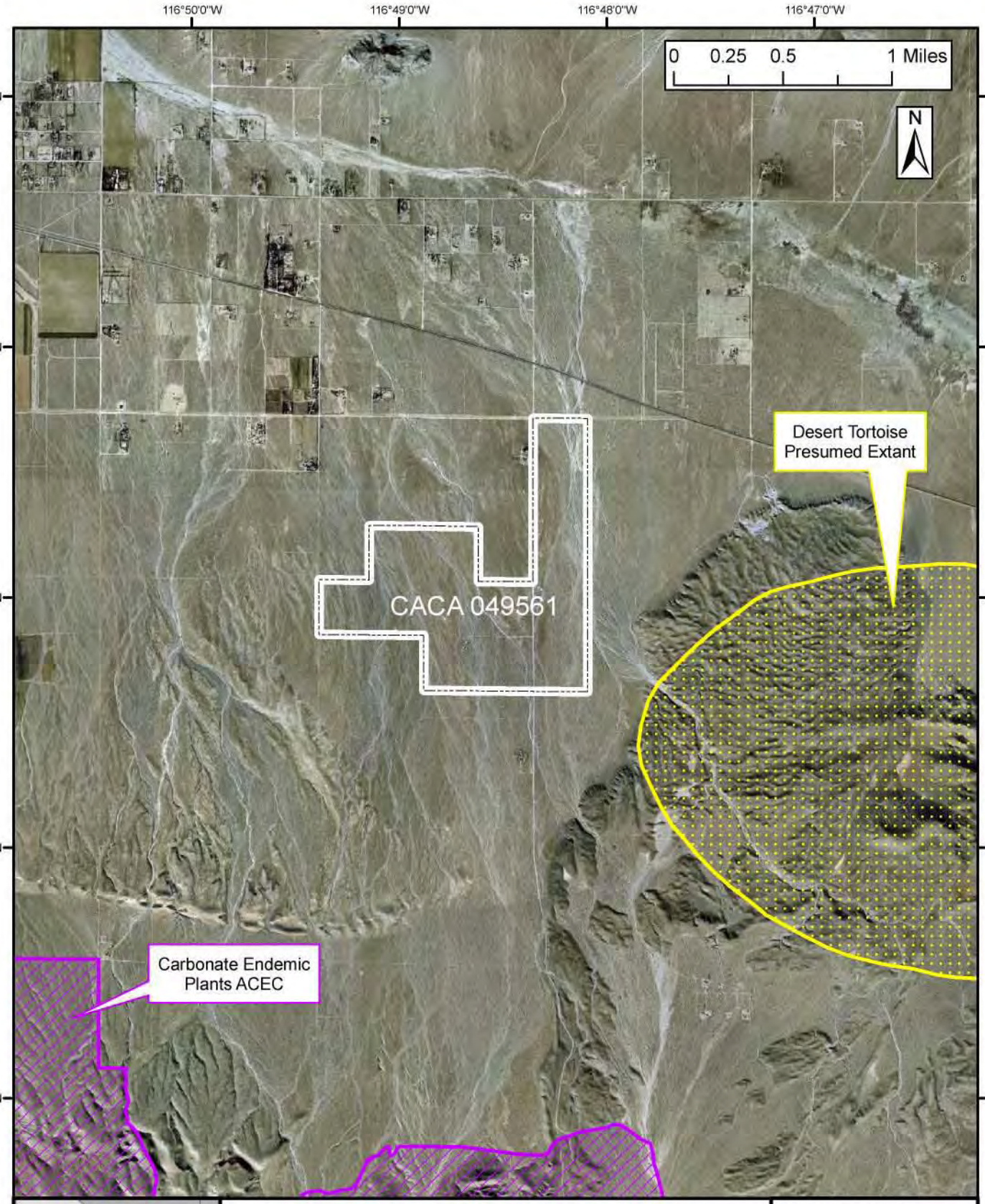
[11] These lands include compensation lands purchased for mitigation by other parties and transferred to the BLM and compensation lands purchased directly by the BLM.

[12] Landscape-level linkages provide connectivity between species populations, wildlife movement corridors, ecological process corridors (e.g., sand movement corridors), and climate change adaptation corridors. They also provide connections between protected ecological reserves such as National Park units and Wilderness Areas. The long-term viability of existing populations within such reserves may be dependent upon habitat, populations or processes that extend outside of their boundaries. While it is possible to describe current wildlife movement corridors, the problem of forecasting the future locations of such corridors is confounded by the lack of certainty inherent in global climate change. Hence the need to maintain broad, landscape-level connections. To maintain ecological functions and natural history values inherent in parks, wilderness and other biological reserves, trans-boundary ecological processes must be identified and protected. Specific and cumulative impacts that may threaten vital corridors and trans-boundary processes should be avoided.

[13] Proposed Wilderness Areas: lands proposed by a member of Congress to be set aside to preserve wilderness values. The proposal must be: 1) introduced as legislation, or 2) announced by a member of Congress with publicly available maps. Proposed National Monuments: areas proposed by the President or a member of Congress to protect objects of historic or scientific interest. The proposal must be: 1) introduced as legislation or 2) announced by a member of Congress with publicly available maps. Citizens' Wilderness Inventory Areas: lands that have been inventoried by citizens groups, conservationists, and agencies and found to have defined "wilderness characteristics." The proposal has been publicly announced.

[14] The extent of upland habitat that needs to be protected is sensitive to site-specific resources. For example: the NECO Amendment to the CDCA Plan protects streams within a 5-mile radius of Townsend big-eared bat maternity roosts; aquatic and riparian species may be highly sensitive to changes in groundwater levels.

[15] Adjacent: lying contiguous, adjoining or within 2 miles of park or state boundaries. (Note: lands more than 2 miles from a park boundary should be evaluated for importance from a landscape-level linkage perspective, as further defined in footnote 12).



Chevron Lucerne Valley Wildlife Issues of Concern

BLM Project CACA 049561

Note: Data compilation does not include non-digitized wildlife data.

Data Sources: BLM, CNDDB, Satellite Image DigitalGlobe via Google Earth (2006).

Map Legend

- BLM ACEC and DWMA
- CNDDB Presumed Extant
- Desert Tortoise

Map Scale: 1 to 40,000

Willis, Christina J.

From: Lynnette_Elser@ca.blm.gov
Sent: Tuesday, February 16, 2010 2:33 PM
To: Willis, Christina J.
Subject: Fw: Lucerne Solar Project

Lynnette Elser
Planning & Environmental Coordinator
California Desert District Office
951-697-5233

----- Forwarded by Lynnette Elser/CASO/CA/BLM/DOI on 02/16/2010 02:32 PM -----

Edward Wood <frd750@gmail.com>

02/13/2010 10:29 AM

To lucernesolar@blm.gov
cc
Subject Lucerne Solar Project

I sincerely hope that, if this project is approved, there will be some mechanism , such as a bond, to absolutely ensure that, when this unit reaches the end of its useful life, the area will be completely cleaned up and returned to its original condition.

I feel that all BLM leases should include such a provision so that our descendants don't have to face the clean-ups that are now a problem
with abandoned mines. It must be made impossible for such messes to be left for public clean-up in the future

Ed Wood
PO Box 302
Goldendale WA 98620

From: DougAnaheim@aol.com
To: Rhollenbacher@chevron.com
Sent: 4/11/2010 9:59:47 P.M. Pacific Standard Time
Subj: Possible HQ for L:ucerne Valley solar project

Dear Mr. Hollenbacher, I sent you a previous e-mail about a property I own in Lucerne Valley that might make a great headquarters for your project. The address is 10760 Kendall Rd. What may make this property of interest to Chevron, is that there is a warehouse with 4,000 sq.ft., not including two integral storage containers providing 640 more sq.ft,.There is also a separate building with 2,500 sq.ft.of office space, with remodeled bathrooms, including two showers. The property is zoned community industrial, but residence is allowed. The property is 1.5 acres, totally security fenced, with a very large parking area in front. As I am considering all my possibilities, I would appreciate hearing back from you soon. Of course, if you are not in charge of property leasing, please forward the message. I can be reached at (714) 883-8025 If you e-mail me, please also give me a quick call. Thank you for your time and consideration. Sincerely Yours, Douglas Metcalf

LUCERNE VALLEY SOLAR PROJECT

DRAFT EIS/CDCA PLAN AMENDMENT

LUCERNE VALLEY, CALIFORNIA

TUESDAY, MARCH 9, 2010

6:30 P.M.

REPORTED BY:

AMY P. SMITH

CSR #12154

Job No. 4474

MS. WILLIS: Good evening. We're going to go ahead and get started tonight.

My name is Christina Willis, and I'm the Chief Planner with Ecology and Environment. Our firm is the third-party contractor here in the EIS on behalf of BLM.

We want to welcome you tonight to the Lucerne Valley Solar Project Public Comment Meeting.

A few guidelines. Please sign in, if you have not already, at the table near the door. This is the best and the only way we have of recalling who is in attendance at the meeting.

And, also, please fill out a blue speaker card, if you'd like to make a comment tonight, or you can take one of the yellow comment forms. You can leave your comments with us tonight, or you can e-mail us your comments, or you can mail them to us later.

We are going to ask that you hold your comments for the comment period, and note that there will be no public -- excuse me -- there will be no question-and-answer session tonight.

However, we will be available for a while after the meeting is over, if you have any questions. We're here to get your comments.

A copy of this -- of tonight's presentation

is going to be available on the BLM website. And the BLM website address is shown on the bottom of your meeting agenda, and it's also shown on the bottom of this project fact sheet.

And now I'll turn the meeting over to Roxie Trost.

MS. TROST: Good evening. I'd like to welcome you, too. My name is Roxie Trost, and I am the field manager for the BLM for Barstow field office. And I'd like to take just a moment and introduce you to the BLM team that we have here tonight.

We have Mickey Quilman, who is the chief of resources for the Barstow field office, and Rick Rotte, who is the realty specialist. And also from the district office we have Lynette Elser, and we have Greg Thomsen.

We also have in attendance tonight Mr. Chuck Bell, who is the president of the Lucerne Valley Economic Development Association.

And it was very helpful in our July scoping meeting to have Mr. Bell briefly summarize the other projects being completed in the area. So if he could just take a moment and do that for us, we would really appreciate it. Thanks, Chuck.

MR. BELL: I think this is the list we have. We

have Boulevard Associates, which is the next area in north Lucerne Valley. That's 60 megawatts on 440 acres, and that's on private land. It's fallow ag. land.

We have Rabbit Springs Solar, which is Rabbit Springs and Barstow Road. And that's 104 megawatts. This is just panels. There's no solar thermal proposed here, all PV. And that's about 900 acres, but they're only going to use about 500 of it. That's also disturbed. That's fallow ag. land.

And Strawberry Peak Solar, which is south of Highway 18 between Lucerne and Apple Valley. That's 15 megawatts on 160 acres. And both of those used to be Edison. That's how they were brought to us. And now, I guess, they are -- First Solar bought them, paid, I guess, just to buy out the projects. I'm not sure.

Status of those, those are all County, private land, and the County is working on the -- and the consultants are working on an environmental impact report.

Daggett Wind, and that's north of Lucerne Valley. Is closer to Barstow. That's 82 megawatts on about 1500 acres, and I think that's mostly BLM. I think there's some private land involved, too. That's pretty close to the -- the access road before you get to the Barstow mountain as you're heading north.

Granite Mountain Wind, that's between Apple Valley and Lucerne Valley. I can't recall exactly the number of megawatts. It's about 15 or so turbines. I can't remember exactly how many. That's both BLM and private, so it's a joint EIS environmental impact report, and that should be out pretty soon.

We had a meeting in Lucerne Valley about a week ago or two weeks ago, and I was at that meeting in which BLM actually made quite a big presentation on that project.

West Fry Mountain Wind, that's between -- that's also Lucerne Valley, most of it is, and Johnson Valley open area. That's in the area of the Twenty-Nine Palms Marine Base expansion, so we don't know the status of that. That has been withdrawn from the new projects because of the expansion.

And, according to issues associated with the Feinstein's Desert Monument Bill, that probably -- which will likely preclude and trump any opportunity for the Marines to release the -- come west into Johnson Valley, and so those projects, we don't know what's going to happen to them.

And I guess there's a major solar project on map that the County was good enough to give us. I don't know what site they used to -- to -- to pick up the map,

but there was some projects. One was a major area, a solar project called "Gasper," on BLM. Apparently, that's been cancelled. Chris can confirm it.

There's another one I guess Amber on our eastern boundary, closer to Highway 247. That one is also on BLM. Apparently, that's been cancelled out.

A lot of it might be because of the Marine Base expansion proposal.

And then Major Wind shows up on this map, and I don't know much about it. It's southwest Lucerne Valley and southeast Apple Valley, right between us, a big chunk of ground. It looks like, according to this map, is a verified wind energy project. We've not heard much about it. Right below the Forest Service.

And I'm sure there will be more pending. I don't know what to tell you. Whoever has to write impact reports and EIS's on cumulative impacts in terms of what happens in Lucerne Valley better factor in those viable projects there because when we start getting two of these constructing at one time, you tie up traffic in town, and it's going to be a mess. So that's just one issue, so...

Anything else? That's all I know about. You guys may know about more. I'm sure the County has got them coming through the assembly line right now, so --

but that's what we have, that we know about.

MS. TROST: Thank you.

MS. WILLIS: Thank you.

MS. TROST: And I'll turn it over to Greg Thomsen.

MR. THOMSEN: Hi. I'm Greg Thomsen. I'm BLM's project manager for this project.

You may recall that Chevron filed an application for a right-of-way to -- to build and operate a solar-generated facility on lands managed by BLM. Currently, we -- as Tina mentioned, we're writing an environmental impact statement, or EIS, to analyze the proposed project.

One of the things we're factoring in are a lot of comments that we received during the scoping process on this project, which was last summer.

Some of you were here in late July in this room, and we had a meeting, and we heard a number of good comments. So we've been working to -- working with Environmental and Ecology, the consultants, to factor those comments into the draft EIS.

Now is really a key time to -- to receive public view of and -- and thoughts on this draft. So we're looking forward to hearing from you either tonight or over the next two months during the public-comment period.

And we'll talk later, but there's a number of ways you can comment. But certainly we hope to hear from you tonight.

And thanks, and I'll turn this over to Ram Ambatipudi, who's from Chevron to talk more about the proposed project.

MR. AMBATIPUDI: Thank you for that.

Good evening, everyone, and thank you for coming. My name is Ram Ambatipudi, and I'm the senior business development manager for our large-scale renewable group within Chevron Energy Solutions. I work out of our Pasadena, California, office.

Most of you, I'm sorry, are familiar with Chevron. You may not fully be aware of how big a presence Chevron has in California. Chevron is headquartered in California in San Ramon.

We are, I believe, the largest private company in California, as well. We currently employ nearly 10,000 people directly in California and nearly 60,000 people indirectly, which equates to approximately 1 in 250 jobs in this state.

In -- since 2007, Chevron has spent nearly 1.8 billions dollars with small businesses, including, you know, approximately 40 percent of that with woman and minority-owned businesses.

The group that I work for and represent is Chevron Energy Solutions. We are one of the largest sustainable -- leading sustainable energy services companies in the United States providing energy efficiency renewable power and clean energy and reliability and infrastructure services.

Primarily we work with public sector and government clients. We are one of largest installers of photovoltaic -- solar photovoltaic systems in the US, with over 25 megawatts at public institutions, mostly "K" through 12 school districts and community colleges and other public sector institutions.

The -- the location of the proposed solar project is approximately eight miles east of Lucerne Valley. The -- we looked at various alternatives, and we're interested in pursuing this site for several reasons. It has a great solar resource in the region.

Also, the Southern California Edison distribution system here has spare capacity to handle a Phase I 20 megawatt project.

So the first phase would not require any new transmission or distribution lines, which -- which was very attractive. The -- the size of the parcel corresponded to the size of the project that we wanted to pursue, as well.

We're proposing to building the project in two phases. Phase I would be 20 megawatts, and then Phase II would be 25 megawatts, for a total of 45 megawatts at the site. The site is 516 acres of BLM land, and it would interconnect to Southern California Edison's 33 KB Distribution System.

We're hoping to begin construction in the fourth quarter of 2010. The project size is roughly a hundred million dollars, and we are targeting approximately 20 million dollars of that for -- for local content.

During the peak period, the construction workforce will be about a 40 -- 40 workers, we estimate. And once the plant is operational, there will be a small permanent workforce of two individuals.

With that, I'd like to turn it over to Christina Willis.

MS. WILLIS: Thank you.

The BLM has prepared a draft EIS for the Lucerne Solar Project. And we're here tonight to receive your comments.

What we intend to do is present findings of key resources evaluated in the draft EIS and take your comments on the project and the analysis.

The draft EIS describes BLM's purposes and

needs, as well as Chevron Energy Solutions' purposes and needs for the proposed action.

It analyzes the project alternatives, identifies potential environmental impacts and mitigation. It describes how your concerns were treated in the analysis, and it identifies the preferred alternative.

During the scoping period, approximately 85 people attended two scoping meetings held in July of this year, and 15 provided verbal comments. In addition, 40 people mailed letters or sent e-mails about the project.

And these comments were used to form the scope of the analysis of the EIS, and they were also used in the development of the alternative, as well as modifying the project design.

A summary of the scoping comments and how they were addressed in the EIS can be found in Chapter 1 of the draft document, and more detailed information on the scoping process can be found in Appendix A of Volume II.

A majority of comments were received in the area of aesthetics and visual, air quality, biological resources, cultural resources, cumulative impacts, and project alternatives.

So based on the Applicant's right-of-way grant application, as well as the comments received during the scoping process, the draft EIS evaluated five alternatives.

Included in this list are two no-action alternatives. Under Alternative 1, the no action, no California Desert Conservation Area Plan Amendment, the right-of-way application is denied. The solar plant would not be constructed. The CDCA plan would not be amended, and current management of the site would be maintained.

Alternative 2 is similar to Alternative 1, with the exception that in Alternative 2 it does include a CDCA plan amendment to classify the right-of-way as either suitable or unsuitable for large-scale solar development.

Alternative 3 is Chevron's proposal. It includes construction and operations of a 45-megawatt solar power plant developed in two phases.

In addition, it includes improvements to Santa Fe Fire Road, and rerouting of a portion of Zircon Road to allow its continued public use. Alternative 3 also includes a CDCA plan amendment.

Alternative 4 is a modified site layout alternative. In response to the comments received

during the public comment period, the draft EIS evaluated an alternative that reduces effects on visual resources.

This alternative would be the same as Chevron's proposed action with three modifications to reduce environmental effects.

It would include a 50-foot setback on either side of Santa Fe Fire Road. It would use natural vegetation as a screen along Santa Fe Fire Road, and it would design site drainage to provide a water source for that vegetative screen.

Alternative 5 is a smaller project alternative, and this alternative reduces energy output to 30 megawatts. It would also be developed in two phases. And the Phase I and Phase II area are noted by the blue and green shaded areas on the screen.

Similar to Chevron's proposal, Santa Fe Fire Road would be improved, and a portion of Zircon Road would be realigned to allow its continued public use. And, as you can see, it would require a smaller footprint.

The alternatives considered, but eliminated from detailed consideration, include alternative sites considered by Chevron Energy Solutions, both private land, as well as alternate BLM land. It includes

alternative sites considered by BLM, as well as alternative renewable energy technologies, different solar technology, wind energy, and also residential roof-top solar panels.

So, as you can see, the draft EIS evaluated potential impacts to a host of environmental resources.

And I'll briefly summarize three of those key environmental issues. For air quality, the EIS found that the action alternative would generate dust and other vehicle omissions during the construction and decommission, and it included mitigation to reduce those impacts. Please see Section 3-1 and 4-1 of the draft EIS for details.

And I do need to mention that of the environmental resources that I'm mentioning, we have included boards that summarize exactly what we're talking about tonight.

For biological resources, the EIS found that the action alternatives would result in a loss of on-site vegetation and habitat for special-status species, including the desert tortoise.

And some of the desert tortoise protection measures include pre-construction surveys and clearance or tortoises from the site, installation of desert tortoise exclusionary fencing, development of off-site

mitigation for effects to desert tortoise and their habitat.

For cultural resources, no cultural resources eligible for inclusion in the natural -- excuse me -- National Register of Historic Places were found to occur in the project area.

And it should also be noted that BLM has completed its consultation with the California State Historic Preservation Office.

For cumulative analysis, the EIS identified and evaluated potential cumulative effects from major past, present and reasonably anticipated future actions in the vicinity of the project. And those projects included energy generation, military uses, roadway improvements, and other local developments.

So where we are, in terms of the schedule, the draft EIS has been distributed for a 90-day public review period. And that period closes on May 19th.

The comment period was originally advertised as closing on May 13th, but you may recall there was a large snow storm in Washington D.C. in early February, which delayed the Environmental Protection Agency's publication of the notice of availability of the draft EIS. So the comment period has been extended until May 19th.

Once that comment period closes, we'll review the comments that we've received, prepare responses to those comments, and revise the environmental document based on your input and input from other agencies and organizations.

BLM will then circulate the proposed CDCA plan amendment and final EIS for a 30-day protest period. And once those protests are resolved, BLM will issue its record of decision. We're looking at late 2010 for that.

And that decision will disclose the alternative that has been selected, and it will identify all approved mitigation measures.

So we are now coming to that portion of our meeting tonight where we're ready to receive your comments.

And I want you to know that the purpose of this session is to hear from you. If you have not yet submitted a speaker card and you would like to comment, please raise your hand, and Connor Doyle will bring you a card. And when your name is called, please stand and we'll bring the microphone to you. Please state your name and spell it for our court reporter and then state your comments.

Is there anyone who has not filled out a

speaker card that would like to?

MR. LEVINE: Okay. So we have two comment cards or speaker cards here. And the first person is Robyn Purchia.

MS. PURCHIA: Hi. My name is Robyn Purchia. That's P-u-r-c-h-i-a. I'm an attorney with Adams, Broad, Well, Joseph & Cardozo, and I'm here tonight on behalf of the International Brotherhood of Electrical Workers, Local 477, whose members live, work, and recreate in San Bernardino County.

We're currently in the process of reviewing the draft EIS in determining whether or not to submit written comments. But we have some initial comments here for you tonight.

First, the draft EIS needs to consistently describe and specifically identify the water source for the project.

The draft EIS indicates that water will be provided from an off-site source and that no new development will be necessary. But on page 3.56, the draft EIS actually says that new on-site wells may need to be developed, so the draft EIS needs to consistently describe the water source, because, right now, it's unclear where the water will be coming from.

It also needs to specifically identify the

water source so that the public can ascertain whether that source has sufficient capacity to service the project and also how the water will be conveyed from a possible off-site source to the project area.

The draft EIS should also describe whether that will be potable water or non-potable water, and what Federal, State and local permits are required for the project to receive the water.

Secondly, the draft EIS should adequately describe the current and reasonably foreseeable projects in the area. Table 3-18-1 lists three solar projects and several residential projects. But as we heard, there are other solar projects in the area, including a solar project proposed by Cannon Solar Partners, and then the Edison PV, power plant.

An adequate description of all of the current and foreseeable future projects is necessary so that the project impacts to water supply are adequately reviewed and possibly the groundwater aquifer and subsidence.

That's just one example, though. There are other issues that come up with cumulative impacts.

Finally, we're in the process of reviewing whether the project complies with the California Environmental Quality Act.

The draft EIS indicates that a streambed

alternation agreement is required from the Department of Fish and Game and an encroachment permit from the Department of Transportation.

An environmental review under the California Environmental Qualify Act may be necessary for these State agencies to issue these permits.

So we suggest that the BLM immediately consult with the Department of Fish and Game and the Department of Transportation to make sure that there's no duplication of the agency's resources, the public's time and resources.

So, in sum, the draft EIS should adequately describe, consistently describe the water source, the cumulative impacts, and make sure that it's complying with the State permitting requirements.

Thank you very much for this opportunity to comment.

MR. LEVINE: The next person is Bill Lembright.

MR. LEMBRIGHT: Thank you.

Bill Lembright from Lucerne Valley Market and Hardware. Bill and then Lembright, L-e-m-b-r-i-g-h-t.

Our town is being overrun with these projects. I'm bothered that so few people from Lucerne Valley are here tonight. Some of them that are even neighbors to this particular project and are very vocal

aren't here tonight, so I'm kind of wondering how the word got out about this meeting. But let me get on to my comments.

They're kind of general, and they have to do with our national problems right now, and I feel that applies to this very much. This Obama care is a great example and a very parallel situation to this.

We're having this stuff ramrodded on us. The public is against the government as it stands now, and the more the government -- the public wakes up, the more they're against what the government's doing, but people don't really seem to realize.

We need to protest, you guys. We've got to write letters. We've got to call. We've got to attend meetings, letters to the editors. We just need to get to work, because we're being overrun by this stuff.

It started basically with the global warming push. That failed. They turned it into climate change, that then turned into a scandal. That's not really being addressed. It's -- these projects are just carrying on, and climate change is in shambles.

Nothing's proved doesn't mean climate change doesn't happen. We know it does. We don't know that it's manmade. We have no idea if all these projects are going to do diddly squat to change anything, except

they're going to raise the cost of living and tighten up our freedoms, reduce them, and also it looks like they're going to pretty well decimate our community.

So it's get up and do something now. And I, for one, am -- my comment to you guys, say no to this project and no to the rest of these solar and wind projects until something gets agreed on locally and nationally that this is even practical.

Natural gas, nuclear and coal are very efficient. Wind and similar are not.

So that's all I have to say. And any of you from Lucerne Valley that would like to figure out ways that we can efficiently fight this stuff, please give me your e-mail address at the store, and we'll see what we come up with.

Thank you.

MR. LEVINE: Did you want to --

MR. BELL: Chuck Bell, B-e-l-l, Lucerne Valley Economic Development Association.

We're going to send our comments in during that -- was it 60 or 90 days?

MS. WILLIS: Ninety.

MR. BELL: Ninety.

Okay. And I appreciate you guys sending us a copy. We have one hard copy. We have one. The library

has one, and I -- we have an extra disk if anybody wants to -- from the community wants to borrow it. They're welcome to it.

In terms of water, you're probable aware of the fact that I think your project is sitting on top of Mojave Water Agency pipeline that goes to the Morongo Basin. It's to reach our Morongo basin in Yucca and the Joshua Tree area, and there are turnouts available, so the construction water may be able to a cut deal with the Mojave Water Agency and not have to use good ground water for that purpose.

We are an adjudicated basin, and the water can be hauled within the basin. Domestic water could be hauled to the -- to the site.

You shouldn't need much after construction, unless they're going to wash the panels now and then.

We have asked -- LVEDA has asked the County and had a meeting to start looking at the whole of all of these projects because we're getting buried in the parts. Bill is absolutely right. We've just got too many of them.

And even the ones that -- if every one of these that has been filed on and EIR's and EIS's being written on, permits are in the process, if they all get approved, we basically could likely -- very likely lose

the land-use character -- our land-use configuration of this -- of our community.

And we just did a community plan about three years ago, and we're asking the County to help us do an energy open (sic). Now, how much of that is applied on BLM land? Probably not much. But we still need to look at BLM and the private land projects in unison cumulatively to see exactly what it's going to do to us.

So hopefully within that context, we can give you some pretty good comments. And anything we can do to help you make this as good a project as you can, we're available.

MR. LEVINE: If there's nobody else, then I'll hand this back to Tina.

MS. WILLIS: Thank you.

MR. LEVINE: Oh, wait a second. Is there somebody?

MS. WILLIS: We have this room until 8:30. If anybody else would like to make a public comment, we are here, and we'll wait, and we will accept your comment. We'll just give a few minutes.

MS. SHUMWAY: Okay. I'll make a comment.

My name is Dinah Shumway, D-i-n-a-h S-h-u-m-w-a-y.

Like Bill, I too am a little disappointed that not more people from Lucerne Valley are making

comments on this. But my issues with these types of projects have more to do with public land use than they have with the specific use itself, as anybody who can read and reads local newspapers knows my position on these issues.

However, my issue with Chevron, for example, is, there's plenty of other projects around here on fallow private land.

Hey, listen, if private landowners want to do whatever they want and it conforms with community standards, then that should be fine for communities.

But we're talking public land here. This is public. So my issues for Chevron would be, why not find private land? Hey, if I had 600 acres, I'd invite solar people to come in because I would be charging them a rent.

But I am not convinced, with the information that I have, that the public is going to reap any kind of viable comparative financial benefit from these programs.

We -- essentially, they're getting rent practically free. We're getting 20 percent or less of installed capacity to produce energy that the taxpayers are subsidizing, and that it's going to cost us all more.

Now, these, I understand, are legislative imperatives, but they do not -- these projects on public land do not serve the public, in my estimation, and I think there's many other people who also feel this way. That's only one.

The other thing is, I'm in the mining industry. I do not see or hear or read that these projects are going to be held to the same standards that the mining industry is held to.

In the mining industry, it's -- even if this is on public land, we don't obliterate habitat, as these projects do. And when that project is done, we must -- so we have mitigation. The mitigation is one to one. One acre of land given to the government of suitable habitat or up to five, depending on what kind of habitat occupies that land prior to mining.

But I don't see that these lands are going to be mitigating to anything at all. For example, if you disturb 500 acres, it's not all fallow land. If you disturb 500 acres, well then how much of that acreage are you going to have to find and give to the taxpayers, Federal government, in some way? I don't see that that's happening.

"Mitigation" means -- I don't see anything here that says you have to re-vegetate. I would hope

that would be in the conditions. But, in the mining industry, if you disturb land, in 20 or 30 years, when that mine is depleted, you must re-vegetate. I don't see that happening. That's a huge expense, so I hope you're planning for that.

But my basic objections to these projects are, they are not economic in any way, without taxpayer subsidies. They're more expensive. They're inefficient, and they take away public use from public lands.

MR. LEVINE: Thank you. Anybody else now? Okay. Thank you.

MS. WILLIS: So if there is no one else who wants to make a comment, I will now turn it over Greg to give specifics about submitting your comments.

MR. THOMSEN: Okay. Thanks again for showing up tonight, and, certainly, we had a lot larger turnout in July, but there's plenty of opportunity for people to comment and participate in this project. As Tina said, there's a 90-day period, so we look forward to hearing from a lot of you.

There are a number of ways that you can comment. You can fill out a form tonight and either give it to us tonight, or you can take one and mail it to us or drop it off at one of our offices. You can

e-mail us comments. Once again, they're due on May 19th, so you should have ample time.

Chuck mentioned that we've tried to make copies of the draft environmental document readily available. In addition to being on our website and at the libraries, both the Apple Valley and the Lucerne Valley libraries, we have them in our BLM offices, available in Barstow and in Moreno Valley. We have copies of the CD. If you haven't been on our websites, if you would like a CD, we have CDs available tonight.

And if somebody decides after tonight they would like a copy it, just let us know, and we'll help you get that.

Tina mentioned our website we have. We have a number of documents posted on this project both on our California Desert District website, which shows all the renewable projects proposed on the BLM-managed lands in Southern California; and then it's also available on the Barstow field office website.

If you -- so you can check on the websites for more information or you can e-mail us or call us. Any way you want, we'll get you the information you need.

So, once again, thanks to all of you for coming out tonight. It's a pretty nippy night out

there. Your comments are appreciated. We did hear from a lot of you last summer, and we expect that we'll hopefully hear from a lot of you over the next couple of months.

This does close the formal part of the meeting, and we're happy to stay around as long as you'd like. Like Tina said, we have the room set aside until nine o'clock.

So thanks again.

(At which time the proceedings concluded at 7:45 p.m.)

--oOo--

REPORTER'S CERTIFICATE

STATE OF CALIFORNIA)
) SS.
COUNTY OF SAN BERNARDINO)

I, AMY P. SMITH, a certified shorthand reporter for the State of California, do hereby certify:

That the said meeting was taken down by me in stenotype at the time and place therein stated and thereafter reduced to typewriting under my direction and that the transcript is a true and correct record of the proceedings here held.

I further certify that I am not of counsel or attorney for any of the parties hereto or in any way interested in the event of this cause and that I am not related to any of the parties thereto.

Dated this 24th day of March, 2010.

_____

AMY P. SMITH
Certified Shorthand Reporter
License No. 12154

Bureau of Land Management
Draft EIS Public Comment Meeting
Lucerne Valley Solar Project EIS
Lucerne Valley, CA
March 9, 2010
COMMENTS

Note: *Before including your address, telephone 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 may 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. All submissions from individuals identifying themselves as representatives or officials of organizations or businesses will be made available for public inspection in their entirety.*

Thank you for participating in tonight's Draft EIS Public Comment Meeting for the Lucerne Valley Solar Project.
Your comments on the Draft EIS are encouraged.

Name (please print legibly): MIKE HAWKINS

Affiliation (if applicable): FRIENDS of GIANT ROCK OHV CLUB

Phone: 760 365 5983 Email: MPHAWK2@WMCONNECT.com

Mailing Address: 57273 IVANHOE DR

City, State, Zip: YUCCA VALLEY CA.

COMMENTS:

I THINK THE LANDS EAST of THE 29 PALMS MARINE BASE WOULD BE BETTER SUITED TO RENEWABLE ENERGY ENDEVORS — IT WOULD CAUSE LESS IMPACT ON ANY NEARBY COMMUNITY — IT IS ALL READY BEING SERVING FOR SIMILAR PURPOSES

I THINK A NATIONAL MONUMENT IN THAT AREA IS ILL ADVISED

Turn in Comments during this meeting or
Send comments to: BLM California Desert District Office, attn: Greg Thomsen, Program Manager, 22835 Calle San Juan de Los Lagos, Moreno Valley, CA 92553 or by e-mail at LucerneSolar@blm.gov

Bureau of Land Management
Draft EIS Public Comment Meeting
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COMMENTS

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Thank you for participating in tonight's Draft EIS Public Comment Meeting for the Lucerne Valley Solar Project.
Your comments on the Draft EIS are encouraged.

Name (please print legibly): Millie Rader

Affiliation (if applicable): LVEDA, MAC

Phone: 760 220-3430 Email: millierader1@yahoo.com

Mailing Address: 32600 Spinel Rd.

City, State, Zip: Lucerne Valley, CA 92356

COMMENTS:

We live here because we enjoy the desert views. I personally ask that you take your project to another area, preferably an area that is not inhabited by humans.

Along with all of the impacts considered in this project, please consider the impacts on those of us who pay property taxes for the privilege of living in this clean, beautiful desert.

Thank you for your consideration.

—Millie—

Turn in Comments during this meeting or
Send comments to: BLM California Desert District Office, attn: Greg Thomsen, Program Manager, 22835 Calle San Juan de Los Lagos, Moreno Valley, CA 92553 or by e-mail at LucerneSolar@blm.gov