INTEROFFICE MEMO

County of San Bernardino

DATE October 9, 2013 **PHONE** 909-387-8311

FROM CHRIS CONNER, SENIOR PLANNER
Land Use Services Department

TO HONORABLE PLANNING COMMISSION

SUBJECT ITEM #2 – Sunlight Partners Conditional Use Permit, Project Number P201200174

This item was continued from August 22, 2013, to allow time for staff to respond to the attached comments on the draft Initial Study/Mitigated Negative Declaration (IS/MND) submitted by Lozeau Drury LLP which includes Exhibit A, comments from Matt Hagemann, P.G., C.H.G., and Exhibit B, comments from K. Shawn Smallwood, Ph.D. Following are responses to those comments.

1-1 Comment noted. The County of San Bernardino ("County") appreciates the Commenter's time and effort in reviewing and commenting on the Draft MND for the Landpro Solar Project ("Project"). Comments will be included in the final package to the appropriate decision makers as required.

1-2 Comment noted. The acknowledgement of the prior letter is accurate. However, the County disagrees with the Commenter's opinion that the County has failed to comply with mandates under the California Environmental Quality Act ("CEQA") and that an Environmental Impact Report ("EIR") is necessary. In contrast to the provided comment, the Initial Study and Mitigated Negative Declaration ("IS/MND") evaluated all potential impacts in detail and determined all environmental impacts would either be less than significant or less than significant with mitigation. There is no substantial evidence in the record that the Project may have a significant impact on the environment; therefore, the required CEQA document to be utilized by the lead agency is an MND. (State CEQA Guidelines, § 15070(a)).

After an initial study is prepared and it has been determined that no significant impacts will occur, either because of the design of the Project or through mitigation, then the lead agency is directed to prepare a negative declaration. (Quoting State CEQA Guidelines Section 15063(b)(2) "the lead agency **shall** prepare a negative declaration if there is no substantial evidence that the Project or any of its aspects may cause a significant effect on the environment.").

1-3 Comment noted regarding the background of Mr. Matthew Hagemann and Dr. Shawn Smallwood. No further response is necessary. It is unknown by the County if such a background constitutes an "expert" or not.

1-4 The comment provided discusses a moratorium that is not applicable to the Project and has no bearing on the evaluation or approval of the IS/MND nor on any potential environmental impacts caused by the Project. Further, there is no requirement that the IS/MND is required to discuss inconsistencies with a moratorium that was crafted and approved after the environmental documents had already been released for public review. Regardless, the comment is noted and no further response is necessary.

1-5 Pursuant to the State CEQA Guidelines Section 15063(d), an initial study shall contain in brief form a description of the project, including the location of the project, an identification of the environmental setting, and the identification of the potential environmental effects from a project along with a brief explanation to support the lead agency determinations. The IS/MND provided a detailed description of the Project, including the location of the site, surrounding land uses, a description of the photovoltaic system, anticipated site preparation and future restoration, and detailed aerial maps illustrating the parcel and surrounding environment. Maintenance on the Project parcel is minimal and would not create any environmental impacts once the Project is operational. Further, the Project Description identified the connection point along Smithson Road that will deliver electricity generated onsite to the regional transmission system. This interconnection process will be handled in conjunction with CAISO (the California Independent System Operator). Accordingly, the Project Description meets the requirements for an IS/MND pursuant to CEQA.

1-6 The County disagrees with the statement that the IS/MND fails to accurately establish the Project's environmental baseline. In particular, the comment states that the baseline is deficient for failure to disclose the potential for residual pesticides at the site, presumably based upon prior onsite agricultural uses. Additionally, the comment states the baseline is insufficient due to inadequate surveys to establish the environmental setting for biological resources.

Typically, any concern of residual pesticides would only be a potential environmental issue based upon the final onsite uses. The grading will consist of the least amount of grading necessary in order to create a staging area, access roads for equipment, and the solar array locations. The Project's final use will be a passive solar project with only minimal (four) onsite visits required per year. The Phase I Site Assessment did not find any particular hazards or onsite risks that may occur during

either construction or operations of the Project. Further, as discussed under the biological resources section, a general biological assessment was completed for the site, along with focused surveys for desert tortoise and burrowing owl. The biological report and discussion in the IS/MND provides sufficient detail as to the onsite vegetation and wildlife, clearly illustrating a sufficient environmental baseline in order to provide suitable comparison regarding potential significant impacts.

1-7 The comment states that there is a fair argument the Project may have significant and unmitigated impacts, individually and cumulatively, due to resulting construction air quality emissions impacts, a failure to quantify and estimate greenhouse gas emissions, potential adverse hazardous materials impacts to construction workers, and adverse impacts to biological resources. The County disagrees with this statement.

The IS/MND addresses the potential for construction impacts as they relate to air quality impacts and finds that construction of the site would contribute only minimal amounts of air quality impacts to the Mojave Desert Air Quality Management District ("MDAQMD") and in no way will the Project cause a significant or unavoidable environmental impact. The grading will consist of the least amount of grading necessary in order to create a staging area, access roads for equipment, and the solar array locations. This activity will constitute the most significant source of emissions during the entire process. Once the grading is complete, only minimal impacts will occur during the remainder of the construction period. No impacts are anticipated during operations. Further, as discussed in the IS/MND and the required conditions of approval, all off-road and on-road diesel vehicles and equipment will need to comply with County diesel exhaust control measures and the California Air Resources Board's requirements for such equipment, as well as detailed dust control measures pursuant to a Dust Control Plan approved by the MDAQMD. Lastly, as discussed in the Planning Commission Staff Report, the MDAQMD commented that its staff had reviewed the IS/MND and they concurred with the less than significant impact determinations. No significant impacts related to air quality during construction would occur. See also Response 1-23 and Response A-3 for additional details below.

The potential for an environmental impact related to greenhouse gas emissions (GHGs) from a project of this nature is remote and speculative. As stated under State CEQA Guidelines Section 15063, an "initial study is neither intended nor required to include the level of detail included in an EIR." Additionally, a lead agency is not required to perform a detailed technical report or study for impacts that are clearly insubstantial and any impacts that are indirect and difficult to evaluate or speculative may be evaluated with a reasonably high level of generality. (See *Save the Plastic Bag Coalition v. City of Manhattan Beach* (2011)

52 Cal. 4th 155.) As discussed in the IS/MND, the only sources of such emissions would be from the heavy equipment located onsite during minimal grading activities and from maintenance vehicles that would travel to the site twice annually. Such minor sources of potential GHGs could not possibly rise to a level that would warrant the need to quantify the amount of GHG emissions that may be generated. See also Response 1-26 for additional details below.

There is no potential for adverse hazardous materials impacts to construction workers. All contractors will adhere to State and Federal rules related to onsite safety during construction. There is no evidence that any contaminated soils are present that would cause potential risk to construction workers, and no significant impacts related to hazards or hazardous materials were determined within the IS/MND. See also Response 1-21 for additional details below.

As discussed under Response 1-6, a general biological assessment was completed for the site, along with focused surveys for desert tortoise and burrowing owl. The biological report and discussion in the IS/MND provides sufficient detail as to the onsite vegetation and wildlife, clearly illustrating that there are no potentially significant impacts to biological resources. Despite this determination that the impact is less than significant, mitigation has been included in the conditions of approval regarding the need to perform preconstruction surveys in conjunction with the appropriate wildlife regulatory authority for burrowing owl, desert tortoise, and Mojave ground squirrel. Additionally, mitigation is included in the conditions related to construction performed during the nesting season and the need for site evaluation and if necessary avoidance of any active nests as dictated by a qualified biologist.

1-8 The County disagrees with the comment that the IS/MND failed to conduct an adequate cumulative impact analysis. All impacts were determined to be less than significant with mitigation. The operation of the site is a passive solar field, with only occasional site visits from a maintenance crew. There is minimal construction required to establish the field; after that, there will virtually no other activity occurring at the site. Accordingly, any impacts to air quality, noise, traffic, greenhouse gas emissions, water quality or water resources, public services, or utilities would be extremely limited, if present at all. These are the typical drivers of potential cumulative impacts. Thus, the Project could not create an incremental effect that is significant when viewed in connection with the effect of other projects in the area. The lead agency correctly determined, based upon the IS/MND and the lack of potential for individual environmental impacts, that the Project's contribution to such impacts would not be cumulatively considerable.

1-9 The comment has been noted and filed for the record. However, the County disagrees with the Commenter's opinion that the Planning Commission should deny the Project and instead prepare an EIR. A detailed initial study was completed pursuant to all requirements under CEQA and the appropriate document required is a mitigated negative declaration, and not an EIR.

1-10 Comment noted and County does not object to the Commenter's recitation of the overall Project description.

1-11 County notes the comment provided regarding standing from the members of LIUNA Local 783 and appreciates the members' time and effort in reviewing and commenting on the IS/MND for the Project. However, the County disagrees with the position that an EIR is required in order to adequately analyze and mitigate potential impacts. A detailed initial study was completed pursuant to all requirements under CEQA and the appropriate document required is a mitigated negative declaration, and not an EIR. The IS/MND evaluated all potential impacts in detail and determined all environmental impacts would either be less than significant or could be mitigated to less than significant. There is no substantial evidence in the record that the Project may have a significant impact on the environment and an EIR therefore is not appropriate under CEQA.

1-12 Comment noted regarding various cases and discussion regarding the importance of an EIR as part of the environmental review process. No response is warranted.

1-13 The Commenter misrepresents the statutory and case law in the discussion and appears to misquote the identified CEQA sections. For example, the commenter adds the phrase "in very limited circumstances…" as describing when a negative declaration may be used. No such editorial limitation appears in the CEQA statutes or regulations. The quotation from *Citizens of Lake Murray* case appears to be dicta, since it does not accommodate circumstances where mitigation can reduce impacts to a level below significant. For ease of reference, the section is reproduced in its entirety in the footnote below.[1] Regardless, as stated within CEQA and the State CEQA Guidelines, if an initial study illustrates all impacts are either less than significant or

[1] "CEQA effectively imposes upon every 'public agency' a duty to disapprove a project, if it will have significant effects on the environment as proposed, unless and until the agency has considered 'feasible alternatives or feasible mitigation measures which will avoid or substantially lessen such significant effects.' (§ 21002.) The agency's decision to prepare an EIR invokes the duty. (See § 21002.1, 21061.) The adoption of a negative declaration operates to dispense with the duty because it is a decision that the proposed project will not affect the environment at all. (See § 21064.) Its terminal effect on the environmental review process means that it is vitally important to the purpose of CEQA. (*Citizens of Lake Murray v. San Diego* (1989) 129 Cal.App.3d 436, 440.)

can be mitigated to less than significant, then a mitigated negative declaration is the correct and appropriate document.

1-14 The County does not dispute the fair argument standard that has been developed in statutory and case law, but disagrees that a fair argument exists to justify an EIR here. The Project includes a detailed analysis supporting the fact that a less than significant impact will occur under CEQA. The information provided from the Commenter suggesting that a significant impact may occur does not alone constitute sufficient evidence to establish a fair argument that a potentially significant impact may result. (See *Friends of "B" St. v. City of Hayward* (1980) 106 CA3d 988.)

1-15 The County accepts as axiomatic the premise that the use of expert opinion supported by facts – as opposed to unsupported opinion – may constitute substantial evidence. However, as stated in Section 15064 (a)(1) of the State CEQA Guidelines, substantial evidence is to be viewed in light of the whole record before the lead agency that a project may be determined to have a significant effect on the environment. Based upon the detailed analysis in the IS/MND, feedback as to a lack of environmental impacts caused by the Project from various public agencies with specific expertise in their respective fields, and additional mitigation included as part of the conditions of approval, there is no substantial evidence in the record that the Project would create any significant impacts.

Note additional mitigation measures include: substantial mitigation to reduce air quality emission impacts during construction; compliance with the County Diesel Exhaust Control Measures and the California Air Resources Board's In-Use-Off-Road Diesel Vehicle Regulations; the requirement to cease all construction and to obtain a qualified expert if any archaeological, paleontological, and/or historical resources are uncovered; preconstruction surveys in conjunction with the appropriate wildlife regulatory authority for burrowing owl, desert tortoise, and Mojave ground squirrel; mitigation related to construction performed during the nesting season and the need for site evaluation and, if necessary, avoidance of any active nests by a qualified biologist; noise attenuation measures such as time restrictions for construction activity; and runoff and water quality controls through the incorporation of required Best Management Practices ("BMPs") and approved drainage facilities.

1-16 The comment provided discusses a moratorium that is not applicable to the Project and has no bearing on the evaluation or approval of the IS/MND nor on any potential environmental impacts caused by the Project. Further, there is no requirement that the IS/MND is required to discuss inconsistencies with a moratorium that was crafted and

approved after the environmental documents had already been released for public review. The Commenter is taking particular liberties with the inclusion of a moratorium on solar projects in the County which allows the County time to craft improved solar guidelines, and likening this to a land use plan or policy adopted for the purpose of avoiding potential environmental impacts. Again, as stated in the comment itself, the moratorium does not apply to applications for solar energy generation projects that have been accepted as complete prior to June 12, 2013. Regardless, the comment is noted and no further response is necessary.

1-17 The comment regarding the Project description is noted. The County disagrees with the statement that the IS/MND does not provide a suitable project description. While the *County of Inyo* case is widely cited for the need for an accurate and stable project description, the comment fails to note that this is in reference to a more detailed EIR. Regardless, the project description provides suitable detail and explanation to meet the requirement that an initial study "contain in brief form…a description of the project including the location of the project" as well as a the requirement that a negative declaration provide "a brief description of the project…" (See State CEQA Guidelines, § 15063(d)(1); § 15071(a).) The Project description provides the necessary information to evaluate the potential for any significant impacts and to provide informed decision-making.

1-18 Comment is noted regarding inconsistencies related to various maintenance visits per year. Maintenance activities would be conservatively estimated at three to four times per year, which provides a worst-case scenario. In no way would the change from two maintenance trips per year to four per year alter or increase the potential for a physical environmental impact in any manner. This change is merely a clarification of the facts and details and does not deprive the public of a meaningful opportunity to review and provide comments on the IS/MND. The difference between two and four maintenance visits to the site per year is minimal at best and would not create any additional environmental impacts nor would it necessitate any additional mitigation. To argue, as the Commenter does, that the difference from two trips per year to four per year is a potentially significant impact as it relates to air quality impacts is unfounded, inaccurate, and specious.

1-19 At this point, the specific connection location is not known and it would be speculative to include as part of the Project a description of the gen-ties that will connect to the transmission line. The Project Description identified the connection point along Smithson Road that will deliver electricity generated onsite to the regional transmission system. This interconnection process will be handled in conjunction with CAISO (the California Independent System Operator). Therefore, it would have

been speculative to have included the gen ties into the description of the Project and it was not considered as part of the analysis.

1-20 The County disagrees with the statement that the IS/MND fails to accurately establish the Project's environmental setting or baseline. Pursuant to the State CEQA Guidelines Section 15063(d), an initial study shall contain in brief form a description of the project, including the location of the project, an identification of the environmental setting, and the identification of the potential environmental effects from a project along with a brief explanation to support the lead agency determinations. The IS/MND fulfilled all requirements as mandated under CEQA for an appropriate environmental setting as it relates to a mitigated negative declaration. The setting is sufficient to allow the lead agency to assess the increase in potential impacts against existing conditions to allow informed decision-making on the part of the County. Given that the true potential for most significant impacts only occurs during the construction phase of the Project as opposed to the passive operation of the solar facility, the environmental baseline was more than adequate.

1-21 There is no potential for adverse hazardous materials impacts to construction workers. All contractors will adhere to State and Federal rules related to onsite safety during construction. The Phase I Site Assessment did not find any particular hazards or onsite risks that may occur during either construction or operation of the Project. There is no indication of contaminated soils that would cause potential risk to construction workers, and no significant impacts related to hazards or hazardous materials were determined within the IS/MND.

The comment makes reference to the report provided from Mathew Hagemann, C.Hg. and his concerns related to exposure to construction workers caused from the prior onsite agricultural uses. As stated in the Phase I Site Assessment, the primary crops used onsite were alfalfa crops. Such crops are considered low investment crops and do not require large amounts of pesticides when compared with other crops (citrus, tomatoes, etc.). Typical pesticides used with alfalfa focus on herbicides to kill grass and other weeds prior to the harvesting of the alfalfa. Low grade herbicides used for alfalfa disperse quickly and, as designed and implemented, are low for human toxicity. Further, occasional insecticides may be used, but that is only occasionally as necessary and typically involves a quick and controlled "knockdown" spray to kill any insects prior to harvesting the crop. Any residual pesticides from the use are very low and such sprays disperse quickly. Their use is not typically required given the desert climate and the regular harvesting that occurs for alfalfa and other similar livestock feed crops. Therefore, no significant risk to onsite workers related to hazards in the soils during construction is anticipated. The IS/MND did not fail to

establish an accurate baseline regarding the presence of such materials that may occur onsite.

1-22 The County disagrees with the statement that the IS/MND fails to accurately establish the Project's environmental baseline as it relates to biological resources and onsite surveys. As discussed under Response 1-6 and 1-7, a general biological assessment was completed for the site, along with focused surveys for desert tortoise and burrowing owl. Further, the assessment determined that no suitable habitat exists to support the Mojave ground squirrel. The onsite visits were conducted as required by biological professionals in order to clearly establish the use of the site by wildlife and plant species. The biological report and discussion in the IS/MND provides sufficient detail as to the onsite vegetation and wildlife, clearly illustrating there are no potentially significant impacts to biological resources. The IS/MND was also provided to the Department of Fish and Wildlife, Region 6, for review and comment. No comments from the department were received with regard to any of the biological data, including the format for burrowing owl and desert tortoise surveys. Regardless, as discussed below, additional onsite surveys will be completed prior to any ground-disturbing activities.

Despite this less than significant determination, mitigation has been included in the conditions of approval regarding the need to perform preconstruction surveys in conjunction with the appropriate wildlife regulatory authority for burrowing owl, desert tortoise, and Mojave ground squirrel. Additionally, mitigation is included in the conditions related to construction performed during the nesting season and the need for site evaluation and if necessary avoidance of any active nests by a qualified biologist. The baseline was clearly established and the potential environmental risks of the Project were found to be less than significant. There is no indication that other special-status species are present onsite. No nocturnal surveys, live-trappings, or bat detectors are warranted and would be an unreasonable expectation based upon the low potential for impact on biological resources at the site.

1-23 The County does not take issue with the overall discussion related to the onsite Project construction. However, the County disagrees that the air quality section of the IS/MND is insufficient in its analysis. The analysis discusses the fact that the site is in nonattainment for PM10 and Ozone and addresses the potential for a cumulative increase in particulate matter and Ozone emissions during construction. Further, the IS/MND addresses the potential for construction impacts as they relate to air quality impacts and finds that construction of the site would contribute only minimal air quality impacts to the MDAQMD. In no way would the Project cause a significant or unavoidable environmental impact related to air quality. Further, as discussed in the IS/MND and the required

conditions of approval, all off-road and on-road diesel vehicles and equipment will need to comply with County diesel exhaust control measures and the California Air Resources Board's requirements for such equipment, as well as detailed dust control measures pursuant to a Dust Control Plan approved by the MDAQMD.

As discussed in the Planning Commission Staff Report, the MDAQMD commented that its staff had reviewed the IS/MND and concurred with the less than significant impact determinations. Further, the need for a health risk assessment to evaluate construction emissions, typically in the form of diesel particulate matter, is not warranted. Determinations of health risks on sensitive receptors from such emissions are considered over a 70-year exposure period. However, onsite construction emissions are short-term in nature, expected to last only 10 months (separated by 4 distinct phases, with construction lasting approximately 10 weeks per each phase). Therefore, considering the short timeframe during which diesel particulate matter emissions would be emitted during construction, exposure to such emissions is anticipated to be less than significant during construction. Additionally, as it relates to PM10 emissions to surrounding receptors, detailed dust control measures pursuant to a Dust Control Plan will be incorporated. The Dust Control Plan includes such elements as: twice daily watering; covering of exposed storage piles; track-out methods; street sweeping; covering truck loads; use of low-sulfur diesel and low-NOx engines; idling limitations; and storm water control systems. The list of measures is extensive. No significant impacts related to air quality during construction would occur and the additional mitigation raised by the Commenter is not required. Therefore, an EIR is not necessary to address potential air quality construction impacts.

1-24 The County disagrees with the idea that the Dust Control Plan is required to be provided as part of the public review process. That is not improper deferral of mitigation. The mitigation measure includes detailed steps that will be incorporated as part of the Dust Control Plan (See Response 1-22). The plan does not defer analysis or order a report that would analyze potential impacts at a future date, but instead provides a required MDAQMD-approved control plan, which lists numerous required actions and performance standards that will occur as part of that plan before any ground disturbance activities take place. The Project applicant and the County will be committed to such mitigation in order to ensure the impacts remain less than significant. This does not constitute impermissible deferral of mitigation.[2] Note the

[2] (See *Defend the Bay v. City of Irvine* (2004) 119 Cal.App.4th 1261, 1275 ["Deferral of the specifics of mitigation is permissible where the local entity commits itself to mitigation and lists the alternatives to be considered, analyzed and possibly incorporated in the mitigation plan."]; *Sacramento Old City Ass'n v. City Council* (1991) 229 Cal.App.3d 1011, 1029 ["the agency can commit itself to eventually devising measures that will satisfy specific performance criteria articulated at the time of project approval. Where future action to carry a project forward is contingent on devising

example provided of a developer inappropriately grading of a solar project without a permit is not applicable to this Project nor does it raise a potential environmental issue under CEQA.

1-25 See Response 1-22 above. The response discusses both localized impacts from particulate matter as well as diesel particulate matter. To date there is no effective measure for evaluating cancer risks from construction equipment. This would not change if evaluated as part of an MND or an EIR. Determinations of health risks on sensitive receptors from such emissions are considered over a 70-year exposure period. However, onsite construction emissions are short-term in nature, and would occur in 10 week increments of four different phases for the entire Project. Therefore, considering the short timeframe during which diesel particulate matter emissions would be emitted during construction, exposure to such emissions is anticipated to be less than significant during construction. The additional mitigation addressed in the comment is not required or necessary.

1-26 The County disagrees with the comment provided regarding the need for a more detailed greenhouse gas emissions analysis. The emissions factors related to carbon values provided as MTCO2e (metric tons of CO2 equivalency) would be minimal and in no way would it cross a 25,000 tons per year standard. For example, construction related emissions for a 35-acre retail area center included total emissions of 1,821 MTCO2e. However, only *20 percent* of those emissions were attributed to grading of the site. Grading of the Project, while minmal, would be the single largest emission source of greenhouse gas emissions. Additionally, such emissions are typically averaged over 30 years because the average is added to the operational emissions. However, the Project will have minimal emissions other than two to four maintenance trips per year during operations. Note the Commenter fails to disclose that this proposed 25,000 ton per year value is only when the MDAQMD is either the lead agency or a responsible agency – neither of which applies to the proposed Project. Further, the cited MDAQMD section from the Commenter also fails to include that a project would also be considered less than significant if it demonstrates compliance with a state GHG reduction plan such as AB 32. Therefore, as concluded in the IS/MND, impacts related to greenhouse gas emissions would be less than significant. In fact, as discussed in the Planning Commission Staff Report, the Project actually aids in meeting both the renewable energy mandates and the California Global Warming Solutions Act (AB 32).

means to satisfy such criteria, the agency should be able to rely on its commitment as evidence that significant impacts will in fact be mitigated."]

1-27 See Response 1-21. As stated in the Phase I Site Assessment, the primary crops used onsite were alfalfa crops. Such crops are considered low investment crops and do not require large amounts of pesticides as opposed to other crops (citrus, tomatoes, etc.). Typical pesticides used with alfalfa focus on herbicides to kill grass and other weeds prior to the alfalfa being harvested. Low grade herbicides used for alfalfa disperse quickly and are very low for human toxicity. Further, occasional insecticides may be used, but that is only occasionally as necessary and typically involves a quick and controlled "knockdown" spray to kill any insects prior to harvesting the crop. Any residual from the use is very low and such sprays disperse quickly. Their use is typically not required given the desert climate and the regular harvesting that occurs for alfalfa and other similar livestock feed crops. Therefore, no significant risk to onsite workers related to hazards in the soils during construction is anticipated. An EIR is not required.

1-28 The County disagrees with the comment related to the IS/MND providing only a cursory and inadequate biological resources evaluation and a failure to take into account additional potential impacts such as avian collisions and the site's proximity to riparian vegetation. A complete biological resource evaluation was completed for the Project, including focused surveys, as well as detailed mitigation measures to ensure no potential impacts would occur. There were no additional biological resources unaccounted for at the Project site and, given these are solar panels (not wind turbines), the risk of aviary collisions is insignificant.

1-29 There are no environmental risks or potential environmental impacts related to aviary collisions. The studies provided from Dr. Smallwood rely on a huge range of assumptions. This is why the results run from a listing of 6.6 to 81 bird fatalities per year. It is also why the Commenter includes the language "depending on many variables" and "complicated formula". The reality is that there is no credible science that bird collision or aviary mortality would be increased beyond any other development with a low profile. Unlike wind turbines, solar panels do not pose such a risk. This represents a less than significant impact.

1-30 The County disagrees with the belief that the biological resources section failed to evaluate wildlife movement. The IS/MND included a complete evaluation that was provided to the Department of Fish and Wildlife, Region 6, for review and comment. No comments from the department were received. There is no substantial evidence in the record to support a fair argument that the Project will interfere with any wildlife corridors or wildlife movement. The impacts will remain less than significant.

1-31 A biological resource assessment and focused surveys were completed for the Project site which found no indication of burrowing owl, desert

tortoise, or suitable habitat for the Mojave ground squirrel. Regardless, preconstruction surveys are required for all three species in order to further reduce the already less than significant impact to biological resources. Simply disagreeing with the determination does not constitute substantial evidence, and is not sufficient in order to force the valid IS/MND into an unneeded EIR. The record reveals no indication of any special-status species located onsite. Moreover, requiring offsetting land to mitigate for the loss (mitigation banking) or additional fees paid to "local wildlife rehabilitators" is not required and is an unreasonable burden placed on the applicant given the absence of evidence indicating that any such impact would occur. This also would apply to a requirement that the applicant perform monthly monitoring of the site by biologists for two years for impacts already identified as less than significant. Further, additional monitoring of the site to ensure the "project proponent will achieve mitigation objectives and [CEQA] performance standards" would be unreasonable and not related to the potential level of impact the Project may create.

A full analysis related to biological resources was completed and detailed mitigation measures incorporated to ensure a continued less than significant impact occurs. There is no reason to include additional mitigation nor is an EIR necessary. Again, after an initial study is prepared and it has been determined that no significant impacts will occur, either because of the design of the Project or through mitigation, then the lead agency is directed to prepare a negative declaration.

1-32 The County acknowledges the statements defining cumulative impacts in the comment; however, the County disagrees with the comment that the IS/MND failed to conduct an adequate cumulative impact analysis. All impacts were determined to be less than significant with mitigation. The operation of the site is a passive solar field, with only occasional site visits from a maintenance crew. In no way will the Project create an incremental effect that is significant when viewed in connection with the effect of other projects in the area. After construction, there will be only minimal impacts to air quality, noise, traffic, greenhouse gas emissions, water quality or water resources, public services, and/or utilities. These are the typical drivers of potential cumulative impacts. The Project will provide only minimal Ozone and PM10 emissions during construction. Such minimal and short-term emissions would not constitute long-term cumulative impacts. Once operational, the emissions impacts from maintenance vehicles would occur at most four times per year. In no way would this contribute to a cumulative impact. Additionally, the IS/MND included a detailed analysis of impacts to biological resources and found no such impacts would exist onsite, either individually or cumulatively. This is not prime habitat for any sensitive species and focused surveys concluded no such species or plants are located onsite.

The level of detail required as part of a CEQA analysis is necessarily dictated by the potential level of impact. Thus, when impacts are clearly insignificant, full-blown technical emission reports are unnecessary. This includes the need to provide an overly inclusive analysis related to cumulative impacts, when no such potential for a significant impact exists. Based upon the lack of potential for individual environmental impacts during construction and the nearly nonexistent impacts during operations, the County concluded that the Project's contribution to such impacts when considered in connection with other past, present, or future projects would not be cumulatively considerable. There is insufficient evidence that a fair argument for cumulative impacts exists, and therefore an EIR is not warranted.

1-33 The IS/MND evaluated all potential impacts in detail and determined all environmental impacts would either be less than significant or could be mitigated to less than significant level. There is no substantial evidence in the record that the Project may have a significant impact on the environment; therefore, the required CEQA document to be utilized by the County is a mitigated negative declaration. (State CEQA Guidelines, § 15070(a)). The information provided in the comments do not create a fair argument that additional environmental impacts will occur beyond what was evaluated in the IS/MND and an EIR is not warranted.

A-1 The County acknowledges the provided information, but disagrees with the statement that significant Project impacts exist related to air quality, greenhouse gas emissions, cumulative impacts, and hazards and hazardous materials. The IS/MND provided a detailed analysis of all potential environmental impacts and concluded such impacts were either less than significant or could be mitigated to less than significant. Therefore, the required document to be approved by the lead agency is a mitigated negative declaration and not an EIR.

A-2 The County has no objection to the comment provided as it relates to the Project. No additional response is necessary.

A-3 The County disagrees with the statement that the analysis related to construction air quality impacts is unsupported. While the Project did not provide numerical values related to criteria emissions, the Project does include suitable mitigation that will clearly reduce the impacts to less than significant.

The examples provided in the comment inserted to argue the Project analysis is insufficient related to construction emissions actually further supports the Project's less than significant findings. Upon review of the cited air quality report for the two similar sized projects (Sol Orchard Valley Center and Sol Orchard Ramona), the reports found only PM10 would be a potentially significant impact in the San Diego APCD related

to a violation of the tons per day regional emissions level during construction. However, with the sole mitigation requiring watering at the site two times per day, the impacts were found to be less than significant. Not only does the Project include mitigation to water at least twice daily, but also includes a host of other measures as part of the Dust Control Plan, such as covering of exposed storage piles, track-out methods, street sweeping, covering truck loads, use of low-sulfur diesel and low-NOx engines, idling limitations, and storm water control systems. Therefore, similar to those two projects provided from the Commenter – both of which were approved with mitigated negative declarations – the Project will have a less than significant regional air quality impact.

As discussed in the Planning Commission Staff Report, the MDAQMD commented that its staff had reviewed the IS/MND and they concurred with the less than significant impact determinations. Further, the need for a health risk assessment to evaluate construction emissions, typically in the form of diesel particulate matter or for particulate matter, is not warranted. Determinations of health risks on sensitive receptors from such emissions are considered over a 70-year exposure period. However, onsite construction emissions are short-term in nature. Therefore, considering the short timeframe (four phases of construction lasting 10 weeks each phase) during which diesel particulate matter emissions would be emitted during construction, exposure to such emissions is anticipated to be less than significant during construction. Additionally, as it relates to PM10 emissions to surrounding receptors, detailed dust control measures pursuant to a Dust Control Plan will be incorporated in order to reduce any impacts on surrounding receptors. The additional mitigation provided in Appendix A is unnecessary and an EIR is not required.

A-4 See Comment 1-32 above related to cumulative air quality impacts. No additional response is necessary.

A-5 See Comment 1-26 above related to greenhouse gas emissions impacts. No additional response is necessary.

A-6 See Comment 1-21 and 1-27 above related to hazards and hazardous waste impacts related to onsite soils. No additional response is necessary.

A-7 The County acknowledges the provided resume for Matthew Hagemann, P.G., C.Hg. No further response is necessary.

B-1 The County acknowledges the provided information, but disagrees with the statement that significant Project impacts would occur that were not addressed in the IS/MND. The IS/MND provided a detailed analysis of

all potential environmental impacts and concluded such impacts were either less than significant or could be mitigated to less than significant. Therefore, the required document to be approved by the lead agency is a mitigated negative declaration and not an EIR.

B-2 County acknowledges receipt of the background of Dr. Smallwood. No additional response is necessary.

B-3 The County disagrees with the comment provided regarding the accuracy or level of analysis provided as part of the biological review process. Merely stating that there should have been additional species located onsite based only on the location of the Mojave River is not sufficient evidence to support the potential for additional onsite species. It is not expert opinion to simply state that the detailed biological analysis should have found some species onsite and therefore the review must be inadequate. A biological resource assessment and focused surveys were completed for the Project site which found no indication of burrowing owl, desert tortoise, or suitable habitat for the Mojave ground squirrel. Regardless, preconstruction surveys are required for all three species in order to further reduce the already less than significant impact to biological resources. Simply disagreeing with the determination does not constitute substantial evidence sufficient to support the preparation of an EIR. Whether the commentator disagrees with what should have been found, the fact is that there was no indication of any special-status species located onsite. Therefore, additional studies beyond those completed such as nocturnal studies are unreasonable and unnecessary.

The IS/MND was provided to the Department of Fish and Wildlife, Region 6, for review and comment. No comments from the department were received. This includes the biological data, including the format for burrowing owl and desert tortoise surveys. A full analysis related to biological resources was completed and detailed mitigation measures incorporated to ensure a continued less than significant impact occurs. There is no reason to included additional mitigation nor is an EIR necessary.

B-4 See Response B-3. Merely providing the names of special-status species on a list and claiming they could occur onsite is insufficient evidence to establish a fair argument that the detailed biological analysis and focused surveys were insufficient and that additional onsite species were unaccounted for in the analysis.

B-5 The County disagrees with the bird collision information provided as evidence that a significant impact will occur. Bird collisions are a phenomena associated with power lines, car collisions, resident and commercial glass collisions, urban light, and cellular towers. It also

includes loss of species from wind turbines – yet that statistic pales in comparison to the species lost by other methods. According to the American Bird Conservancy, hundreds of millions of birds die each year in collisions with manmade structures, including glass windows and buildings, communication towers, and wind turbines (http://www.abcbirds.org/abcprograms/policy/collisions/). However, while research is continuing as to the potential for bird kills at solar sites, the mortality level appears comparatively low. Further, as concluded at the end of the complicated equations provided in the comment, the Commenter states:

> "Fatality monitoring study resulted in a highly uncertain fatality rate estimate, which was revealed to be even more uncertain when considering national averages of the adjustment factors and when carrying the error terms through the calculations. The direct impact of the LANDPRO Solar Project can be said to be highly uncertain at this point."

This uncertainty does not justify negating the detailed biological analysis performed as part of the IS/MND and does not justify additional monitoring or an EIR.

B-6 As stated prior, the County disagrees with the belief that the biological resources section failed to evaluate wildlife movement. The IS/MND included a complete evaluation that was provided to the Department of Fish and Wildlife, Region 6, for review and comment. No comments from the department were received. There is no substantial evidence in the record to support a fair argument that the Project will interfere with any wildlife corridors or wildlife movement. The impacts will remain less than significant.

B-7 The County disagrees with the comment that the IS/MND failed to conduct an adequate cumulative impact analysis. All impacts were determined to be less than significant with mitigation. The operation of the site is a passive solar field, with only occasional site visits from a maintenance crew. The Project will not create an incremental effect that is significant when viewed in connection with the effect of other projects in the area. Based upon the lack of potential for individual environmental impacts during construction and the nearly nonexistent impacts during operations, the County concluded that the Project's contribution to such impacts when considered in connection with other past, present, or future projects would not be cumulatively considerable.

B-8 A biological resource assessment and focused surveys were completed for the Project site which found no indication of burrowing owl, desert tortoise, or suitable habitat for the Mojave ground squirrel. Regardless,

preconstruction surveys are required for all three species in order to further reduce the already less than significant impact to biological resources. Simply disagreeing with the determination does not create a fair argument sufficient to support the preparation of an EIR. There was no indication of any special-status species located onsite. Moreover, requiring offsetting land to mitigate for the loss (mitigation banking) or the payment of additional fees to "local wildlife rehabilitators" is not required and is an unreasonable burden placed on the applicant that goes beyond a reasonable relationship between the required mitigation and the potential impact. This also applies to a requirement for monthly monitoring of the site by biologists for two years for impacts already identified as less than significant or the requirement for additional monitoring of the site paid for from funds to "support named individuals or an organization to track the implementation of mitigation measures." Evidently, according to the Commenter, this can easily be accomplished by "provid[ing] a performance bond in an amount that is sufficient for an independent party to achieve the mitigation objectives originally promised…" Again, such requirements are totally unreasonable and are not related to the potential level of impact caused by the Project.

B-9 The remaining material includes an overview of Dr. Smallwood's achievements and various selected articles and protocols; none of which address potential environmental impacts related to the Project. No additional response is necessary.

In addition to the comments submitted by Lozeau Drury LLP, Kimberly Cox, General Manager of the Helendale Community Services District (CSD), provided testimony at the August 22, 2013 hearing expressing concerns about dust control and aesthetic impacts on the adjacent property to the west that is owned by the CSD. In response to these concerns, the applicant has proposed to install slats in the chain-link fencing along the western property line to screen the proposed solar arrays. Staff has also added a Condition of Approval that requires submittal and approval of an operational Dust Control Plan that will reduce windblown dust during operation.

STAFF RECOMMENDATION:

1) **ADOPT** the Mitigated Negative Declaration and find that the Initial Study has been completed in compliance with CEQA, that it has been reviewed and considered prior to approving the Project and that the Initial Study/Mitigated Negative Declaration reflects the independent judgment of San Bernardino County;

2) **APPROVE** a Conditional Use Permit to establish a 7.5-MW PV solar energy generation facility on 80.6 acres subject to the recommended conditions of approval;

3) **ADOPT** the Findings for approval of the Conditional Use Permit; and

4) **FILE** a Notice of Determination.

Att: Lozeau Drury Comment Letter
Revised Conditions of Approval

CONDITIONS OF APPROVAL

GENERAL REQUIREMENTS

Conditions of Operation and Procedure

[Not subject to Condition Compliance Release Form (CCRF) signatures]

LAND USE SERVICES – Planning Division (909) 387-8311

1. Project Approval Description. This Conditional Use Permit (CUP) project is approved to be constructed and operated in compliance with the San Bernardino County Code (SBCC), California Building Codes (CBC), the following conditions of approval, the approved site plan, and all other required and approved reports and displays (e.g. elevations). This CUP project is approved to establish a 7.5-megawatt (MW) solar power generation facility on 80 acres. The arrays of PV panels will be mounted on single-axis tracking systems and will have a maximum height of 9 feet. Substantial on-site grading (i.e. disking or scarification) or vegetation removal shall not occur during the installation of the proposed project. Each solar module shall be fastened to the ground surface via driven piles resulting in minimal disturbance to topsoil and allowing retention of much of the on-site vegetation. The project site will be surrounded by an eight-foot high chain link fence with slats installed in the fencing along the western property line. No barbed wire or other sharp pointed material shall be allowed. Any proposed change to this Project Description including maximum height and/or tracking systems shall require a Revision to an Approved Action application to be filed with County Planning.

   The developer shall provide a copy of the approved conditions and the site plan to every current and future project tenant, lessee, and property owner to facilitate compliance with these conditions of approval and continuous use requirements for the Project Site with APN: 04666-181-59-0000 and Project Number: P201200174.

2. Project Location. The project site in an unincorporated area of the County of San Bernardino (County) on the southwest corner of Wild Road and Smithson Road. The project site is in the unincorporated community of Helendale in the First Supervisorial District.

3. Zoning Standards. The project site is located in the Desert Region within the Rural Living Land Use Zoning District, 5 acre minimum parcel size (RL-5.) RL Development Standards are listed in SBCC section 82.03.060. The following standards apply to the project:

   - Solar energy generating equipment and their mounting structures and devices shall be set back from the property lines either pursuant to the standards in the Land Use Zoning District, or 130 percent of maximum height of the mounted structure, whichever is greater.

4. Facility Design. The facility design shall incorporate the following guidelines:
   - The applicant shall arrange the arrays in a logical, orderly manner and pattern.
   - The applicant shall maintain the panels, inverters, and transformers so that electrical interference will not affect adjacent properties.
   - The applicant shall perform any repairs or upgrades to the components of the solar power facility at such times and in such a manner that noise and glare will not be significantly disruptive to adjacent properties, roads, or traffic.

5. Continuous Maintenance. The project property owner shall continually maintain the property so that it is not dangerous to the health, safety, and general welfare of both on-site users (e.g. employees) and surrounding properties. The developer shall ensure that all facets of the development are regularly inspected, maintained and that any defects are timely repaired. The elements to be maintained, include but are not limited to:
   - Annual maintenance and repair inspections shall be conducted for all structures, fencing/walls, driveways, and signs to assure proper structural, electrical, and mechanical safety.
   - Graffiti and debris shall be removed within 48 hours of notification.
   - Dust control measures shall be maintained on any undeveloped areas where landscaping has not been provided.
   - Erosion control measures shall be maintained to reduce water runoff, siltation, and promote slope stability.
   - Signage. All on-site signs, including posted area signs (e.g. “No Trespassing”) shall be maintained in a clean readable condition at all times and all graffiti and vandalism shall be removed and repaired on a regular basis. Signs on the site shall be of the size and general location as shown on the approved site plan or subsequently County Planning-approved sign plan.
   - Fire Lanes. All markings required by the Fire Department, including “No Parking" designations and “Fire Lane” designations shall be clearly defined and shall be maintained in good condition at all times.

6. Performance Standards. The approved land uses shall operate in compliance with the general performance standards listed in the SBCC Chapter 83.01, regarding air quality, electrical disturbance, fire hazards (storage of flammable or other hazardous materials), heat, noise, vibration, and the disposal of liquid waste. In addition to these, none of the following shall be perceptible without instruments at any point outside the project boundaries at adjoining property lines:
   - Odors: No offensive or objectionable odor.
   - Smoke: No smoke of a greater density than that described in No. 2 on the Ringelmann Chart, as published currently by the United States Bureau of Mines, shall be emitted from any project source.
   - Radiation: No dangerous amount of radioactive emissions.
   - Toxic Gases: No emission of toxic, noxious or corrosive fumes of gases.

- Glare: No intense glare that is not effectively screened from view at any point outside the project boundary.

7. Revisions. Any proposed change to the approved use/activity on the site (e.g. from solar facility to other uses); or any increase in the developed area of the site or expansion to the approved facilities, including changes to structures, tracking system, equipment, elevations, heights, signs, parking allocation, lighting, or a proposed change in the conditions of approval, including operational restrictions from those shown either on the approved site plan and/or in the conditions of approval shall require that an additional land use application (e.g. Revision to an approved Action) be approved by the County. The developer shall prepare, submit with fees, and obtain approval of the application prior to implementing any such revision or modification. (SBCC §86.06.070)

8. Continuous Effect/Revocation. All of the conditions of approval applied to this project shall be effective continuously throughout the operative life of the project for all approved structures and approved land uses/activities. Failure of the property owner or developer to comply with any or all of the conditions at any time may result in a public hearing and possible revocation of the approved land use, provided adequate notice, time, and opportunity is provided to the property owner, developer, or other interested party to correct the non-complying situation.

9. Developer Defined. The term "developer" as used in these conditions of approval for this project and for any development of this project site, includes all of the following: the applicant, the property owner, and any lessee, tenant or sub-tenant, operator and/or any other agent or other interested party of the subject project and/or project site and/or any heir or any other successor in interest in the project site or project land use by sale or by lease of all or of a portion of the project site or project land uses and/or any other right given to conduct any land use in any or all of the project structures or any area on the project site.

10. Indemnification. In compliance with SBCC §81.01.070, the developer shall agree to defend, indemnify, and hold harmless the County or its "indemnities" (herein collectively the County's elected officials, appointed officials [including Planning Commissioners], Zoning Administrator, agents, officers, employees, volunteers, advisory agencies or committees, appeal boards or legislative body) from any claim, action, or proceeding against the County or its indemnitees to attack, set aside, void, or annul an approval of the County by an indemnitee concerning the map or permit or any other action relating to or arising out of County approval, including the acts, errors, or omissions of any person and for any costs or expenses incurred by the indemnitees on account of any claim, except where such indemnification is prohibited by law. In the alternative, the developer may agree to relinquish such approval.

Any condition of approval imposed in compliance with the County Development Code or County General Plan shall include a requirement that the County acts reasonably to promptly notify the developer of any claim, action, or proceeding and that the County cooperates fully in the defense. The developer shall reimburse the County and its indemnitees for all expenses resulting from such actions, including any court costs and attorney's fees, which the County or its indemnitees may be required by a court to pay as a result of such action.

At its sole discretion, the County may participate at its own expense in the defense of any such action, but such participation shall not relieve the developer of their obligations under this condition to reimburse the County or its indemnitees for all such expenses.

This indemnification provision shall apply regardless of the existence or degree of fault of indemnitees. The developer's indemnification obligation applies to the indemnitee's "passive" negligence but does not apply to the indemnitee's "sole" or "active" negligence or "willful misconduct" within the meaning of Civil Code Section 2782.

11. *Local Labor. The developer shall give preference to and employ San Bernardino County residents as much as practicable during construction and operation of the facility.*

12. Development Impact Fees. Additional fees may be required prior to issuance of development permits. Fees shall be paid as specified in adopted fee ordinances.

13. Project Account. The Job Costing System (JCS) account number is P201200174. This is an actual cost project with a deposit account to which hourly charges are assessed by various county agency staff (e.g. Land Use Services, Public Works, and County Counsel). Upon notice, the developer shall deposit additional funds to maintain or return the account to a positive balance. The developer is responsible for all expenses charged to this account. Processing of the project shall cease, if it is determined that the account has a negative balance and that an additional deposit has not been made in a timely manner. A minimum balance of $1,000.00 shall be in the project account at the time of project approval and the initiation of the Condition Compliance Review. Sufficient funds shall remain in the account to cover all estimated charges that may be made during each compliance review. All fees required for processing shall be paid in full prior to final inspection, occupancy, and/or operation of each approved use in each approved structure or land use activity area. There shall be sufficient funds ($500.00 minimum) remaining in the account to properly fund file closure and any other required post-occupancy compliance review and inspection requirements (e.g. landscape performance).

14. Expiration/CUP. This project permit approval shall expire and become void if it is not exercised within three years of the effective date of this approval, unless an extension of time is approved. The permit is deemed exercised when either:
    - The permittee has commenced actual construction or alteration under a validly issued Building Permit or
    - The permittee has substantially commenced the approved land use or activity on the project site, for those portions of the project not requiring a Building Permit. (SBCC 86.06.060)

    Occupancy of completed structures and operation of the approved exercised land use remains valid continuously for the life of the project and the approval runs with the land, unless one of the following occurs:
    - Construction permits for all or part of the project are not issued or the construction permits expire before the structure is completed and the final inspection is approved.
    - The land use is determined by the County to be abandoned or non-conforming.
    - The land use is determined to be not operating in compliance with these conditions of approval, the County Code, or other applicable laws, ordinances, or regulations. In these cases, the land use may be subject to a revocation hearing and possible termination.

    PLEASE NOTE: This will be the ONLY notice given of the expiration date. The developer is responsible for initiation of any Extension of Time application.

15. Extension of Time/CUP. Extensions of time to the expiration date (listed above or as otherwise extended) may be granted in increments each not to exceed an additional three years beyond the current expiration date. An application to request consideration of an extension of time may be filed with the appropriate fees no less than 30 days before the expiration date. Extensions of time may be granted based on a review of the application, which includes a justification of the delay in construction and a plan of action for completion. The granting of such an extension request is a discretionary action that may be subject to additional or revised conditions of approval or site plan modifications. (SBCC §86.06.060)

16. Condition Compliance. In order to obtain construction permits for grading, building, final inspection and/or tenant occupancy for each approved building, the developer shall process a Condition Compliance Release Form (CCRF) for each respective building and/or phase of the development through County Planning in accordance with the directions stated in the Approval letter. County Planning shall release their holds on each phase of development by providing to County Building and Safety the following:
    - Grading Permits – a copy of the signed CCRF for grading/land disturbance and two “red” stamped and signed approved copies of the grading plans.
    - Building Permits – a copy of the signed CCRF for building permits and three “red” stamped and signed approved copies of the final approved site plan.

- Final Inspection – a copy of the signed CCRF for final inspection of each respective building, after an on-site compliance inspection by County Planning.

17. Additional Permits. The property owner, developer, and land use operator are all responsible to ascertain and comply with all laws, ordinances, regulations, and any other requirements of Federal, State, County, and Local agencies as are applicable to the development and operation of the approved land use and project site. These include:
    a) FEDERAL: U.S. Army Corps of Engineers, U.S. Fish and Wildlife Service
    b) STATE: California Department of Fish and Wildlife, Mojave Desert Air Quality Management District, Colorado Regional Water Quality Control Board, California Energy Commission
    c) COUNTY: Land Use Services – Planning / Building and Safety / Code Enforcement/Land Development, County Fire, Environmental Health Services, and Public Works
    d) LOCAL: N/A

18. Lighting. Any lighting shall be maintained so that all lights are operating properly for safety purposes and shall not project onto adjoining properties or roadways. Lighting shall adhere to San Bernardino County Desert and Mountain night light regulations.

19. Clear Sight Triangle. Adequate visibility for vehicular and pedestrian traffic shall be provided at clear sight triangles at all 90-degree angle intersections of public rights-of-way and private driveways. All signs, structures, and landscaping located within any clear sight triangle shall comply with the height and location requirements specified by County Development Code (SBCC 83.02.030) or as otherwise required by County Traffic.

20. Cultural Resources. If archaeological, paleontological and/or historical resources are uncovered during ground disturbing activities, all work in that area shall cease immediately until written clearance by County Planning is provided indicating that satisfactory mitigation has been implemented. A qualified expert (e.g. archaeologist or paleontologist), as determined by County Planning in consultation with the County Museum shall be hired to record the find and recommend any further mitigation. The "Developer" shall implement any such additional mitigation to the satisfaction of County Planning and the County Museum. If human remains are uncovered during ground disturbing activities, the San Bernardino County Coroner shall be contacted within 24 hours of the find. If the remains or cultural artifacts are determined to be of Native American origin, the local Native American representative shall also be notified. [MM CR-2]

21. AQ/Construction and Operational Mitigation. Operation of all off-road and on-road diesel vehicles/equipment shall comply with the County Diesel Exhaust Control Measures [SBCC §83.01.040 (c)] and the California Air Resources Board's In-Use-Off-Road Diesel Vehicle Regulations, including but not limited to:

a) Equipment/vehicles shall not be left idling for period in excess of five minutes
b) Engines shall be maintained in good working order to reduce emissions
c) Onsite electrical power connections shall be made available where feasible
d) Ultra low-sulfur diesel fuel shall be utilized (State law)
e) Electric and gasoline powered equipment shall substituted for diesel powered equipment where feasible
f) Signs shall be posted requiring all vehicle drivers and equipment operators to turn off engines when not in use.
g) In addition, all on-road diesel trucks shall not idle more than five minutes per truck trip or per day on the project site (State law).
h) All transportation refrigeration units (TRU's) shall be provided electric connections.

22. Noise. The following noise attenuation measures shall be implemented:
    - Exterior construction activities shall be limited between 7 a.m. and 7 p.m. There shall be no exterior construction activities on Sundays or National Holidays.
    - Muffling of construction equipment shall be per manufacturer's specifications.
    - All stationary construction and operations equipment shall be placed in a manner so that emitted noise is directed away from sensitive receptors nearest the project site.

LAND USE SERVICES – Code Enforcement (909) 387-8311

23. Enforcement. If any County enforcement activities are required to enforce compliance with the conditions of approval, the property owner shall be charged for such enforcement activities in accordance with the County Code Schedule of Fees.

24. Weed Abatement. In conjunction with required permits, the applicant shall comply with San Bernardino County Desert Area Fire Hazard Abatement regulations [SBCC§ 23.031-23.043] and periodically clear the site of all non-complying vegetation. This includes removal of all Russian thistle (tumbleweeds).

LAND USE SERVICES – Building and Safety (909) 387-8311

25. Walls. Submit plans and obtain separate building permits for any required walls, retaining walls, or trash enclosures.

PUBLIC HEALTH – Environmental Health Services [DEHS] (800) 442-2283

26. Noise. Noise level shall be maintained at or below County Standards, Development Code Section 83.01.080. For information, please call DEHS at 800-442-2283.

27. Septic Maintenance. The septic system shall be maintained so as not to create a public nuisance and shall be serviced by a DEHS permitted pumper. For information, please call DEHS at 800-442-2283.

28. Refuse. All refuse generated at the premises shall at all times be stored in approved containers and shall be placed in a manner so that environmental public health nuisances are minimized. All refuse not containing garbage shall be removed from the premises at least **1** time per week, or as often as necessary to minimize public health nuisances. Refuse containing garbage shall be removed from the premises at least **2** times per week, or as often if necessary to minimize public health nuisances, by a permitted hauler to an approved solid waste facility in conformance with San Bernardino County Code Chapter 8, Section 33.0830 et. seq. For information, please call DEHS/LEA at: 800-442-2283.

SAN BERNARDINO COUNTY FIRE – (760) 995-8190

29. Jurisdiction. The above referenced project is under the jurisdiction of the San Bernardino County Fire Protection District, herein "Fire Department". Prior to any construction occurring on any parcel, the developer shall contact the Fire Department for verification of current fire protection requirements. All new construction shall comply with the current Uniform Fire Code requirements and all applicable statutes, codes, ordinances, and standards of the Fire Department.

30. Additional Requirements. In addition to the Fire requirements stated herein, other requirements from the Solar Photovoltaic Installation Guideline from the California State Fire Marshal may arise at the time of field inspection.

LAND USE SERVICES - Land Development – Drainage (909) 387-8311

31. FEMA Flood Zone. The project is located within Flood Zone D according to FEMA Panel Number 4500H dated 08/28/2008. Flood hazards are undetermined in this area, but possible.

32. Tributary Drainage. Adequate provisions should be made to manage the tributary off-site/on-site drainage flows around and through the site in a manner that will not adversely affect adjacent or downstream properties.

33. Natural Drainage. The natural drainage courses traversing the site shall not be occupied or obstructed.

34. Additional Drainage Requirements. In addition to drainage requirements stated herein, other on-site and/or off-site improvements may be required that cannot be determined from tentative plans at this time and would have to be reviewed after more complete improvement plans and profiles have been submitted to this office.

LAND USE SERVICES - Land Development– Roads (909) 387-8311

35. Road Standards. All required street improvements shall comply with the latest San Bernardino County Road Planning and Design Standards and the San Bernardino County Standard Plans.

PRIOR TO ANY LAND DISTURBANCE OR ISSUANCE OF ANY GRADING PERMITS,
Completion of the following must occur, with CCRF signatures

LAND USE SERVICES – Building and Safety (909) 387-8311

36. Runoff. Applicant must hold all runoff to pre-development levels per Section 82.13.080 of the San Bernardino County Development Code.

37. Erosion and Sediment Control Plan. Applicant shall submit an erosion and sediment control plan and permit application to Building and Safety for review and approval prior to any land disturbance.

38. Preconstruction Inspection. A preconstruction inspection, tree removal plan and permit in compliance with the County's Plant Protection and Management Ordinance, shall be approved prior to any land disturbance and/or removal of any trees or plants.

39. Grading Plans. If grading exceeds fifty (50) cubic yards, plans are required to be submitted to and approved by Building Safety.

40. NPDES Permit. A National Pollutant Discharge Elimination System (NPDES) permit – Notice of Intent (NOI) is required on all grading of one acre or more prior to issuance of a grading/construction permit. Contact the Regional Water Quality Control Board (RWQCB), Lahontan Region, for specifics.

41. RWQCB Permit. Prior to permit issuance, CONSTRUCTION projects involving one or more acres must be accompanied by a copy of the Regional Board permit letter with the WDID#. Construction activity includes clearing, grading, or excavation that results in the disturbance of at least one acre of land total.

LAND USE SERVICES – Planning (909) 387-8311

42. Landscape Buffers/Translocation Plan. The Developer shall leave in place existing native landscaping buffers between the solar panel field and the adjacent properties.

43. **Pre-construction Survey. As a standard operating procedure for projects located in native habitat, a qualified biologist shall conduct a 30-day preconstruction survey to determine if DT, MGS, and/or BUOW have migrated onto the site. If the biologist encounters any of these species during the pre-construction survey, then the project proponent must contact the appropriate regulatory authority (USFWS and/or CDFG) to obtain the required take authorization for the project.** ***(MM BIO-1, Prior to Land Disturbance/Grading)***

44. **<u>Nesting Birds.</u> The State of California prohibits the "take" of active bird nests. To avoid an illegal take of active bird nests, any grubbing, brushing or tree removal shall be conducted outside of the State identified nesting season (February 15 through September 1). Alternatively, a qualified biologist shall evaluate the site prior to initiation of ground disturbance to determine the presence or absence of nesting birds. Avoidance of active bird nests MUST occur during the nesting season. If an active nest is located in the project construction area it will be flagged and a 300-foot avoidance buffer placed around it. No activity will occur within the 300-foot buffer until the young have fledged the nest.** ***(MM BIO-2, Prior to Land Disturbance/Grading)***

45. **<u>AQ – Construction Mitigation</u>. Developer shall submit written verification that all construction contracts and sub-contracts for the project contain provisions that require adherence to the following standards to reduce impacts to air quality: During construction, each contractor and subcontractor shall implement the following, whenever feasible:**

- **MDAQMD-approved Dust Control Plan (DCP) submitted with the Grading Plans. The DCP shall include these elements to reduce dust production:**
- **Exposed soil shall be kept continually moist through a minimum of twice daily waterings to reduce fugitive dust during all grading and construction activities**
- **Street sweeping shall be conducted when visible soil accumulations occur along site access roadways to remove dirt dropped by construction vehicles.**
- **Site access driveways and adjacent streets shall be washed daily, if there are visible signs of any dirt track-out at the conclusion of any workday.**
- **Tires of vehicles will be washed before the vehicle leaves the project site and enters a paved road.**
- **All trucks hauling dirt away from the site shall be covered**
- **During high wind conditions (i.e., wind speeds exceeding 25 mph), areas with disturbed soil shall be watered hourly and activities on unpaved surfaces shall be terminated until wind speeds no longer exceed 25 mph.**
- **Storage piles that are to be left in place for more than three working days shall either be:**
  - **Sprayed with a non-toxic soil binder, or**
  - **Covered with plastic, or**
  - **Re-vegetated until placed in use.**
- **Provide documentation prior to beginning construction demonstrating that the project proponents will comply with all MDAQMD regulations.**
- **Suspend use of all construction equipment operations during second stage smog alerts. For daily forecast, call (800) 367 4710 (San Bernardino and Riverside counties).**
- **Trucks/equipment shall not be left idling on site for periods in excess of ten minutes.**

- **Provide temporary traffic control during all phases of construction.**
- **Provide on-site food service for construction workers.**
- **Use reformulated low-sulfur diesel fuel in equipment and use low-NOx engines, alternative fuels and electrification. Apply 4-6 degree injection timing retard to diesel IC engines. Use catalytic converters on gasoline-powered equipment.**
- **Minimize concurrent use of equipment through equipment phasing.**
- **Substitute electric and gasoline-powered equipment for diesel-powered equipment.**
- **Onsite electrical power hook-ups shall be provided for electric construction tools to eliminate the need for diesel-powered electronic generators.**
- **Maintain construction equipment engines in good order to reduce emissions. The developer shall have each contractor certify that all construction equipment is properly serviced and maintained in good operating condition.**
- **Install storm water control systems to prevent mud deposition onto paved areas.**
- **Contractors shall use low sulfur fuel for stationary construction equipment as required by AQMD Rules 431.1 and 431.2 to reduce the release of undesirable emissions.**

(MM AQ-1, Prior to Land Disturbance/Grading)

PUBLIC WORKS – Surveyor (909) 387-8149

46. ROS. A Record of Survey or Corner Record is required to be filed per the Business and Professions Code, to facilitate the location of the property lines for the proposed chain link fencing and due to bearings and distances being shown on the Site Plan that are not of record.

47. Monumentation. If any activity on this project will disturb **any** land survey monumentation, including but not limited to vertical control points (benchmarks), said monumentation shall be located and referenced by or under the direction of a licensed land surveyor or registered civil engineer authorized to practice land surveying **prior** to commencement of any activity with the potential to disturb said monumentation, and a corner record or record of survey of the references shall be filed with the County Surveyor (Section 8771(b) Business and Professions Code).

LAND USE SERVICES - Land Development– Drainage (909) 387-8311

48. Drainage Facility Design. A Registered Civil Engineer shall investigate and design adequate drainage facilities to intercept and conduct the off-site and on-site drainage flows around and through the site in a manner, which will not adversely affect adjacent or downstream properties. Submit drainage study for

review and obtain approval. A $520 deposit for drainage review will be collected upon submittal to the Land Development Division.

49. Topo Map. A topographic map shall be provided to facilitate the design and review of necessary drainage facilities.

50. LDD/Grading Plans. Applicant shall submit grading plans to the Land Development Division, Drainage Section for review and approval. The Land Development Division will collect a $520 deposit for grading review upon submittal.

51. Natural Drainage. The natural drainage courses traversing the site shall not be occupied or obstructed.

LAND USE SERVICES - Land Development– Roads (909) 387-8311

52. Maintenance Agreement. The developer shall enter into a maintenance agreement with the Department of Public Works, Transportation Operations Division to insure all County maintained roads utilized by construction traffic shall remain in acceptable condition during construction.

PUBLIC WORKS – Solid Waste Management Division (909) 386-8701

53. C&D Plan – Part 1. The developer shall prepare, submit, and obtain approval from Solid Waste Management Division (SWMD) of a "Construction Waste Management Recycling Plan (C&D Plan), Part I". The C&D Plan shall list the types and volumes of solid waste materials expected to be generated from grading and construction. The Plan shall include options to divert from landfill disposal materials for reuse or recycling by a minimum of 50 percent of total volume.

    Upon completion of construction, the developer shall complete SWMD's C&D Plan Part 2". This summary shall provide documentation of diversion of materials including but not limited to receipts or letters from diversion facilities or certification regarding reuse of materials on site.

SAN BERNARDINO COUNTY FIRE – (760) 995-8190

54. Access. The development shall have a minimum of ONE point of vehicular access. These are for fire/emergency equipment access and for evacuation routes. Standard 902.2.1

    Single Story Road Access Width: All buildings shall have access provided by approved roads, alleys and private drives with a minimum twenty six (26) foot unobstructed width and vertically to fourteen (14) feet six (6) inches in height. Other recognized standards may be more restrictive by requiring wider access provisions.

Multi-Story Road Access Width: Buildings three (3) stories in height or more shall have a minimum access of thirty (30) feet unobstructed width and vertically to fourteen (14) feet six (6) inches in height. [F41]

PRIOR TO ISSUANCE OF BUILDING PERMITS,
Completion of the following must occur, with CCRF signatures

LAND USE SERVICES / Land Development– Roads (909) 387-8311

55. Road Dedication/Improvement. The developer shall submit for review and obtain approval from the Land Use Services Department of the following dedications, plans and permits for the listed required improvements, designed by a Registered Civil Engineer (RCE), licensed in the State of California. These shall be submitted to the Land Use Services Department (LUSD), located at 385 N. Arrowhead Ave, San Bernardino CA 92415-0187. Phone: (909) 387-8311.
    - Wild Road (1/4 Section Line – 88')
        - Road Dedication. A 4 foot grant of easement is required to provide a half-width right-of-way of 44 feet.
        - Curb Return Dedication. A 35 foot radius return grant of easement is required at the intersection of Wild Road and Smithson Road.
    - Smithson Road (1/4 Section Line – 88)
        - Road Dedication. A 4 foot grant of easement is required to provide a half-width right-of-way of 44 feet along the southerly and easterly boundaries of the project.
        - Curb Return Dedication. A 35 foot radius return grant of easement is required at the southeast corner of APN 0466-181-62.
        - Street Improvements. Design A.C. dike with match up paving 26 feet from centerline along southerly property line.
        - Driveway Approach. Design driveway approach per San Bernardino County Standard 129A, and located per Standard 130 .
        - Curb Returns. Curb Returns shall be designed per County Standard 110.

56. Road Design. Road sections within and/or bordering the project site shall be designed and constructed to Desert Road Standards of San Bernardino County, and to the policies and requirements of the County Department of Public Works and in accordance with the Master Plan of Highways.

57. Street Improvement Plans. The developer shall submit for review and obtain approval of street improvement plans prior to construction.

58. Utilities. Final plans and profiles shall indicate the location of any existing utility facility or utility pole which would affect construction, and any such utility shall be relocated as necessary without cost to the County.

59. Encroachment Permits. Prior to installation of road and drainage improvements, a permit is required from County Public Works, Transportation Operations Division,

Permit Section, (909) 387-8039, as well as other agencies prior to work within their jurisdiction.

60. Soils Testing. Any grading within the road right-of-way prior to the signing of the improvement plans shall be accomplished under the direction of a soils testing engineer. Compaction tests of embankment construction, trench back fill, and all sub-grades shall be performed at no cost to San Bernardino County and a written report shall be submitted to the Transportation Operations Division, Permits Section of County Public Works, prior to any placement of base materials and/or paving.

61. Open Roads/Cash Deposit. Existing County roads, which will require reconstruction, shall remain open for traffic at all times, with adequate detours, during actual construction. A cash deposit shall be made to cover the cost of grading and paving prior to issuance of road encroachment permit. Upon completion of the road and drainage improvement to the satisfaction of the Department of Public Works, the cash deposit may be refunded.

62. Transitional Improvements. Right-of-way and improvements (including off-site) to transition traffic and drainage flows from proposed to existing, shall be required as necessary.

63. Street Gradients. Road profile grades shall not be less than 0.5% unless the engineer at the time of submittal of the improvement plans provides justification to the satisfaction of County Public Works confirming the adequacy of the grade.

PUBLIC HEALTH – Environmental Health Services [DEHS] (800) 442-2283

64. Water Purveyor. Water purveyor shall be EHS approved. Applicant shall procure a verification letter from the water agency with jurisdiction. This letter shall state whether or not water connection and service shall be made available to the project by the water agency. This letter shall reference the Assessor's Parcel Number. For projects with current active water connections, a copy of water bill with project address may suffice. For information, contact the Water Section at 909-387-4655.

65. Water Quality. Source of water shall meet water quality and quantity standards. Test results, which show source meets, water quality and quantity standards shall be submitted to the Division of Environmental Health Services (DEHS). For information, contact the Water Section at 800-442-2283.

66. Abandoned Wells. An abandoned well was noted on the Conditional Use Permit site plan, evidence shall be provided that all wells are (1) properly destroyed under permit from that Country OR (2) constructed to DEHS standards, properly sealed and certified to the County as inactivated OR (3) constructed to DEHS standards and meet the quality standards for the proposed use of the water (industrial and/or domestic). Evidence shall be submitted to DEHS/Water Section for approval.

Contact DEHS/Water Section for approval. Contact DEHS/Water Section for more information at 909-387-4666.

67. OWTS. Method of sewage disposal shall be **EHS approved onsite wastewater treatment system (OWTS).** Existing septic system can be used if applicant provides certification from a qualified professional (i.e., Professional Engineer (P.E.), Registered Environmental Health Specialist (REHS), C42 contractor, Certified Engineering Geologist (C.E.G.), etc.) that the system functions properly, meets code, and has the capacity required for the proposed project. Applicant shall provide documentation outlining methods used in determining function.

68. Acoustical Checklist. Submit preliminary acoustical information demonstrating that the proposed project maintains noise levels at or below San Bernardino County Noise Standard(s), San Bernardino Development Code Section 83.01.080. The purpose is to evaluate potential future on-site and/or adjacent off-site noise sources. If the preliminary information cannot demonstrate compliance to noise standards, a project specific acoustical analysis shall be required. Submit information/analysis to the DEHS for review and approval. For information and acoustical checklist, contact DEHS at 800-442-2283.

LAND USE SERVICES – Building and Safety (909) 387-8311

69. Erosion Control Devices. Prior to issuance of building permits, erosion control devices must be installed at all perimeter openings and slopes. No sediment is to leave the job site.

70. Erosion Control Devices Installed. All erosion control planting, landscaping and devices shall be installed upon completion of rough grading.

71. Compaction Report. Upon completion of rough grading and prior to footing excavations, a compaction report shall be submitted to Building and Safety for review and approval.

72. Building Plans. Any building, sign, or structure to be constructed or located on site will require professionally prepared plans approved by the Building and Safety Division.

73. Drainage Approval. Approval from the Drainage Section - Land Development is required for all new construction in the FP Zone.

SAN BERNARDINO COUNTY FIRE – (760) 995-8190

74. Building Plans. No less than three (3) complete sets of Building Plans shall be submitted to the Fire Department for review and approval. [F42]

LAND USE SERVICES – Planning (909) 387-8311

75. Decommissioning Requirements. In accordance with SBCC 84.29.060, Decommissioning Requirements, the Developer shall submit a Closure Plan to the Planning Division for review and approval. The Decommissioning Plan shall satisfy the following requirements:
    a) Closure Plan. Following the operational life of the project, the project owner shall perform site closure activities to meet federal, state, and local requirements for the rehabilitation and re-vegetation of the project Site after decommissioning. The applicant shall prepare a Closure, Re-vegetation, and Rehabilitation Plan and submit to the Planning Division for review and approval prior to building permit issuance. Under this plan, all aboveground structures and facilities shall be removed to a depth of three feet below grade, and removed off-site for recycling or disposal. Concrete, piping, and other materials existing below three feet in depth may be left in place. Areas that had been graded shall be restored to original contours unless it can be shown that there is a community benefit for the grading to remain as altered. Succulent plant species native to the area shall be salvaged prior to construction, transplanted into windrows, and maintained for later transplanting following decommissioning. Shrubs and other plant species shall be re-vegetated by the collection of seeds and re-seeding following decommissioning.
    b) Closure Compliance**.** Following the operational life of the project, the developer shall perform site closure activities in accordance with the approved closure plan to meet federal, state, and local requirements for the rehabilitation and re-vegetation of the project site after decommissioning. Project decommissioning shall be performed in accordance with all other plans, permits, and mitigation measures that would assure the project conforms to applicable requirements and would avoid significant adverse impacts. These plans shall include the following as applicable:
        - Water Quality Management Plan
        - Erosion and Sediment Control Plan
        - Drainage Report
        - Notice of Intent and Stormwater Pollution Prevention Plan
        - Air Quality Permits
        - Biological Resources Report
        - Incidental Take Permit, Section 2081 of the Fish and Game Code
        - Cultural Records Report
    c) Abandoned Site. If the solar field is not operational for twelve consecutive months, it shall be deemed abandoned. The solar field shall be removed within 60 days from the date a written notice of the declaration of abandonment by the County is

sent to the developer. Within this 60-day period, the developer may provide the Land Use Services Director with a written request to modify this condition at a public hearing before the Planning Commission requesting an extension of time for an additional twelve months. In no case shall the Planning Commission authorize an extension of time beyond two years from the date the solar field was deemed abandoned without requiring financial assurances to guarantee the removal of the solar field, and that portion of the support structure lying above the natural grade level, in the form of a corporate surety bond, irrevocable letter of credit, or an irrevocable certificate of deposit wherein the County is named as the sole beneficiary**.** In no case shall a solar field, which has been deemed abandoned, be permitted to remain in place for more than 48 months from the date the solar field was first deemed abandoned.

d) Environmental Site Assessment. The County may require a Phase 1 Environmental Site Assessment be performed at the end of decommissioning to verify site conditions.

PRIOR TO FINAL INSPECTION OR OCCUPANCY,
Completion of the following must occur, with CCRF signatures

SAN BERNARDINO COUNTY FIRE – (760) 995-8190

76. Key Box. An approved Fire Department key box is required. The key box shall be provided with a tamper switch and shall be monitored by a Fire Department approved central monitoring service. In commercial, industrial and multi-family complexes, all swing gates shall have an approved fire department Knox Lock. Standard 902.4 [F85]

77. Haz-Mat Approval. The applicant shall contact the San Bernardino County Fire Department/Hazardous Materials Division (909) 386-8400 for review and approval of building plans, where the planned use of such buildings will or may use hazardous materials or generate hazardous waste materials. [F94]

78. Fire Extinguishers. Hand portable fire extinguishers are required. The location, type, and cabinet design shall be approved by the Fire Department. [F88]

COUNTY FIRE DEPARTMENT – Hazardous Materials Division (909) 386-8401

79. Emergency/Contingency Plan. Prior to occupancy, the operator shall submit a Business Emergency/Contingency Plan for emergency release or threatened release of hazardous materials and wastes or a letter of exemption. For information, contact the Office of the Fire Marshall, Hazardous Materials Division at (909) 386-8401.

80. Permits. Prior to occupancy, the applicant shall be required to apply for one or more of the following: a Hazardous Materials Handler Permit, a Hazardous Waste Generator Permit, and/or an Underground Storage Tank Permit. For information, contact the Office of the Fire Marshall, Hazardous Materials Division at (909) 386-8401.

PUBLIC WORKS – Solid Waste Management Division (909) 386-8701

81. C&D Plan – Part 2. The developer shall complete SWMD's C&D Plan Part 2". This summary shall provide documentation of diversion of materials including but not limited to receipts or letters from diversion facilities or certification reuse of materials on site. The C&D Plan – Part 2 shall provide evidence to the satisfaction of County Solid Waste that demonstrates that the project has diverted from landfill disposal materials for reuse or recycling by a minimum of 50 percent of total volume of all construction waste.

    This summary shall provide documentation of diversion of materials including but not limited to receipts or letters documenting material types and weights from diversion facilities or certification reuse of materials on site.

LAND USE SERVICES - Land Development– Drainage (909) 387-8311

82. Drainage Improvements. All required drainage improvements shall be completed by the applicant, then inspected and approved by County Public Works.

LAND USE SERVICES - Land Development– Roads (909) 387-8311

83. Road Improvements. All required on-site and off-site improvements shall be completed by the applicant and inspected and approved by County Public Works.

84. Structural Section Testing. A thorough evaluation of the structural road section, to include parkway improvements, from a qualified materials engineer, shall be submitted to County Public Works.

85. Maintenance Compliance. The developer shall comply with the maintenance agreement during construction if applicable and/or assure that all County maintained roads affected by the project during construction shall be restored to pre-construction condition. Please contact the County Department of Public Works, Transportation Operations Division at (909) 387-7995 for inspection prior to occupancy.

PUBLIC WORKS – Traffic Division (909) 387-8186

86. Local Transportation Fees. This project falls within the Helendale/Oro Grande Local Area Transportation Facilities Fee Plan. This fee shall be paid by cashier's check to the Department of Public Works Business Office.

LAND USE SERVICES – Building and Safety (909) 387-8311

87. Final Occupancy. Prior to occupancy, all Planning Division requirements and sign-offs shall be completed.

LAND USE SERVICES – Planning (909) 387-8311

88. CCRF/Occupancy. Prior to occupancy/use, all Condition Compliance Release Forms (CCRF) shall be completed to the satisfaction of County Planning with appropriate authorizing signatures from each affected agency.

89. Dust Control – Operation. Prior to final inspection, the Applicant shall develop an Operational Dust Control Plan that shall be approved and implemented prior to energization of the solar facility. The Operational Dust Control Plan shall include Dust Control Strategies sufficient to ensure that areas within the project site shall not generate visible fugitive dust (as defined in Mojave Desert Air Quality Management District's [MDAQMD's] Rule 403.2) such that dust remains visible in the atmosphere beyond the property boundary. During high wind events, Dust

Control Strategies shall be implemented so as to minimize the Project site's contribution to visible fugitive dust beyond that observed at the upwind boundary.

90. Special Use Permit. The developer shall submit for review and gain approval for a Special Use Permit (SUP) from County Code Enforcement. Thereafter, the SUP shall be renewed annually subject to annual inspections. The annual SUP inspections shall review & confirm continuing compliance with the listed conditions of approval, including all mitigation measures. This comprehensive compliance review shall include evaluation of the maintenance of all storage areas, landscaping, screening and buffering. Failure to comply shall cause enforcement actions against the developer. Such actions may cause a hearing or an action that could result in revocation of this approval and imposition of additional sanctions and/or penalties in accordance with established land use enforcement procedures. Any additional inspections that are deemed necessary by the Code Enforcement Supervisor shall constitute a special inspection and shall be charged at a rate in accordance with the County Fee Schedule, including travel time, not to exceed three (3) hours per inspection.

91. Removal Surety. Surety in a form and manner determined acceptable to County Counsel and the Land Use Services Director shall be required for the closure costs and complete removal of the solar energy generating facility and other elements of the facility. The developer shall either:

a) Post a performance or other equivalent surety bond issued by an admitted surety insurer to guarantee the closure costs and complete removal of the solar panels and other elements of the facility in a form or manner determined acceptable to County Counsel and the Land Use Services Director in an amount equal to 120% of the cost estimate generated by a licensed civil engineer and approved by the Land Use Services Director; OR
b) Cause the issuance of a certificate of deposit or an irrevocable letter of credit payable to the County of San Bernardino issued by a bank or savings association authorized to do business in this state and insured by the Federal Deposit Insurance Corporation for the purpose of guaranteeing the closure costs and complete removal of the solar panels and other elements of the facility in a form or manner determined acceptable to County Counsel and the Land Use Services Director in an amount equal to 120% of the cost estimate generated by a licensed civil engineer and approved by the Land Use Services Director.

92. Install On-site Improvements. All required on-site improvements shall be installed.

93. Fees Paid. Prior to final inspection by Building and Safety Division and/or issuance of a Certificate of Conditional Use by the Planning Division, the applicant shall pay in full all fees required under actual cost job number P201200174.

END OF CONDITIONS

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August 21, 2013

Hand Delivery to:
Randolph Coleman, Chairman
And Honorable Commissioners
San Bernardino Planning Commission
County Government Center, Covington Chambers
385 N. Arrowhead Avenue, 1st Floor
San Bernardino, CA 92415
Phone (909) 387-8311

Email to:
Christopher Conner, Senior Planner
San Bernardino County - Land Use Services
385 N. Arrowhead Avenue, 1st Floor
San Bernardino, CA 92415-0182
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Re: Comment on the Proposed Initial Study/Mitigated Negative Declaration for Landpro Solar Project by Sunlight Partners LLC, CUP P201200174 (SCH # 2013061033)

Dear Chairman Coleman and Honorable Commissioners:

I am writing on behalf of San Bernardino County residents Ernest Angel, David Rodriguez, Lonnie Passmore, Rodrigo Briones, and Laborers International Union of North America, Local Union 783, and its members living in San Bernardino County and in and around Helendale, California ("LiUNA") (collectively "Commenters") concerning the Initial Study and Mitigated Negative Declaration ("IS/MND") prepared by the County of San Bernardino ("County") for the Landpro Solar project, a 7.5 megawatt ("MW") photovoltaic solar generating facility on four existing parcels totaling 80.6 acres, APNs 0466-181-59, 60, 61, 62, by Sunlight Partners LLC, Conditional Use Permit ("CUP") P201200174 ("Project"). The Project is proposed to be located at the southwest corner of Wild Road and Smithson Road in the unincorporated community of Helendale in San Bernardino County, just northeast of the Silver Lakes Country Club.

1-1

On June 25, 2013, during the comment period for the IS/MND, Commenters submitted comments urging the County to comply with the California Environmental Quality Act ("CEQA") and prepare an environmental impact report ("EIR") because the
1-2 IS/MND prepared by the County is insufficient and an EIR is required where substantial evidence in the record supports a fair argument that the Project may have significant adverse impacts. However, the County proposes to proceed with adopting the IS/MND and approving the Project without fully complying with CEQA.

These comments are supported by expert comments of Mr. Matthew Hagemann and Dr. Shawn Smallwood. Mr. Hagemann is an expert in the fields of hydrogeology, toxics, and air quality. He is also the former Senior Science Policy Advisor, U.S. EPA Region 9 and Hydrogeologist, Superfund, RCRA and Clean Water programs. Mr. Hagemann's comments and curriculum vitae are attached hereto as Exhibit A and are incorporated herein by reference in their entirety. Dr. Smallwood is an expert wildlife
1-3 biologist and ecologist who has expertise in the areas of rare and special status plants, animal density and distribution, habitat selection, habitat restoration, interactions between wildlife and human infrastructure and activities, conservation of rare and endangered species, and on the ecology of invading species, and other species impacts relevant to this IS/MND. His comments and curriculum vitae are attached hereto as Exhibit B and are incorporated by reference in their entirety. These expert comments are incorporated herein in full.

First and foremost, the County must consider this Project in light of the current County-wide moratorium on approval of commercial solar energy generation projects, which the Board of Supervisors unanimously approved on June 12, 2013. (Exhibit C, Ordinance No. 4198.) According to the Staff Report, this Project is not directly affected by the moratorium because the application was deemed completed prior to when the
1-4 moratorium was first adopted on June 12, 2013. (Staff Report, p. 8.) Nevertheless, the County must consider this Project carefully to carry out the purposes of the moratorium, which include immediate protection and preservation of the public peace, health, safety and welfare, coupled with CEQA's requirement that the County consider whether the Project would conflict with such an ordinance. (CEQA Guidelines, Appendix G, Section IX(b).)

1. The Project's IS/MND omits an accurate project description.

1-5
   a. The IS/MND fails to provide a stable description on the amount of maintenance required by the Project; and

   b. The IS/MND fails to adequately describe the Project's interconnecting transmission.

2. The Project's IS/MND fails to accurately establish the Project's environmental setting or "baseline."

1-6

   a. The IS/MND fails to disclose the potential for residual pesticides at the Project site; and

   b. The IS/MND fails relies on inadequate surveys to establish the environmental setting for biological resources.

3. There is a fair argument that the Project may have significant unmitigated impacts, both individually and cumulatively, including:

   a. The Project will result in significant, unmitigated air quality impacts during construction;

1-7

   b. The IS/MND fails to quantify and estimate the Project's GHG emissions;

   c. The Project will have significant, adverse hazardous materials impacts to construction workers; and

   d. The Project will have significant, adverse impacts on biological resources.

1-8

4. The IS/MND fails to conduct an adequate cumulative impacts analysis.

In addition, this comment letter supplements and incorporates by reference all prior written and oral comments submitted on the IS/MND for the Project by any commenting party or agency.

1-9

The Staff Report for the August 22, 2013 Planning Commission Hearing, Agenda Item No. 2, reiterates the information contained in the IS/MND and recommends that the Planning Commission adopt the IS/MND and approve the Project. (Staff Report, p. 10.) Commenters request that the Planning Commission decline to adopt the IS/MND and refer this Project back to Staff to prepare an EIR. An EIR is required to analyze these and other impacts and to propose mitigation measures to reduce these impacts to the extent feasible.

PROJECT DESCRIPTION

1-10

The Project proposes to construct and operate a 7.5 MW photovoltaic (PV) solar generating facility, to be located at the southwest corner of Wild Road and Smithson Road in the unincorporated community of Helendale in San Bernardino County, just

northeast of the Silver Lakes Country Club. The Project site encompasses 80.5 acres on 4 parcels, APNs 0466-181-59, 0466-181-59-60, 0466-181-59-61, and 0466-181-59-62. The Project is proposed by Sunlight Partners LLC.

The Project will utilize PV technology to generate electricity. The PV solar panels will be mounted on single axis trackers, supported by steel piers driven into the ground to an appropriate depth, as determined by soil conditions. Each block of trackers will have a concrete pad, supporting the 500 W inverters and mechanical components. The pad will be approximately 8 feet wide and 30 feet long. The height of the panels at horizontal is not anticipated to exceed 7 feet. The trackers will form rows running north and south. The site will be surrounded by an 8 foot high chain link fence with a video monitoring system. There is a perimeter access road and two interior north-south access roads and three interior east-west access roads.

1-10

Construction of the facility is proposed in four phases, with each phase taking approximately 10 weeks. Up to 80 workers are expected on site during construction. During construction, there will be a staging area, which will include construction offices, a first aid station, temporary buildings, worker parking, truck loading and unloading.

The IS/MND provides that the Project will be unmanned with "approximately three to four times per year to perform maintenance and monitoring duties including washing the solar panels, which is anticipated to consume approximately 10,000 gallons of water during each visit."

1-10

The electrical energy produced by the Project is proposed to be delivered to the existing regional transmission system in the area and the connection point will be located along Smithson Road.

The Project is anticipated to operate for about 35 years.

STANDING

Members of LIUNA Local 783 live, work, and recreate in the immediate vicinity of the proposed Project site. These members will suffer the impacts of a poorly executed or inadequately mitigated Project, just as would the members of any nearby homeowners association, community group, or environmental group. Members of LIUNA Local 783 live and work in areas that will be affected by air pollution, hazardous materials, and impacts on plant and wildlife species generated by the Project.

1-11

In addition, construction workers in particular will suffer many of the most significant impacts from the Project as currently proposed, such as exposure to residual pesticides at the Project site that pose a risk to human health through dust inhalation and direct physical contact on the ground. Therefore, LIUNA Local 783 and its members have a direct interest in ensuring that the Project is adequately analyzed and

that its environmental and public health impacts are mitigated to the fullest extent feasible.

Commenters Ernest Angel, David Rodriguez, and Lonnie Passmore are residents of Barstow in San Bernardino County. Commenter Rodrigo Briones is a resident of Apple Valley in San Bernardino County. Mr. Angel, Mr. Rodriguez, Mr. Passmore, and Mr. Briones each travel about once per month to the Project area and regularly enjoys the scenery, natural environment and physical attributes of the high desert areas, their surrounding mountain ranges. Commenters are concerned about the impacts the Project will have on these natural resources, as well as on regional air quality in the Mojave Air Basin, which they regularly breathe. They believe that the County must prepare an EIR to adequately analyze and mitigate numerous adverse environmental impacts created by the Project.

Commenters are interested in participating in a full and open CEQA process to ensure that all of the Project's impacts are mitigated to the fullest extent feasible. Finally, as the Court of Appeal stated, "in any event, unions have standing to litigate environmental claims." (*Bakersfield Citizens for Local Control v. Bakersfield* (2004) 124 Cal. App. 4th 1184, 1198, citing, *International Longshoremen's & Warehousemen's Union v. Board of Supervisors* (1981) 116 Cal. App. 3d 265.)

LEGAL STANDARD

As the California Supreme Court very recently held, "[i]f no EIR has been prepared for a nonexempt project, but substantial evidence in the record supports a fair argument that the project may result in significant adverse impacts, the proper remedy is to order preparation of an EIR." (*Communities for a Better Environment v. South Coast Air Quality Management Dist.* (2010) 48 Cal. 4th 310, 319-320 ("*CBE v. SCAQMD*"), citing, *No Oil, Inc. v. City of Los Angeles*, 13 Cal.3d at pp. 75, 88; *Brentwood Assn. for No Drilling, Inc. v. City of Los Angeles* (1982) 134 Cal. App. 3d 491, 504–505.) "The 'foremost principle' in interpreting CEQA is that the Legislature intended the act to be read so as to afford the fullest possible protection to the environment within the reasonable scope of the statutory language." (*Communities for a Better Environment v. Calif. Resources Agency* (2002) 103 Cal. App. 4th 98, 109 ["*CBE v. CRA*"].)

1-12

The EIR is the very heart of CEQA. (*Bakersfield Citizens for Local Control v. City of Bakersfield* (2004) 124 Cal.App.4th 1214; *Pocket Protectors v. City of Sacramento* (2004) 124 Cal. App. 4th 903, 927.) The EIR is an "environmental 'alarm bell' whose purpose is to alert the public and its responsible officials to environmental changes before they have reached the ecological points of no return." (*Bakersfield Citizens*, 124 Cal.App.4th at 1220.) The EIR also functions as a "document of accountability," intended to "demonstrate to an apprehensive citizenry that the agency has, in fact,

analyzed and considered the ecological implications of its action." (*Laurel Heights Improvements Assn. v. Regents of University of California* (1988) 47 Cal.3d 376, 392.) The EIR process "protects not only the environment but also informed self-government." (*Pocket Protectors*, 124 Cal.App.4th 927.)

An EIR is required if "there is substantial evidence, in light of the whole record before the lead agency, that the project may have a significant effect on the environment." (Pub. Res. Code, § 21080(d); see also *Pocket Protectors*, 124 Cal.App.4th at 927.) In very limited circumstances, an agency may avoid preparing an EIR by issuing a negative declaration, a written statement briefly indicating that a project will have no significant impact thus requiring no EIR (14 Cal. Code Regs., § 15371 [CEQA Guidelines]), only if there is not even a "fair argument" that the project will have a significant environmental effect. (Pub. Res. Code, §§ 21100, 21064.) Since "[t]he adoption of a negative declaration . . . has a terminal effect on the environmental review process," by allowing the agency "to dispense with the duty [to prepare an EIR]," negative declarations are allowed only in cases where "the proposed project will not affect the environment at all." (*Citizens of Lake Murray v. San Diego* (1989) 129 Cal.App.3d 436, 440.) CEQA contains a "***preference for resolving doubts in favor of environmental review***." (*Pocket Protectors*, 124 Cal.App.4th at 927 [emphasis in original].)

1-13

A negative declaration is improper, and an EIR is required, whenever substantial evidence in the record supports a "fair argument" that significant impacts may occur. Under the "fair argument" standard, an EIR is required if any substantial evidence in the record indicates that a project may have an adverse environmental effect—even if contrary evidence exists to support the agency's decision. (CEQA Guidelines, § 15064(f)(1); *Pocket Protectors*, 124 Cal.App.4th at 931; *Stanislaus Audubon Society v. County of Stanislaus* (1995) 33 Cal.App.4th 144, 150-15; *Quail Botanical Gardens Found., Inc. v. City of Encinitas* (1994) 29 Cal. App. 4th 1597, 1602.) The "fair argument" standard creates a "low threshold" favoring environmental review through an EIR rather than through issuance of negative declarations or notices of exemption from CEQA. (*Pocket Protectors*, 124 Cal.App.4th at 928.)

The "fair argument" standard is virtually the opposite of the typical deferential standard accorded to agencies. As a leading CEQA treatise explains:

1-14

> This 'fair argument' standard is very different from the standard normally followed by public agencies in making administrative determinations. Ordinarily, public agencies weigh the evidence in the record before them and reach a decision based on a preponderance of the evidence. [Citations]. The fair argument standard, by contrast, prevents the lead agency from weighing competing evidence to determine who has a better argument concerning the likelihood or extent of a potential environmental impact. The lead agency's decision is thus

> largely legal rather than factual; it does not resolve conflicts in the evidence but determines only whether substantial evidence exists in the record to support the prescribed fair argument.

(Kostka & Zishcke, *Practice Under CEQA*, §6.29, pp. 273-274.) The Courts have explained that "it is a question of law, not fact, whether a fair argument exists, and the courts owe no deference to the lead agency's determination. Review is de novo, with a ***preference for resolving doubts in favor of environmental review***." (*Pocket Protectors*, 124 Cal.App. 4th at 928 [emphasis in original].)

As a matter of law, "substantial evidence includes . . . expert opinion." (Pub. Resources Code, § 21080(e)(1); CEQA Guidelines, § 15064(f)(5).) CEQA Guidelines demand that where experts have presented conflicting evidence on the extent of the environmental effects of a project, the agency must consider the environmental effects
1-15 to be significant and prepare an EIR. (CEQA Guidelines § 15064(f)(5); Pub. Res. Code § 21080(e)(1); *Pocket Protectors*, 124 Cal.App.4th at 935.) "Significant environmental effect" is defined very broadly as "a substantial or potentially substantial adverse change in the environment." (Pub. Resources Code, § 21068; see also Guidelines § 15382.) An effect on the environment need not be "momentous" to meet the CEQA test for significance; it is enough that the impacts are "not trivial." (*No Oil, Inc. v. City of Los Angeles* (1974) 13 Cal.3d 68, 83.) In the recent *Pocket Protectors* case, the court explained how expert opinion is considered. The Court limited agencies and courts to weighing the admissibility of the evidence. (*Id*.) In the context of reviewing a Negative Declaration, "neither the lead agency nor a court may 'weigh' conflicting substantial evidence to determine whether an EIR must be prepared in the first instance." (*Id*.) Where a disagreement arises regarding the validity of a negative declaration, the courts require an EIR. As the *Pocket Protectors* court explained, "It is the function of an EIR, not a negative declaration, to resolve conflicting claims, based on substantial evidence, as to the environmental effects of a project." (*Id*.)

DISCUSSION

A. The County Must Consider this Project Carefully in Light of the County-Wide Moratorium on the Approval of Commercial Solar Energy Generation Projects.

1-16

On June 12, 2013, the County Board of Supervisors (Board) unanimously adopted Interim Urgency Ordinance No. 4198, establishing a temporary (45-day) moratorium on approval of commercial solar energy generation projects. (Exhibit C, Ordinance No. 4198.) In adopting the moratorium, the Board found that County residents have reported adverse effects of solar generation projects which could adversely impact the quality of life for the residents and that "[t]here is a current and immediate threat to the public health, safety and welfare if permits or entitlements for

construction of new solar energy generation projects are issued." (Exhibit C, Ordinance No. 4198.) The moratorium, however, does not apply to applications for solar energy generation projects that have been accepted as complete prior to the June 12, 2013 Ordinance. (*Id.*)

On July 23, 2013, the Board extended the initial 45-day moratorium for an additional 10 months and 15 days, based on the same public welfare findings it made on June 12, 2013. The extended moratorium would allow the County to develop standards in the Development Code that will help ensure that such developments are compatible with existing land uses, which will include the preparation of a Renewable Energy Element of the General Plan, with a complementary Regulatory System for renewable energy projects.

1-16 The Staff Report provides that this Project is not affected by the moratorium because the application was deemed completed prior to when the moratorium was first adopted on June 12, 2013. (Staff Report, p. 8.) Nevertheless, CEQA requires that the lead agency consider whether the project would conflict with any land use plan, policy, or regulation adopted for the purpose of avoiding or mitigating an environmental effect. (CEQA Guidelines, Appendix G, Section IX(b).) Since the moratorium is an ordinance which was adopted by the County for the purpose of avoiding or mitigating environmental effects, the County must analyze whether the Project conflicts with it.

Additionally, the Board's adoption of such an urgency measure "necessary for the immediate protection and preservation of the public peace, health, safety and welfare" warrants a cautious and rigorous review of the instant Project. (See Exhibit C, Ordinance No. 4198.) Therefore, in reviewing this Project, the County must focus on the welfare of the County residents and the environment in which they reside. The County has made a formal finding that "[t]here is a current and immediate threat to the public health, safety and welfare if permits or entitlements for construction of new solar energy generation projects are issued." (Exhibit C, Ordinance No. 4198.) There is no logical reason that this finding does not apply equally to the instant Project. At the very least, the County must acknowledge all potentially significant environmental impacts that should be analyzed in an EIR.

Based on the arguments set forth below, substantial evidence supports a fair argument that the Project will have potentially significant impacts on the environment and an EIR is required to analyze such impacts and mitigate them to the extent feasible.

B. The IS/MND Omits An Accurate Project Description.

1-17 The IS/MND fails to include a complete and accurate project description. The IS/MND fails to provide a stable description of the amount of maintenance the Project will require and identify precise the location of the Project's interconnecting transmission

lines. However, the courts have repeatedly emphasized that "an accurate, stable and finite project description is the *sine qua non* of an informative and legally sufficient [CEQA document]." (*County of Inyo v. County of Los Angeles* (1977) 71 Ca.App.3d 185, 193.) As such, the IS/MND fails as an informative and legally sufficient CEQA document.

1-17

1. The IS/MND Fails to Provide a Stable Project Description of the Maintenance Required by the Project.

The IS/MND provides the following shifting description of the maintenance that the Project will require:

"This will be an unmanned facility with personnel expect [sic] to be on site approximately **three or four times** per year to perform maintenance and monitoring duties including washing the solar panels, which is anticipated to consume approximately 10,000 gallons of water during each visit." (IS/MND, p. 2 [emph. added].)

1-18

"Operational emissions will involve **only 2-3 trips** to the Site annually." (IS/MND, pp. 12-13 [emph. added].)

"Air emissions will also occur during occasional maintenance; however, these emissions will be at non-significant levels (**generally twice a year**)." (IS/MND, p. 13 [emph. added].)

"After construction, maintenance vehicles will be the primary source of GHGs, however, these will only be used **about twice annually** on each phase of the project." (IS/MND, p. 20 [emph. added].)

"Following construction, personnel would visit the site **three to four times per year** to perform maintenance activities." (IS/MND, p. 32 [emph. added].)

Based on the inconsistent information provided by the IS/MND, it is impossible to ascertain the true extent of impacts the Project will have during the life of its operation. The project description, and the accompanying analysis, must be consistent throughout the IS/MND. An inconsistent description of the maintenance required for the Project prevent the IS/MND from serving a vehicle for intelligent public participation in the decision-making process. (See *County of Inyo*, 71 Cal.App.3d at 197.) Here, the IS/MND admits that maintenance will occur about 4 times per year. However, emission calculations are based on maintenance occurring only 2 times per year (IS/MND, p. 13) – half the actual level. This results necessarily in a significant underestimation of Project impacts.

2. The IS/MND Fails to Adequately Describe the Project's Interconnecting Transmission.

1-19

The IS/MND admits that the Project will connect with an existing transmission line and the connection point is located along Smithson Road. (IS/MND, p. 3.) However, the IS/MND fails to disclose the precise point of connection along Smithson Road. As a result, the IS/MND fails to describe the gen ties that will interconnect the Project to the transmission line. The installation of the necessary interconnecting transmission lines will require pole sites, laydown areas, and pull-sites. Such activities will cause ground disturbance, dust generation and noise and, according to expert Matthew Hagemann, C.Hg., will result in potentially significant air quality impacts. (See Exhibit A, pp. 1-5.) The County must accurately describe and analyze the Project's potential impacts from the interconnecting transmission in an EIR.

C. The IS/MND Fails to Accurately Establish the Project's Environmental Setting or "Baseline."

1-20

CEQA requires that an Initial Study include a description of the project's environmental setting or "baseline." (CEQA Guidelines, § 15063(d)(2).) The CEQA "baseline" is the set of environmental conditions against which to compare a project's anticipated impacts. (*Communities for a Better Environment v. So Coast Air Qual. Mgmnt. Dist*. (2010) 48 Cal. 4th 310, 321.) CEQA Guidelines section 15125(a) states, in pertinent part, that a lead agency's environmental review under CEQA:

> …must include a description of the physical environmental conditions in the vicinity of the project, as they exist at the time [environmental analysis] is commenced, from both a local and regional perspective. This environmental setting will normally constitute the baseline physical conditions by which a Lead Agency determines whether an impact is significant.

(*See*, *Save Our Peninsula Committee v. County of Monterey* (2001) 87 Cal.App.4th 99, 124-125.)

Here, the IS/MND is inadequate because it fails to establish an accurate environmental setting for the Project.

1. The IS/MND Fails to Disclose the Potential for Residual Pesticides at the Project Site.

1-21

The IS/MND admits that the Project site is comprised of currently fallow land which was "previously utilized for farming for several decades and alfalfa was the main crop." (IS/MND, p. 11.) Based on the history of "several decades" of agricultural use of

the Project site, there is a fair argument, supported by substantial evidence that the Project may result in significant impacts to workers' exposure to hazardous materials. The Phase I Environmental Site Assessment (ESA) admits that the Project site was previously used for agriculture and residual pesticides may be present in the site soils. (IS/MND, p. 11; Phase I ESA, pp. 21-22.)

According to expert Matthew Hagemann, C.Hg., former director of US EPA's Western States Superfund Program and EPA Senior Science Advisor, residual pesticides may pose a serious health risk to workers and site personnel, like Commenters, who may be exposed to these substances through dermal contact with the soil and through dust inhalation. (Exhibit A, p. 5-6.) Commenters are concerned about the potential health risks from such residual pesticides during construction.

The IS/MND, however, fails to account for the presence of the residual pesticides in establishing the environmental setting for the Project. (IS/MND, p. 11; Phase I ESA, pp. 21-22.) According to Mr. Hagemann, soil sampling, under a Phase II investigation, is necessary to determine the residual concentrations of pesticides that may be present in site soils. (Exhibit A, p. 5-6.) The sampling results should be compared to human health screening levels and evaluated in an EIR. (*Id.*)

As a result of its failure to establish an accurate baseline regarding the presence of hazardous materials, the IS/MND fails to analyze and mitigate potential impacts from such residual pesticides.

1-22

2. The IS/MND Relies on Inadequate Surveys to Establish Environmental Setting for Biological Resources.

The IS/MND's biological resources analysis is predicated on inadequate surveys of the Project site. According to Dr. Shawn Smallwood, an expert biologist, a single biologist visiting the site for 2 consecutive days, for no longer than 10.5 hours, was insufficient to adequately characterize the use of the site by wildlife and plants. (Exhibit B, p. 2.) In particular, Dr. Smallwood provides that the surveys were too cursory to detect many species of wildlife, especially considering that a part of that time was supposed to have been devoted to botanical surveys. (*Id.*)

Based on the inadequate surveys, the IS/MND established and relied on an inaccurate baseline for its analysis of all biological resources on the Project site. Indeed, Dr. Smallwood notes that the applicant's biologist detected only 3 species of wildlife: common raven, mourning dove, and song sparrow. (Exhibit B, p. 2.) However, given the richness of wildlife species present in the Mojave Desert and near the Mojave River, where this Project site is located, Dr. Smallwood opines based on his experience performing numerous wildlife surveys in the area, the applicant's biologist should have

performed nocturnal surveys, live-trappings, and bat acoustical detectors to adequately detect the wildlife that occur on the Project site. (*Id*.)

Moreover, according to Dr. Smallwood, no protocol-level surveys were performed for desert tortoise and Mojave ground squirrel. (Exhibit B, p. 3.) As for burrowing owls, the applicant's biologist failed to utilize the 2012 burrowing owl guidelines by California Department and Fish and Wildlife, which recommend multiple surveys to be spaced throughout the breeding season. The applicant's biologist performed only a single survey on one morning, which according to Dr. Smallwood, is inconsistent with any of the available survey guidelines, including the guidelines prepared by the California Burrowing Owl Consortium (1993), which the applicant's biologist relied upon. (Arnold, Burrowing Owl Survey, p. 1.)

According to Dr. Smallwood, the IS/MND fails to account for at least 32 special-status species which possibly, probably or certainly occur on the Project site. (Exhibit B, Table 1, p. 4.) The IS/MND's use of an inaccurate baseline renders the biological resources impacts analysis inadequate.

Based on the IS/MND's errors described above, the Project site's value for special-status species may be understated, raising a fair argument that the Project may result in potentially significant impacts on biological resources.

D. An EIR is Required Because the Project May Have Significant and Adverse Environmental Impacts.

1-23

1. Substantial Evidence Supports a Fair Argument That the Project May Result in Significant, Unmitigated Air Quality Impacts.

The Project construction is expected to involve four phases, with each phase taking approximately 10 weeks. (IS/MND, p. 1.) The IS/MND admits that the construction of the Project entails disturbing soil for preparation and placement of PV panels. (*Id.* at p. 12.) Such site preparation activities, including grading, excavation, and piers driven into the ground, generating particulate emissions and ozone precursors. (*Id*. at pp. 3, 12; see Exhibit A, p. 1.) According to Mr. Hagemann, fugitive dust is primarily responsible for particulate matter pollution in the Mojave Desert Air Basin. (Exhibit A, p. 1.)

The IS/MND generally concludes, without providing any quantitative estimates, that the construction emissions will "generate minor particulate and ozone precursors." (IS/MND, p. 12.) According to Mr. Hagemann, the IS/MND did not use models such as CalEEMod and URBEMIS to estimate the Project's emissions of PM10, PM2.5 and ozone precursors like NOx. (Exhibit A, p. 3.) Such failure is problematic because, according to Mr. Hagemann, the IS/MND does not have any quantitative estimates to

compare to applicable thresholds of significance for criteria pollutants such as PM10, PM2.5 and NOx and therefore, the IS/MND does not have any basis to conclude that construction emissions will be less than significant. (*Id.*)

Especially where, as here, the IS/MND acknowledges that the Project site is located within the Mojave Desert Air Quality Management District ("MDAQMD"), which is in non-attainment for ozone and PM10, the IS/MND's failure to quantify the Project's emissions of ozone and PM10 is all the more puzzling. (IS/MND, p. 12.) According to Mr. Hagemann, inhalation of particulate matter may cause irritation of lungs, coughing, difficulty breathing, an irregular heartbeat, aggravated asthma, and decreased lung function. (Exhibit A, p. 3.) Mr. Hagemann notes that children and older adults are most likely to be affected by exposure to particulate matter. (*Id.*)

The IS/MND fails to take sensitive receptors on and near the Project site into consideration in its construction emissions analysis. Sensitive receptors, which include residences, will be exposed to construction emissions such as particulate matter emissions. (Exhibit A, p. 4.) Most significantly, the IS/MND admits that there is an existing single-family residence and accessory structures on the Project site which will remain, separated by a fence from the PV panels. (IS/MND, p. 2.) The IS/MND also notes that there are several residences on the east side of the Project site and a community of Silver Lakes, which is a densely populated residential community, just northwest of the Project site. (*Id.*) To ensure that these sensitive receptors are adequately protected from construction emissions, Mr. Hagemann recommends that the dust control plan identify all sensitive receptors and an EIR be prepared to incorporate mitigation measures that are necessary to ensure the health of the public. (Exhibit A, p. 4.) An example of a mitigation measure is real-time dust monitoring and notification to the residents when the construction emission levels are unhealthful. (*Id.*)

In particular, Mr. Hagemann has found that other solar projects that are similar in scale as the Project have estimated PM10 construction emissions that exceed the MDAQMD threshold of 15 tons/year. (Exhibit A, pp. 2-3.) Therefore, just based on the scale of the Project, evidence supports that the Project will have potentially significant impacts from PM10 emissions in particular.

Although the IS/MND proposes mitigation measure AQ-1, there is no way to know whether the measure will be effective because construction emissions have not been quantified, both before and after the implementation of the measure. (Exhibit A, p. 3.) If the modeling shows that the PM10 and PM2.5 emissions during Project construction will exceed the thresholds, Mr. Hagemann suggests additional, feasible measures to mitigate such significant impacts to a less than significant level. Such mitigation measures include, but are not limited to:

- Ceasing all clearing, grading, earth moving, and excavation activities when winds exceed 15 miles per hour, along with ways wind speeds will be measured and now notices of work stoppages will be communicated;
- Planning to minimize areas disturbed by clearing, earth moving, or excavation activities;
- Covering stockpiles (with tarps) or use water to reduce dust generation;
- Limit construction vehicle speeds to 15 miles per hour, and identify measures to enforce speeds; and
- Use of street sweepers on adjacent roadways with a regenerative street sweeper to reduce track-out of dust.

(Exhibit A, p. 3.)

Based on expert opinion, there is a fair argument, supported by substantial evidence that the Project may result in significant impacts to air quality. Commenters are concerned about the adverse health effects of exposure to particulate matter especially for construction workers and sensitive receptors nearby. An EIR must be prepared to quantify, analyze, and mitigate the potentially significant emissions of particulate matter during Project construction.

a. The IS/MND Improperly Defers Mitigation of Particulate Matter Emissions.

1-24

The IS/MND improperly defers the formulation of a dust control plan, which is proposed to be developed and submitted to the County and MDAQMD for review and approval prior to issuance of a grading permit and/or land disturbance. (IS/MND, pp. 12-13; Exhibit A, p. 3.)

But without including the dust control plan as part of the IS/MND and circulated to the public during the environmental review process, it is unclear whether the Project's potentially significant impacts from PM10 (as evidenced by Mr. Hagemann's comments) will indeed be reduced to a less than significant level. Additionally, Mr. Hagemann provides that the dust control plan should include all feasible mitigation measures, including those provided by MDAQMD Rule 403.2, to reduce all construction emissions impacts to a less than significant level if modeling estimates show an exceedance of thresholds for PM10 and PM2.5 emissions during construction.

The importance of ensuring that the dust control plan is prepared and circulated with the IS/MND is plainly exhibited by the recent blunder with a developer beginning grading of a solar project site without a grading permit. In July 2013, the County inspectors found that Sun Edison began grading on a Cascade Solar project in north

Joshua Tree without a grading permit.[1] In that instance, the County had to issue a stop-work permit to stop the unauthorized grading. (*Id.*) If a dust control plan is not required to be prepared as part of the IS/MND, and the County is deferring the preparation of the plan until before the issuance of the grading permit, the County risks the developer from beginning the grading process without such a plan in place.

The County should not defer the preparation of the dust control plan until project approval. An EIR must be prepared and the dust control plan must be circulated along with the EIR for public input.

b. The IS/MND Fails to Analyze or Mitigate the Project's Potentially Significant Impacts from Toxic Air Contaminants.

1-25

The IS/MND fails entirely to discuss toxic air contaminants, particularly diesel particulate matter (DPM), from activities associated with construction and maintenance of the Project. According to Mr. Hagemann, exposure to DPM may cause irritation to the eyes, nose, throat, and lungs, as well as neurological effects. (Exhibit A, p. 4.) DPM is classified as a "likely carcinogen." (*Id.*) According to the California Air Resources Board (CARB), children are the most vulnerable to the health effects of DPM. (*Id.*) Especially since numerous residences are located both on and near the Project site, where vulnerable children are likely to reside in, the IS/MND should have analyzed the Project's potential impacts of DPM.

According to Mr. Hagemann, studies by CARB and by the California Office of Health Hazard Assessment (OEHHA) have identified the need to evaluate even short term exposures to air toxics and provide appropriate risk assessment methodologies. (Exhibit A, p. 4.) OEHHA recognizes that shorter-term exposures can and should be evaluated. CARB now recognizes the importance of cancer risk from construction projects. According to a CARB analysis of a hypothetical construction project, cancer risk from construction activity can exceed 10 cases in a million for an area of 26 acres surrounding a construction site. (*Id.*) The MDAQMD has defined "significant health risk" for CEQA reviews as the exposure of sensitive receptors to substantial pollutant concentrations, including those resulting in a cancer risk greater than or equal to 10 in a million. (*Id.*)

Despite the Project's potentially significant impacts on sensitive receptors, the IS/MND does not address this issue. Mr. Hagemann provides that an EIR should be prepared to evaluate DPM emissions, to include a comprehensive inventory of vehicles to be used in construction and maintenance. (Exhibit A, p. 4.) If emissions are harmful to human health, in particular to sensitive receptors as determined by an assessment to determine cancer risks, Mr. Hagemann proposes that the EIR incorporate the following mitigation measures to reduce diesel exhaust emissions:

[1] http://www.hidesertstar.com/news/article_e68edd88-f103-11e2-9b83-0019bb2963f4.html

- Regular preventive maintenance to reduce emissions;
- Post signs to strictly limit vehicle idle times to less than 5 minutes and turn off vehicles when not in use;
- Full compliance with the latest California emission standards for off-road compression-ignition engines;
- Ensure that emissions from all construction diesel powered equipment used on the project site do not exceed 40 percent opacity (an indicator of exhaust particulate emissions from off-road diesel powered equipment) for more than three minutes in any one hour; and
- Install temporary electrical service to avoid the need for diesel powered equipment (e.g. compressors).

(IS/MND, pp. 4-5.)

2. The IS/MND Fails to Quantify and Estimate the Project's Greenhouse Gas Emissions.

1-26

The IS/MND concludes, without any analysis, that the Project's GHG emissions will be less than significant. (IS/MND, p. 20.) The extent of GHG emissions "analysis" the IS/MND provides is the following:

> **The only major source of greenhouse gas emissions that will be associated with the project are construction and maintenance vehicles.** During construction, several heavy vehicles will be used which emit a variety of GHGs, including carbon dioxide. After construction, maintenance vehicles will be the primary source of GHGs, however, these will only be used about twice annually on each phase of the project.

(IS/MND, p. 20.)

But without quantifying the Project's GHG emissions, it is impossible to determine whether the Project's GHG emissions will not be significant and below the MDAQMD threshold. According to Mr. Hagemann, the IS/MND must comply with MDAQMD CEQA policy and GHG Emissions must be quantified and compared to a threshold of 25,000 tons per year. (Exhibit A, p. 5.) If emissions exceed that threshold, mitigation is required to achieve a less than significant impact through reduction by at least 20% with implementation of best performance standards, carbon offsets, or through use of an alternative GHG reduction strategy. (*Id.*)

According to Mr. Hagemann, an EIR must be prepared, which includes a quantitative estimate of GHG emissions and a comparison to thresholds established by

the MDAQMD. (Exhibit A, p. 5.) The results of this analysis should be included in an EIR.

1-27

3. Substantial Evidence Supports a Fair Argument that the Project May Result in Significant and Unmitigated Hazardous Materials Impacts.

As fully discussed in Part C.1, *supra*, the IS/MND fails to establish an accurate baseline for hazardous materials present or potentially present on the Project site. As a result, the IS/MND fails to adequately analyze and mitigate the significant impacts of such hazards.

According to expert Matt Hagemann, the Project site was previously used for agriculture and therefore, residual pesticides may be present in the site soils. (Exhibit A, p. 6; IS/MND, p. 11.) Mr. Hagemann notes that residual pesticides may pose a serious health risk to workers and site personnel, especially construction workers like Commenters, who may be exposed to these substances through dermal contact with the soil and through dust inhalation. (Exhibit A, p. 6.) Commenters are concerned about the potential health risks from such residual pesticides.

Despite the potentially significant health risks that the residual pesticides may pose, the IS/MND and the Phase I Site Assessment fail to analyze such risks. (Exhibit A, pp. 5-6.) The Phase I ESA fails to classify the historical agricultural usage of the Project site as a recognized environmental condition (REC). *Id.* As a result, the IS/MND fails to mitigate the Project's impacts of exposing workers to residual pesticides during construction of the Project.

Based on the substantial evidence which support the finding that the Project may have significant impacts related to hazardous materials, an EIR should be prepared to analyze and mitigate these impacts to the extent feasible.

4. Substantial Evidence Supports a Fair Argument That the Project Will Have Significant and Unmitigated Impacts to Biological Resources.

1-28

According to Dr. Smallwood, the IS/MND's analysis of the Project's impacts to biological resources was extremely cursory and inadequate especially because it failed to take into account the Project's impacts of avian collisions, the Project site's proximity to riparian vegetation along the Mojave River, and the Project's likely contributions to habitat fragmentation.

a. The IS/MND Fails to Analyze and Mitigate the Project's Impacts of Avian Collisions.

According to Dr. Smallwood, the IS/MND and the supporting documents fail to consider how the Project's PV panels and support structures pose some collision risk to birds. (Exhibit B, p. 5.) Based on established literature and complicated formula, Dr. Smallwood calculates and concludes, depending on many variables, that the Project could result in 6.6 to 81 bird fatalities per year. (*Id.*, pp. 5-7.) Even at the lower end of the projected fatalities, there is no doubt that the Project will have significant impacts of avian collisions. And in light of the probable and certain occurrences of special status avian species in the Project area, there is substantial evidence which supports a fair argument that the Project will have significant impacts on special status species. As such, the IS/MND's failure to analyze such impacts cannot be justified.

1-29

The County must prepare an EIR to analyze the Project's impacts of avian collisions and mitigate such impacts to the extent feasible.

1-30

b. The IS/MND Fails to Adequately Analyze and Mitigate the Project's Impacts to Wildlife Movement.

The IS/MND fails to adequately analyze the Project's impacts to wildlife movement by stating that "[n]o distinct wildlife corridors were identified on the site or in the immediate surrounding area; therefore, the proposed project will not interfere with the movement of any…wildlife…." (IS/MND, p. 16.) However, according to Dr. Smallwood, focusing on "corridors" fails to account for the Project's impacts on wildlife movement. (Exhibit B, pp. 7-8.) CEQA does not limit environmental analysis of the Project's impacts to wildlife "corridors" but requires the analysis of impacts on wildlife movement on the whole. According to Dr. Smallwood, wildlife movement can be disrupted by a project, like this one, which involves the installation of many rows of PV panels and surrounding fencing. (*Id.*) The disruption of wildlife movement would lead to habitat fragmentation, which according to Dr. Smallwood is recognized as the most serious threat to the continued existence of terrestrial wildlife. (*Id.*) Especially since the Project site's proximity to the Mohave River, which represents a geographic feature well known to serve as a movement conduit for wildlife, Dr. Smallwood opines that the IS/MND and supporting biological surveys should have taken such fact into consideration.

In conclusion, according to Dr. Smallwood, the IS/MND failed to consider whether the Project will interfere with the movement of wildlife or fish, thereby disrupting a fundamental ecological requirement of wildlife species. The County must prepare an EIR to analyze and mitigate the Project's impacts on wildlife movement and habitat fragmentation.

c. The IS/MND Fails to Adequately Mitigate the Project's Potentially Adverse Impacts to Biological Resources.

1-31 As discussed in Part C.2, *supra*, the IS/MND failed to conduct adequate surveys to detect the occurrence of numerous special-status species. (See Exhibit B, p.4, Table 1.) According to Dr. Smallwood, the Project site has a high value habitat to wildlife due to its proximity to the Mojave River and its location in the Mojave Desert.

Dr. Smallwood opines that the Project will have a potentially significant impact on special-status species and the IS/MND fails to adequately mitigate such impacts. (Exhibit B, pp. 5-8.) The only mitigation measures proposed by the IS/MND are the preconstruction surveys, which are not required to be conducted until after the approval of the Project and just prior to grading at the Project site. (IS/MND, p. 56.) According to Dr. Smallwood, such preconstruction surveys, MM BIO-1 and MM BIO-2, are not adequate mitigation especially where, as here, the initial surveys were deficient and failed to detect the occurrence of many special-status species. (Exhibit B, pp. 1-3, 8; IS/MND, p. 56.)

Additionally, according to Dr. Smallwood, the IS/MND fails to incorporate all feasible mitigation measures to minimize, reduce, rectify or offset the Project's significant impacts to biological resources. (Exhibit B, p. 8.) Dr. Smallwood opines that an appropriate mitigation measure is protecting an equal area of land as wildlife habitat, either through purchase of title or conservation easement, near the Project site. (*Id.*) In order to adequately mitigate impacts to wildlife, Dr. Smallwood states that the County should require the project applicant to provide compensatory mitigation in the form of donations to local wildlife rehabilitators. (*Id.*) The Project will cause injuries to wildlife and therefore, Dr. Smallwood believes that the project applicant should be responsible for contributing to wildlife rehabilitation, which includes the care of injured wildlife so they could be released back into the wild. (*Id.*) Such compensatory mitigation will help wildlife rehabilitation facilities to maintain appropriate staff levels and facilities. (*Id.*) According to Dr. Smallwood, these measures are feasible and necessary to mitigate the Project's impacts to biological resources to a less than significant level.

Dr. Smallwood also provides specific ways in which the Project's impacts to biological resources can be monitored, which includes requiring qualified biologists to search the ground between solar panel arrays on a monthly basis for at least one year to monitor the number of collision fatalities and if collision fatalities are determined to be an issue, Dr. Smallwood recommends that fatality monitoring be extended for another two years. (*Id.*)

Moreover, Dr. Smallwood recommends that the County require mitigation monitoring to ensure that the project proponent will achieve mitigation objectives and performance standards as set forth in the CEQA and permit documents. (Exhibit B, p. 9.) Without an adequate and concrete monitoring requirement, the proposed mitigation measures and permit conditions are uncertain to reduce the Project's potentially

significant impacts to a less than significant level. (*Id.*) As such, an EIR must be prepared to not only incorporate all feasible mitigation measures to address the Project's impacts on biological resources but also require mitigation monitoring to ensure such measures comply with all applicable objectives and performance standards.

1-31

In conclusion, based on the Project's potentially significant adverse impacts to biological resources, the County is required to prepare an EIR to analyze these impacts in full and adopt all feasible mitigation measures to reduce such impacts to a less than significant level.

E. The IS/MND Fails to Analyze or Mitigate the Project's Potentially Cumulatively Considerable Impacts.

1-32

The County fails to analyze the cumulative impacts of the Project in connection with other related past, present and future projects in the vicinity. An agency must make a "mandatory finding of significance" and may not issue a negative declaration if a proposed project will have "impacts that are individually limited, but cumulatively considerable." (Pub. Resources Code, § 21083; CEQA Guidelines, § 15355.) "Cumulatively considerable means that the incremental effects of a project are considerable when viewed in connection with the effects of past projects, the effects of other current projects, and the effects of probable future projects." (CEQA Guidelines, Appendix G, Section XVII; CEQA Guidelines, section 15130(a).) "Cumulative impacts" are defined as "two or more individual effects which, when considered together, are considerable or which compound or increase other environmental impacts." (CEQA Guidelines, § 15355(a).) "[I]ndividual effects may be changes resulting from a single project or a number of separate projects." (CEQA Guidelines, § 15355(a).)

"The cumulative impact from several projects is the change in the environment which results from the incremental impact of the project when added to other closely related past, present, and reasonably foreseeable probable future projects. Cumulative impacts can result from individually minor but collectively significant projects taking place over a period of time." (*CBE v. CRA*, *supra*, 103 Cal.App.4th at 117; see CEQA Guidelines, § 15355(b).)

As the court stated in *CBE v. CRA*:

> Cumulative impact analysis is necessary because the full environmental impact of a proposed project cannot be gauged in a vacuum. One of the most important environmental lessons that has been learned is that environmental damage often occurs incrementally from a variety of small sources. These sources appear insignificant when considered individually, but assume threatening dimensions when considered collectively with other sources with which they interact.

(*CBE v. CRA,* 103 Cal.App.4th at 114.)

The IS/MND fails to provide an adequate cumulative impacts analysis. First, the extent of IS/MND's discussion of cumulative impacts of the Project is limited to two small paragraphs. (IS/MND, pp. 13, 36.) But even in these limited sections, the IS/MND only focuses on discussing the Project's incremental impacts and fails to analyze whether such impacts, when considered with other related projects, could be cumulatively considerable.

1-32

The IS/MND discounts the Project's potential to produce cumulatively significant emissions for ozone or PM10 based on the premise that ozone or PM10 emissions during construction would be mitigated by the Mojave Desert Air Quality Management District Rule 403.2. (IS/MND, p. 13.) However, as stated by Mr. Hagemann, the IS/MND fails to even quantify the amount of emissions the Project will produce, which, contrary to the IS/MND's conclusion, can potentially be significant. Therefore, it is unclear whether such mitigation measures will in fact successfully decrease the Project's emissions to an insignificant level.

But the IS/MND's focus on project-level impacts is irrelevant for cumulative impacts analysis. Even if the Project's emissions of ozone or PM10 may indeed be minor on its own, they can be collectively significant when considered with other related past, present and future projects in the vicinity. (*CBE v. CRA*, *supra*, 103 Cal.App.4th at 117; see CEQA Guidelines, § 15355(b).) The very purpose of CEQA's cumulative impacts analysis requirement is that the incremental effects of a project are considerable when viewed in connection with the effects of past projects, the effects of other current projects, and the effects of probable future projects. (*CBE v. CRA,* 103 Cal.App.4th at 114.)

The only mention of other related projects by the IS/MND is as follows:

> Several similar solar power projects are being proposed for San Bernardino County, and more can be expected if the solar projects are considered successful sources of clean and renewable energy. However, assuming each solar project implements mitigation measures to ensure non-significance in the areas described in this document, no significant cumulative effects are expected. At some point, if large acreages in the County are committed to renewable energy this may begin to limit habitat for other biological species.

(IS/MND, p. 36.) The IS/MND does not provide a list of any project which may be relevant for the cumulative impacts analysis, i.e. constructed during the same timeframe as the Project. Then the IS/MND concludes, without analysis, that "[t]he project does not have impacts that are individually limited but cumulatively considerable." (*Id.*) The

IS/MND, however, entirely fails to consider the Project's impacts with any other related projects' impacts. As a result, the IS/MND fails as an informational document and also fails to mitigate any potentially significant cumulative impacts.

According to Mr. Hagemann, an EIR must be prepared to identify the timing of the construction of all projects that are approved or pending in San Bernardino County and to quantify the emissions of the projects in a cumulative context. (Exhibit A, p. 5.) The EIR must determine if the Project's construction emissions exceed the applicable MDAQMD thresholds of significance and if they do, the EIR must adopt all feasible mitigation measures. (*Id.*)

Finally, according to Dr. Smallwood, the IS/MND fails to analyze the Project's potential cumulative impacts on biological resources. (Exhibit B, p. 8.) With countless number of industrial solar and wind energy projects which are currently proposed, under construction, or already constructed in the Mojave Desert area, Dr. Smallwood opines that the Project will contribute to cumulative impacts, especially given its proximity to the Mojave River. The County must analyze the Project's cumulative impacts on biological resources and mitigate such impacts to a feasible extent.

The IS/MND's cumulative impacts analysis was conclusory and failed to meet the requirements of CEQA.

CONCLUSION

For the foregoing reasons, the IS/MND for the Project should be withdrawn, an EIR should be prepared and circulated for public review and comment in accordance with the requirements of the CEQA. Thank you for considering our comments. 1-33

Sincerely,

Richard Drury
Cathy D. Lee
Lozeau Drury LLP

EXHIBIT A

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

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August 16, 2013

Cathy Lee
Lozeau | Drury LLP
410 12th Street, Suite 250
Oakland, CA 94607

Subject: Comments on the Sunlight Partners Solar Project, Helendale, California

Dear Ms. Lee:

I have reviewed the May 2013 Initial Study (IS) for the Sunlight Partners Solar Project, Helendale, California ("Project"), Conditional Use Permit P201200174. The Project would construct a 7.5 megawatt (MW) photovoltaic (PV) solar facility along with access roads on 80.6 acres in an unincorporated area of San Bernardino County.

A-1

I have found potentially significant Project related impacts associated with air quality, greenhouse gases, cumulative impacts, and hazards and hazardous waste. The IS does not disclose these impacts and a draft environmental impact report (DEIR) should be prepared to analyze these issues and provide mitigation where warranted.

Air Quality

The construction of the Project will disturb soil over a 10 week period (p. 12) for preparation and placement of PV panels. During site preparation -- which includes grading, excavation, and piers driven into the ground -- particulate matter (PM) will be released. The project is located in the Mojave Desert Air Basin which is designated by both the US and state as non-attainment for PM10.[1]

A-2

The IS does not estimate particulate matter (both PM10 and PM2.5) emissions from construction of the Project. The IS states only:

A-3

> The project is expected to generate minor particulate and ozone precursors during the 10 week construction period, however, these will be less than or roughly equal to pollutants generated by other land uses for this property such as farming (farrowing, plowing, etc.) (p. 12).

[1] http://www.mdaqmd.ca.gov/Modules/ShowDocument.aspx?documentid=1806 p. 3

The statement in the IS that construction emissions will "generate minor particulate and ozone precursors" is not supported with any quantitative estimates. Typically, estimates of PM10, PM2.5 and ozone precursors, like NOx, are made though use of models, such as CalEEMod and URBEMIS. No modeling results were referenced in the IS and no other estimates of PM10 and PM2.5 emissions were made. Because no estimates of Project emissions were made, the IS makes no comparisons to these CEQA thresholds[2] established by the Mojave Desert Air Quality Management District (p. 10)

A-3

Criteria Pollutant	Annual Threshold (tons)	Daily Threshold (pounds)
NOx	25	137
PM10	15	82
PM2.5	15	82

Other projects in Southern California that are smaller in scale have estimated emissions in excess of the thresholds that have been established for the MDQAMD for PM10 as shown in the table below.

Summary of Estimated PM10 Emissions from Solar Projects in Southern California					
Name	County	Acreage	Megawatts	Applicant's Estimated PM10 Emissions (tons/year)	Exceeds MDAQMD thresholds (15 tons/year)?
Sol Orchard Valley Center[3]	San Diego	54.6	7.5	30.16	Yes
Sol Orchard Ramona[4]	San Diego	42.7[5]	7.5	25.86	Yes
Adobe Solar	Kern	160	20	39	Yes
FRV Orion Solar	Kern	265	20	38.5	Yes

This review demonstrates that the IS cannot simply "expect to generate minor particulate and ozone precursors" during construction that are lower than the MDAQMD emissions thresholds. Projects of the same power generating capacity on fewer acres (Sol Orchard Valley Center and Sol Orchard Ramona)

[2] http://www.mdaqmd.ca.gov/Modules/ShowDocument.aspx?documentid=1806, p. 10
[3] Air Quality Assessment, Sol Orchard – Valley Center Project. October 20, 2011. http://www.sdcounty.ca.gov/pds/regulatory/docs/CEQA_REVIEW_3300-11-027_120413/3300-11-027-AQ.pdf, p. 19.
[4] Air Quality Assessment, Sol Orchard – Ramona Solar Project. April 18, 2012. http://www.sdcounty.ca.gov/pds/regulatory/docs/3300-11-029_CEQA_REVIEW_120503/3300-11-029-AIRQA.pdf, p. 17.
[5] *Ibid.*, p. v.

have estimated PM10 construction emissions that exceed the MDAQMD threshold. Estimates for larger projects, like Adobe Solar (20 MW, 160 acres) and FRV Orion Solar (20 MW, 265 acres), when scaled to the size of the Project (7.5 MW, 80.6 acres), approach the MDAQMD emissions threshold for PM10.

There is a fair argument that Project emissions will exceed thresholds for PM10, PM2.5 and NOx. A DEIR should be prepared to provide a quantitative estimate of Project construction emissions and to compare emissions to the MDAQMD thresholds for PM10, PM2.5 and NOx. Documentation to support the emissions estimates, including modeling assumptions, should be included.

The IS states that a dust control plan will be submitted to the County prior to land disturbance (p. 12) and the plan is cited as mitigation in AQ-1. Instead, a dust control plan should be included in a DEIR. The plan should include all feasible mitigation measures, pursuant to MDAQMD Rule 403.2[6], to reduce impacts to a less than significant level if modeling estimates show an exceedence of thresholds for construction PM10 and PM2.5 emissions.

The IS provides for mitigation consistent with MDAQMD Rule 403.2 which includes periodic watering, preventing tracking material onto public roads, reducing earth-moving activities when wind gusts are greater than 25 miles per hour or average wind speed of 15 miles per hour (p. 13). These measures are cited in Mitigation Measure AQ-1. However, because emissions have not been quantified (both pre- and post-mitigation), there is no way to determine if mitigation will be effective. A DEIR should be prepared to include estimates of construction emissions and, if emissions exceed thresholds, an evaluation of all feasible mitigation for the Project, including:

- Ceasing all clearing, grading, earth moving, and excavation activities when winds exceed 15 miles per hour, along with ways wind speeds will be measured and now notices of work stoppages will be communicated;
- Planning to minimize areas disturbed by clearing, earth moving, or excavation activities;
- Covering stockpiles (with tarps) or use water to reduce dust generation;
- Limit construction vehicle speeds to 15 miles per hour, and identify measures to enforce speeds; and
- Use of street sweepers on adjacent roadways with a regenerative street sweeper to reduce track-out of dust.

Implementation of these measures will help to reduce basin-wide health impacts from inhalation of particulate matter which results in irritation of the lungs, coughing, difficulty breathing, an irregular heartbeat, aggravated asthma, and decreased lung function.[7] According to the US Environmental Protection Agency, children and older adults are the most likely to be affected by particulate matter exposure.[8]

[6] http://www.mdaqmd.ca.gov/Modules/ShowDocument.aspx?documentid=306
[7] http://www.epa.gov/pm/health.html
[8] http://www.epa.gov/pm/health.html

Construction emissions of particulate matter may also impact the health of those residents located nearby. The closest residence is located on the Project site and other residences are located directly adjacent to the Project, to the east and the west. MDAQMD defines residences as a sensitive receptor.[9] A dust control plan should be included in a DEIR to identify all sensitive receptors (such as the residents on and adjacent to the Project site) and mitigation measures that will be taken to ensure the health of the public, including real-time dust monitoring and notification of residents when levels are unhealthful.

The IS also fails to discuss any toxic air contaminants, particularly diesel particulate matter (DPM), from activities associated with construction of the Project. Exposure to DPM may cause irritation to the eyes, nose, throat, and lungs, as well as neurological effects. DPM is classified as a "likely carcinogen."[10] According to the California Air Resources Board, children are the most vulnerable to the health effects of DPM.[11]

Studies by the California Air Resources Board (CARB) and by the California Office of Health Hazard Assessment (OEHHA) have identified the need to evaluate even short term exposures to air toxics and provide appropriate risk assessment methodologies. OEHHA recognizes that shorter-term exposures can and should be evaluated.[12] CARB now recognizes the importance of cancer risk from construction projects. According to a CARB analysis of a hypothetical construction project, cancer risk from construction activity can exceed 10 cases in a million for an area of 26 acres surrounding a construction site.[13] The MDAQMD has defined "significant health risk" for CEQA reviews as the exposure of sensitive receptors to substantial pollutant concentrations, including those resulting in a cancer risk greater than or equal to 10 in a million.[14]

Despite the potential for significant impacts on sensitive receptors, the IS does not address this issue. A DEIR should be prepared to evaluate DPM emissions, to include a comprehensive inventory of vehicles to be used in construction and maintenance. If emissions are harmful to human health, in particular to sensitive receptors as determined by an assessment to determine cancer risks, mitigation needs to be provided to reduce diesel exhaust emissions, to include:

- Regular preventive maintenance to reduce emissions;
- Post signs to strictly limit vehicle idle times to less than 5 minutes and turn off vehicles when not in use;
- Full compliance with the latest California emission standards for off-road compression-ignition engines;

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[9] http://www.mdaqmd.ca.gov/Modules/ShowDocument.aspx?documentid=1806, p. 9
[10] http://www.epa.gov/region1/eco/airtox/diesel.html
[11] http://www.arb.ca.gov/research/diesel/diesel-health.htm
[12] California Office of Environmental Health Hazard Assessment, Air Toxics Hot Spots Program Risk Assessment Guidelines Technical Support Document for Exposure Assessment and Stochastic Analysis, August 2012, Chapter 11, available at http://oehha.ca.gov/air/hot_spots/pdf/2012tsd/TOC2012.pdf
[13] California Air Resources Board, Staff Report: Initial Statement of Reasons for Proposed Rulemaking, Proposed Regulation for In-Use Off-Road Diesel Vehicles, April 2007, p. 12.
[14] http://www.mdaqmd.ca.gov/Modules/ShowDocument.aspx?documentid=414, p. 2

- Ensure that emissions from all construction diesel powered equipment used on the project site do not exceed 40 percent opacity (an indicator of exhaust particulate emissions from off-road diesel powered equipment) for more than three minutes in any one hour; and
- Install temporary electrical service to avoid the need for diesel powered equipment (e.g. compressors).

Cumulative Air Impacts

The IS lacks any substantive evaluation of cumulative air impacts, stating only: "several similar solar power projects are being proposed for San Bernardino County" (p. 36). The IS does not provides a list of projects that have been approved or are pending approval in the area and does not analyze if the concurrent construction of the Project, along with other projects, will result in a cumulative impact on air quality.

A-4 A DEIR should be prepared to identify the timing of the construction of all the projects that are approved or pending in San Bernardino County and quantify the emissions of the projects in a cumulative context. If emissions of particulate matter of the Project, in combination with other projects, exceed MDAQMD thresholds, mitigation should be identified in the DEIR. In applying these thresholds, the MDAQMD requires project emissions to be estimated through modeling along with documentation to support these estimates including all emission factors, emission factor sources, assumptions, sample calculations and model inputs.

Greenhouse Gas Emissions

The IS does not quantify greenhouse gas (GHG) emissions for the Project. The IS states that "the only major source of greenhouse gas emissions that will be associated with the project are construction and maintenance vehicles" (p. 20). The IS, however, does not quantify the emissions from construction and

A-5 maintenance vehicles.

In accordance with MDAQMD CEQA policy, GHG Emissions must be quantified and compared to a threshold of 25,000 tpy.[15] If emissions exceed thresholds, mitigation is required to achieve a less than significant impact through reduction by at least 20% with implementation of best performance standards, carbon offsets, or through use of an alternative GHG reduction strategy.

Without quantifying Project GHG emissions, it is impossible to determine whether emissions would be below the MDAQMD threshold. In accordance with MDAQMD guidance, a quantitative estimate of GHG emissions should be completed along with comparisons to thresholds established by the MDAQMD. The results of this analysis should be included in a DEIR.

Hazards, and Hazardous Waste

Potentially hazardous baseline conditions at the Project site are not disclosed. A Phase I Environmental

A-6 Site Assessment (ESA) was prepared for the Project site that identified past uses to include agricultural activities. The Phase I does not identify the types of crops that were cultivated and the pesticides that may have been used on the crops. In fact, the Phase I ESA makes no reference at all to the fact that

[15] www.mdaqmd.ca.gov/Modules/ShowDocument.aspx?documentid=3647, slide 5

pesticides may have been used on the site and may exist in residual concentrations in site soils. The IS states that alfalfa was the main crop and that the Project site was used for farming for several decades (p. 11). The IS also fails to identify any pesticide use in conjunction with agricultural operations.

A-6

The Phase I ESA does not classify the historical agricultural usage of the Project sites as a recognized environmental condition (REC). Therefore, the Phase I ESA makes no recommendations for soil sampling to determine if residual pesticide concentrations are present in Project site soils.

Because of past agricultural use at the Project site -- extending over a period of several decades, according to the IS -- there is a fair argument that residual concentrations of pesticides may be present in site soils. Soil sampling, under a Phase II investigation, should be conducted and included in a DEIR. Sampling results should be compared to human health screening levels (such as Environmental Screening Levels[16] and California Human Health Screening Levels[17]) and evaluated in a revised DEIR. If concentrations exceed screening levels, mitigation measures to minimize exposure to construction workers and on-site and nearby residents should be considered, including issuance of protective equipment for workers (i.e. respirators), onsite dust monitoring, and fenceline dust monitoring.

Sincerely,

Matt Hagemann, P.G., C.Hg.

[16] http://www.waterboards.ca.gov/sanfranciscobay/water_issues/available_documents/ESL_May_2008.pdf
[17] http://www.calepa.ca.gov/brownfields/documents/2005/CHHSLsGuide.pdf

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

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Geologic and Hydrogeologic Characterization
Industrial Stormwater Compliance
CEQA Review
Investigation and Remediation Strategies
Litigation Support and Testifying Expert

A-7

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
California Certified Hydrogeologist
Qualified SWPPP Developer and Practitioner

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);
- Geology Instructor, Golden West College, 2010 – 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).

Partner, SWAPE:

With SWAPE, Matt's responsibilities have included:

- Lead analyst and testifying expert 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.
- Stormwater analysis, sampling and best management practice evaluation at industrial facilities.
- Lead analyst and testifying expert in the review of environmental issues in license applications for large solar power plants before the California Energy Commission.
- Technical assistance and litigation support for vapor intrusion concerns.
- Manager of a project to evaluate numerous formerly used military sites in the western U.S.
- 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 two cases involving MTBE litigation.
- Expert witness and litigation support on the impact of air toxins and hazards at a school.
- Expert witness in litigation at a former plywood plant.

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.

A-7

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.

A-7

- 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.

A-7

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.

Matt currently teaches Physical Geology (lecture and lab) to students at Golden West College in Huntington Beach, California.

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.

A-7 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.

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A-7

Other Experience:

Selected as subject matter expert for the California Professional Geologist licensing examination, 2009-2011.

EXHIBIT B

Part I

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Chris Conner, Senior Planner
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Land Use Services -- Planning
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17 August 2013

RE: Comments on the proposed LANDPRO Solar Project

Dear Mr. Conner,

I would like to comment on an Initial Study (San Bernardino County 2013) and supporting documents (Arnold 2012a,b) that were prepared for the proposed LANDPRO Solar Project. As I understand it, the LANDPRO Project would have a rated capacity of 7.5 MW on 80.6 acres of what used to in alfalfa production, and which is currently kept fallow. County Staff recommends that this project be approved under a Mitigated Negative Declaration (San Bernardino County 2013). However, this project would cause significant environmental impacts that were not addressed in the Initial Study.

B-1

My qualifications for preparing expert comments are the following. I earned a Ph.D. degree in Ecology from the University of California at Davis in 1990, where I subsequently worked for four years as a post-graduate researcher in the Department of Agronomy and Range Sciences. My research has been on animal density and distribution, habitat selection, habitat restoration, interactions between wildlife and human infrastructure and activities, conservation of rare and endangered species, and on the ecology of invading species. I have authored numerous papers on special-status species issues, including "Using the best scientific data for endangered species conservation," published in Environmental Management (Smallwood et al. 1999), and "Suggested standards for science applied to conservation issues" published in the Transactions of the Western Section of The Wildlife Society (Smallwood et al. 2001). I served as Chair of the Conservation Affairs Committee for The Wildlife Society – Western Section. I am a member of The Wildlife Society and the Raptor Research Foundation, and I've been a part-time lecturer at California State University, Sacramento. I was also Associate Editor of wildlife biology's premier scientific journal, The Journal of Wildlife Management, as well as of Biological Conservation, and I was on the Editorial Board of Environmental Management.

B-2

I have performed avian surveys in California for twenty-three years (Smallwood et al. 1996, Smallwood and Nakamoto 2009). Over these years, I studied the impacts of human activities and human infrastructure on birds and other animals, including on Swainson's hawks (Smallwood 1995), burrowing owls (Smallwood et al. 2007), and other species (Smallwood and Nakamoto 2009). I studied fossorial animals (i.e., animals that burrow into soil, where they live much of their lives), including pocket gophers (Smallwood and Geng 1997), ground squirrels, kangaroo rats, voles, harvester ants, and many other functionally similar groups. I performed focused studies of how wildlife interact with agricultural fields and associated cultural practices,

especially with alfalfa production (Smallwood and Geng 1993, Erichsen et al. 1996, Smallwood et al. 1996, 2001). I performed extensive research programs directed toward reducing and minimizing the impacts of electrical generating facilities and electrical transmission systems on wildlife (e.g., Smallwood 2007, Smallwood and Karas 2009, Smallwood et al. 2007, Smallwood 2013). I have also performed wildlife surveys at many proposed project sites, including at a proposed large solar farm in the Mojave Desert.

B-2

SUFFICIENCY OF IMPACT REVIEW

The environmental review devoted to this project was extremely cursory, and wholly inadequate. The nearness of the riparian vegetation along the Mojave River did not factor into the review, nor did the project's likely contributions to habitat fragmentation and cumulative impacts. A single biologist visited the site for unspecified time periods during the mornings of April 9-10, 2012, although the time on site appears to have been no longer than 10.5 hours, total. It is unrealistic to expect that such a cursory site visit could result in the detection of many species of wildlife, especially considering that part of that time was supposed to have been devoted to botanical surveys.

B-3

In fact, Arnold (2012a,b) detected only three species of wildlife: common raven, mourning dove, and song sparrow. This was the shortest list of wildlife species observed on a proposed project site that I have seen reported, anywhere. This short list resulted from the project site either (1) providing extremely low value to wildlife, or (2) the site visits having been grossly inadequate. The first possibility was unlikely, given the richness of wildlife species in the Mojave Desert and the nearness of the Mojave River.

I have performed many wildlife surveys in the Mojave Desert, including mountain lion track counts, small mammal trapping, and walkover surveys for special-status species. In my experience, interpreting sign of wildlife presence is critical to wildlife species detections in the Mojave Desert, because most mammalian and reptilian species in the desert are active at night. Lacking reports of tail drags (typical of lizards and kangaroo rats), foot tracks, scat, owl pellets, dust baths, or burrows, the site was either a true wasteland or the survey was unqualified.

Nocturnal surveys are also important, especially using a thermal imager or other night-vision equipment. No such surveys were performed at the project site. If nocturnal surveys are not practical, then surveys around dusk and dawn are essential; waiting until 07:00 hours was too late to start a wildlife survey in the Desert. Live-trapping is also essential in the Mojave Desert, but was not performed at the proposed project site. Bat acoustical detectors are also essential for detecting bats, but no such detectors were deployed at the project site.

Special-status Species

B-4

The County's Initial Study and supporting documents (Arnold 2012a,b) failed to address likely project impacts to many special-status species capable of foraging, breeding, or stopping over on the land proposed for the project site (Table 1). There was no assessment of project impacts on bats, for example, even though the project would occur near the riparian vegetation of the Mojave River, where bats, no doubt, roost.

No protocol-level surveys were performed for desert tortoise or Mojave ground squirrel.

B-4 For burrowing owls, Arnold (2012b) claimed to have followed the guidelines prepared by the California Burrowing Owl Consortium (1993), but the guidelines of the California Department of Fish and Game (2012) were the guidelines that should have been used. Either way, these guidelines recommend conducting multiple surveys spaced out through the breeding season. Arnold (2012b) performed only a single survey on one morning, which as inconsistent with any of the available survey guidelines.

Table 1. Special-status species of wildlife that could potentially occur at, or travel through, the proposed LANDPRO Solar Project site.

Common name	Scientific name	Status[1]	Occurrence likelihood	
			Staff Report	Smallwood
Pallid bat	*Antrozous pallidus*	CSC	No mention	Probable
Townsend's western big-eared bat	*Plecotus t. townsendii*	CSC	No mention	Probable
Western mastiff bat	*Eumops perotis*	CSC	No mention	Probable
Long-eared myotis	*Myotis evotis*	WBWG	No mention	Probable
Fringed myotis	*Myotis thysanodes*	WBWG	No mention	Probable
Long-legged myotis	*Myotis volans*	WBWG	No mention	Probable
Yuma myotis	*Myotis yumanensis*	CSC	No mention	Probable
Mojave ground squirrel	*Xenospermophilus mojavensis*	CT	Unlikely	Possible
American badger	*Taxidea taxus*	CFP	No mention	Probable
Mountain plover	*Charadrius montanus*	BCC, BSSC2	Nomention	Probable
Turkey vulture	*Cathartes aura*	CDFG 3503.5	No mention	Probable
Golden eagle	*Aquila chrysaetos*	CFP, BGEPA	No mention	Probable
Northern harrier	*Circus cyaneus*	SSC3	No mention	Probable
White-tailed kite	*Elanus leucurus*	CFP	No mention	Probable
Cooper's hawk	*Accipiter cooperi*	CDFG 3503.5	No mention	Probable
Sharp-shinned hawk	*Accipiter striatus*	CDFG 3503.5	No mention	Probable
Ferruginous hawk	*Buteo regalis*	SSC	No mention	Probable
Red-tailed hawk	*Buteo jamaicensis*	CDFG 3503.5	No mention	Certain
Red-shouldered hawk	*Buteo lineatus*	CDFG 3503.5	No mention	Probable
Swainson's hawk	*Buteo swainsoni*	CT	No mention	Certain
American kestrel	*Falco sparverius*	CDFG 3503.5	No mention	Probable
Merlin	*Falco columbarius*	CDFG 3503.5	No mention	Possible
Prairie falcon	*Falco mexicanus*	CDFG 3503.5	No mention	Probable
Peregrine falcon	*Falco peregrinus*	CE, CFP	No mention	Possible
Barn owl	*Tyto alba*	CDFG 3503.5	No mention	Probable
Great-horned owl	*Bubo virginianus*	CDFG 3503.5	No mention	Probable
Short-eared owl	*Asio flammeus*	SSC3	No mention	Possible
Western burrowing owl	*Athene cunicularia*	SSC2, FCC	Unlikely	Possible
California horned lark	*Eremophila alpestris actia*	CBRL	No mention	Probable
Loggerhead shrike	*Lanius ludovicianus*	SSC2 (breeding)	No mention	Probable
Silvery legless lizard	*Anniella pulchra pulchra*	SSC	No mention	Possible
Coast horned lizard	*Phrynosoma blainvillii*	SSC	No mention	Possible

[1] *Listed as FE = federal endangered, FT = threatened, FCC = U.S. Fish and Wildlife Service Bird of Conservation Concern, BGEPA = Bald and Golden Eagle Protection Act, CE = California endangered, CT = California threatened, CSC = California species of special concern (not threatened with extinction, but rare, very restricted in range, declining throughout range, peripheral portion of species' range, associated with habitat that is declining in extent), CFP = California Fully Protected (CDFG Code 4700), CDFG 3503.5 = California Department of Fish and Game Code 3503.5 (Birds of prey), and SSC2 and SSC3 = California Bird Species of Special Concern priorities 2 and 3, respectively (Shuford and Gardali 2008), CBRL = California*

B-4

Bird Responsibility List, WBWG = Western Bat Working Group listing as moderate or high priority.

Collision risk

B-5

The Initial Study and supporting documents (Arnold 2012a,b) did not consider that the PV panels will pose some collision risk to birds. A Yuma clapper rail (*Rallus longirostris yumanensis*), which was a member of a species listed as Endangered under the Federal Endangered Species Act, was recently killed at an industrial solar farm near Joshua Tree National Park (http://www.kcet.org /news/rewire/solar/photovoltaic-pv/endangered-bird-dead-at-desert-solar-facility.html). Although it is now known that special-status species are vulnerable at solar projects, the collision risk of PV panels remains largely unknown in an industrial setting. It also remains unknown to what degree collision rates might differ from those measured at Solar One (McCrary et al. 1986), which was a concentrating thermal power plant. In the face of high uncertainty when assessing impacts to rare environmental resources, the accepted standard is to err on the side of caution (National Research Council 1986, Shrader-Frechette and McCoy 1992, O'Brien 2000). Therefore, it should not be assumed that due to less reflectivity in PV panels, the collision rates will necessarily be different. All this said, the Staff Report did not even consider the potential for avian collisions with PV panels or support structures.

McCrary et al. (1986) remains the only study of direct impacts to birds caused by a solar power plant (Solar One). McCrary et al. (1986) searched for dead birds amongst the heliostat mirrors and around the power tower, and they estimated a bird fatality rate caused by bird collisions with heliostat mirrors and the power tower, and by heat encountered when birds flew through the concentrated sunlight reflected toward the power tower. However, McCrary et al. (1986) appeared to have under-appreciated the magnitude of the impacts caused by Solar One, likely because McCrary et al. (1986) did not know as much as scientists know today about scavenger removal rates and searcher detection error.

McCrary et al. (1986) searched for dead birds during 40 visits to the 10 MW Solar One Project. Their search pattern was not fixed, so it was not as rigorous as modern searches at wind energy projects and other energy generation and transmission facilities. McCrary et al. (1986) placed 19 bird carcasses to estimate the proportion remaining over the average time span between their visits to the project site, though they provided few details about their scavenger removal trial. We know today that the results of removal trials can vary substantially for many reasons, including the species used, time since death, and the number of carcasses placed in one place at one time, and etc. (Smallwood 2007). McCrary et al. (1986) also performed no searcher detection trials, because they concluded that the ground was sufficiently exposed that all available bird carcasses would have been found. This conclusion would not be accepted today, based on modern fatality search protocols.

Because, scientists have performed many more scavenger removal trials and searcher detection trials, as well as many more bird carcass searches since the study of McCrary et al. (1986), I re-calculated the fatality rate estimate from that first study, but this time using national averages to represent scavenger removal rates and searcher detection rates (see Smallwood 2007, 2013). Based on the methods in Smallwood (2007), I have since reviewed more than 400 searcher

detection trials and more than 400 scavenger removal trials across North America (Smallwood 2013). From these reviews, I estimated the average proportion of carcasses remaining after 9 days since the last carcass search. I used 9 days for the average search interval, because that was
B-5 the average search interval in the McCrary et al. (1986) study.

The estimator I used was derived from the Horvitz and Thompson (1952):

$$F_A = \frac{F_U}{R_C \times p},$$

where F_U was the unadjusted number of fatalities/MW/year (the found carcasses), and F_A was the fatality rate adjusted for the proportion of carcasses found amongst those that were available to be found, p, and by the average proportion of carcasses remaining since the last fatality search, R_C. The adjustments for p and R_C were estimated from searcher detection trials and scavenger removal trials. I assumed carcasses were deposited at a steady rate from heliostat mirrors and power towers, so I took the average proportion of carcasses remaining each sequential day between searches:

$$R_C = \frac{\sum_{i=1}^{I} R_i}{I},$$

where R_i was proportion of carcasses remaining by the ith day following the initiation of a scavenger removal trial. Thus, the expected proportion of carcasses remaining by the next fatality search should be R_C corresponding with the fatality search interval, I, which was 9 days in the McCrary et al. (1986) study. Note that McCrary et al. (1986) used R_i instead of R_C, which means their fatality rate estimate would have been inflated for this factor alone (their estimate was biased low, however, by assuming they experienced no searcher detection error).

McCrary et al. (1986) reported the mean and standard deviation (SD) of bird carcasses found per visit, but estimating rates for the purpose of extrapolation should include a standard error (SE), which can be approximated as:

$$SE = \frac{SD}{\sqrt{n}},$$

which, in the case of McCrary et al. (1986), with a SD = 1.8 and n = 40 visits, was 0.28 (the calculated mean was 1.75).

Using SE also facilitates carrying of the error terms through the calculation of the fatality rate estimate. For this purpose, I estimated standard error of the adjusted fatality rate, $SE[F_A]$, using the delta method (Goodman 1960):

B-5

$$SE[F_A] = \sqrt{\left(\frac{1}{p \times R_C} \times SE[F_U]\right)^2 \times \left(\frac{F_U}{p} \times \frac{-1}{R_C^2} \times SE[R_C]\right)^2 \times \left(\frac{F_U}{R_C} \times \frac{-1}{p^2} \times SE[p]\right)^2}.$$

Using data reported by McCrary et al. (1986), and adopting their assumptions, their estimated fatality rate was 1.75 fatalities/visit divided by 70% to 90% of placed trial carcasses remaining between visits, or 1.75 ÷ 0.90 = 1.94 and 1.75 ÷ 0.70 = 2.5. Assuming a point estimate of 80% of placed carcasses remaining, then the estimated bird carcasses per visit would be 1.75 ÷ 0.80 = 2.19. Given that there were 40 visits in the year, then 2.19 × 40 = 87.6 bird fatalities per year, or on a per-MW basis, there were 87.6/10 MW = 8.76 bird fatalities per MW per year. Because McCrary et al. (1986) did not report the SE of their proportion of placed trials carcasses remaining, and because they assumed $p = 1$, I could not carry the error terms, so the estimate from their study was 8.76 bird fatalities/MW/year with an 80% confidence interval (CI) of 6.96 to 10.55. The only real challenge remaining is to extrapolate this estimate to the 7.5 MW LANDPRO Solar Project consisting of PV panels instead of power towers and heliostat mirrors.

Assuming PV panels will result in only 10% of the fatalities compared to the rate observed at Solar One, then I would predict that LANDPRO Solar will kill 6.6 birds per year (80% CI: 5.2 to 7.9). Assuming PV panels will result in half the fatalities per MW as occurred at Solar One, and extrapolating this rate to the 7.5 MW LANDPRO Solar Project, I would predict 33 bird fatalities per year (80% CI: 26 to 39.5). However, these rates need to be adjusted for the proportion of fatalities not found by searchers.

The results of my adjustment trials yielded national averages of $R_C = 0.48$ (SE = 0.12) for birds over a mean search interval of 9 days and $p = 0.676$ (SE = 0.029) when ground visibility was characterized as high or very high. Using these values, my estimated fatality rate at McCrary et al.'s project site was 21.57 fatalities/MW/year (80% CI: 7.15 to 36.00). Relying on these adjustments and assuming PV panels will result in only 10% of the fatalities compared to the rate observed at Solar One, then I would predict that LANDPRO Solar will kill 16.2 birds per year (80% CI: 5.4 to 27). Assuming PV panels will result in half the fatalities per MW as occurred at Solar One, and extrapolating this rate to the 7.5 MW LANDPRO Solar Project, I would predict 81 bird fatalities per year (80% CI: 27 to 135).

Clearly, the McCrary et al. (1986) fatality monitoring study resulted in a highly uncertain fatality rate estimate, which was revealed to be even more uncertain when considering national averages of the adjustment factors and when carrying the error terms through the calculations . The direct impact of the LANDPRO Solar Project can be said to be highly uncertain at this point. If the project goes forward, it would be very important to require sound fatality monitoring. It would be helpful to perform avian behavior surveys in advance of construction, in order to characterize avian flight paths and the types of behaviors of endemic species that could contribute to collision risk (Smallwood et al. 2009, 2010).

B-6

Wildlife Movement

According to Arnold (2012a), "*No distinct wildlife corridors were identified…*" However, this finding was a red-herring argument, because CEQA does not identify corridors as central to the

environmental impact on wildlife movement. Wildlife movement can be disrupted by a project involving the installation of many rows of PV panels and surrounding fencing. Determining whether this type of impact will be significant requires much more careful examination than noting whether a corridor – whatever it was that was meant by "corridor" – was present. Furthermore, Arnold (2012a) made no mention of the nearness of the Mojave River, which represents a geographic feature well known to serve as a movement conduit for wildlife. The Initial Study failed to analyze the effects of habitat fragmentation, which is recognized as the most serious threat to the continued existence of terrestrial wildlife (Wilcox and Murphy 1985), and which is highly relevant to a parcel of land so close by the Mohave River.

B-6

B-7

Cumulative Impacts

No cumulative impacts analysis was provided in the Initial Study. Many industrial solar and wind energy projects are currently proposed, under construction, or already constructed in the Mojave Desert. LANDPRO Solar will contribute to cumulative impacts, especially given its location next to the Mojave River. A cumulative impacts analysis is needed.

MITIGATION MEASURES

B-8

Preconstruction surveys were the only form of mitigation promised in the Initial Study. No additional mitigation measures were formulated to minimize, reduce, rectify, or offset the project's impacts on wildlife.

An appropriate mitigation measure would be to protect an equal area of land as wildlife habitat, either through purchase of title or conservation easement. This land should be acquired nearby the project site.

I suggest that the project applicant provides compensatory mitigation in the form of donations to local wildlife rehabilitators. The project will cause injuries to wildlife, so the applicant should be responsible for contributing to the care and release to the wild of injured animals. Rehabilitation facilities typically operate on very small budgets, so struggle to maintain appropriate staff levels and facilities. More reliable funding is needed, and this funding should come from those causing the impacts.

Impact Monitoring

Very little is known of the types or magnitudes of impacts on wildlife caused by industrial solar projects. It would be irresponsible of permitting agencies to allow industrial solar projects to go forward without scientific monitoring of project impacts. Qualified biologists should be funded to search the ground between solar panel arrays on a monthly basis for at least one year to determine whether collision fatalities are an issue. Searches should be done on foot. I suggest searching randomly or systematically selected arrays of solar panels to the extent that equals 20 person-days per month. If collision fatalities are deemed to be an issue, then I suggest extending the fatality monitoring for another two years and adding searcher detection trials to facilitate the accurate estimation of fatality rates. Furthermore, I would suggest performing an analysis of the pattern of fatalities to identify spatial or other trends that can inform mitigation measures to

reduce fatality rates. Basic methods for fatality monitoring at a solar energy plant can be found in McCrary et al. (1986), and updated methodology can be found in Smallwood (2007, 2009, 2013), Smallwood and Karas (2009), Smallwood et al. (2013).

B-8

MITIGATION MONITORING

It has long been known that mitigation pursuant to CEQA has often either failed or has not been implemented, but with no consequences to the take-permit holder (Silva 1990). There should be consequences for not achieving mitigation objectives or performance standards. The project proponents should be required to provide a performance bond in an amount that is sufficient for an independent party to achieve the mitigation objectives originally promised, and in this case, the promises should be much more substantial. A fund is needed to support named individuals or an organization to track the implementation of mitigation measures. Report deadlines should be listed, and who will be the recipients of the reports. In my professional opinion, the Mitigated Negative Declaration's lack of specific mitigation monitoring details renders it inadequate and uncertain, and makes it impossible to gauge whether or to what extent any mitigation measures will lessen potentially significant impacts on species. If these measures are not clearly laid out in the EIR, then there will be no basis to determine that impacts will be less than significant once implemented. Furthermore, without adequate funding allocated in advance, there is no certainty that any proposed mitigation monitoring will actually take place.

Shawn Smallwood, Ph.D.

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B-9

Kenneth Shawn Smallwood
Curriculum Vitae

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Born May 3, 1963 in
Sacramento, California.
Married, father of two.

Ecologist

Expertise

- Finding solutions to controversial problems related to wildlife interactions with human industry, infrastructure, and activities; and,

- Using systems analysis and experimental design principles to identify meaningful ecological patterns that can inform conclusions and management decisions.

Education

Ph.D. Ecology, University of California, Davis. September 1990.
M.S. Ecology, University of California, Davis. June 1987.
B.S. Anthropology, University of California, Davis. June 1985.
Corcoran High School, Corcoran, California. June 1981.

Experience

- 337 professional publications, including:
- 61 peer reviewed publications
- 24 in non-reviewed proceedings
- 244 reports, declarations, and book reviews
- 8 in mass media outlets
- 75 public presentations of research results at meetings
- Reviewed many professional papers and reports
- Testified in 4 court cases.

Associate Editor, *Journal of Wildlife Management*, March 2004 to 30 June 2007.

Editorial Board Member, *Environmental Management*, 10/1999 to 8/2004.

Associate Editor, *Biological Conservation*, 9/1994 to 9/1995. Administered independent scientific reviews of submitted, professional papers in ecology and conservation biology, and made recommendations to the Editors.

Member, Alameda County Scientific Review Committee (SRC), 8/06 to 4/11. As part of a five member committee, I investigated the causes of bird and bat collisions in the Altamont Pass Wind Resource Area, and I recommended mitigation and monitoring measures. The SRC reviews the science underlying the Alameda county Avian Protection Program, and advises the County on how to reduce wildlife fatalities.

B-9

Research Ecologist, 2/06 to 12/07, under contract to East Bay Regional Parks District. Performed research of how fossorial mammals and raptors responded to grazing treatments and wind turbines at Vasco Caves Regional Preserve. I designed the study, trained the fatality monitors and behavior observers, mapped the burrows of fossorial mammals, analyzed the data, and took the lead on writing the report.

Consulting Ecologist, 7/04 to 12/07, California Energy Commission (CEC). In collaboration with Lawrence-Livermore National Lab, I performed independent research funded by the CEC on bird behavior in the Altamont Pass Wind Resources Area. I also provided consulting services as needed to the CEC. I produced several reports to the CEC and the CEC's Public Interest Energy Research program.

Consulting Ecologist, 11/99 to present, U.S. Navy. I provide endangered species surveys at multiple Navy facilities, hazardous waste site monitoring, and habitat restoration for the endangered Fresno kangaroo rat, California tiger salamander, California red-legged frog, California clapper rail, western burrowing owl, and other species. I have worked at Naval Air Station Lemoore; Naval Weapons Station, Seal Beach, Detachment Concord; Naval Security Group Activity, Skaggs Island; National Radio Transmitter Facility, Dixon.

Part-time Lecturer, 1/98 to 2005, California State University, Sacramento. I taught Contemporary Environmental Issues, Natural Resources Conservation (twice), Mammalogy, Behavioral Ecology, and Ornithology Lab.

Senior Ecologist, 1999 to 2005, BioResource Consultants. I planned and carried out research and monitoring projects, and analyzed complex data related to avian fatalities at wind turbines, avian electrocutions on electric distribution poles across California, and avian fatalities at transmission lines.

Systems Ecologist, 7/96 to present, Consulting in the Public Interest, www.cipi.com. I am part of a multi-disciplinary consortium of scientists facilitating large-scale, environmental planning projects and litigation. We provide risk assessments, assessments of management practices, and expert witness testimony.

Chairman, Conservation Affairs Committee, The Wildlife Society--Western Section, 1999-2001. I prepared position statements and led efforts directed toward conservation issues, including travel to Washington, D.C. to lobby Congress for more wildlife conservation funding.

Systems Ecologist, 1/95 until about 2000, Institute for Sustainable Development. I headed ISD's program on integrated resources management. I developed indicators of ecological integrity for large areas, using remotely sensed data, local community involvement and GIS.

Associate, 1997-1998, Department of Agronomy and Range Science, University of California, Davis. I worked with Shu Geng and Mingua Zhang on several projects related to wildlife interactions with agriculture and patterns of fertilizer and pesticide residues in groundwater across a large landscape.

B-9

Lead Scientist, 6/96 to 6/99, National Endangered Species Network. I headed NESN's efforts to inform academic scientists and environmental activists about emerging issues regarding the Endangered Species Act and other environmental laws pertaining to special status species. I also testified at public hearings on behalf of environmental groups and endangered species.

Ecologist, 1/97 to 6/98, Western Foundation of Vertebrate Zoology. I conducted field research to determine the impact of past mercury mining on the status of California red-legged frogs in Santa Clara County, California.

Senior Systems Ecologist, 7/94 to 12/95, EIP Associates, Sacramento, California. Provided consulting services in environmental planning. I also developed a quantitative assessment of land units for their conservation and restoration opportunities, using the ecological resource requirements of 29 special status species. I mapped vegetation and land use, and derived new spatial data from a GIS overlay of these variables with soil types, flood zones, roads, and other spatially referenced data. Using these derived data, I developed a set of indicators for prioritizing areas within Yolo County that will receive mitigation funds for habitat easements and restoration.

Post-Graduate Researcher, 10/90 to 6/94, with Dr. Shu Geng, Department of Agronomy and Range Science, *U.C. Davis*. Studied landscape and management effects on temporal and spatial patterns of abundance among pocket gophers and species of Falconiformes and Carnivora in the Sacramento Valley. I also developed and analyzed a data base of energy use in California agriculture, and I assisted with a landscape (GIS) study of groundwater contamination across Tulare County, California.

Co-teacher, 1/91 to 6/91 and 1/93 to 6/93, Graduate Group in Ecology, U.C. Davis. Co-taught conservation biology with Dr. Christine Schonewald.

Reader, 3/90 to 6/90, Department of Psychology, U.C. Davis. Assisted students of Psychobiology (taught by Dr. Richard Coss) with research and writing term papers.

Research Assistant, 11/88 to 9/90, with Dr. Walter E. Howard, Department of Wildlife and Fisheries Biology, U.C. Davis. Tested durable baits for pocket gopher control in forest plantations, and developed gopher sampling methods.

Fulbright Research Fellow, Indonesia, 7/88 to 11/88. Tested use of new sampling methods for monitoring the number of Sumatran tigers and six other species of endemic felids, and evaluated methods used by other researchers.

Research Assistant, 7/87 to 6/88, with Dr. Terrell P. Salmon, Wildlife Extension, Department of Wildlife and Fisheries Biology, U.C. Davis. Developed empirical models of mammal and bird invasions in North America, and a rating system for priority research and control of exotic species based on economic, environmental, and human health hazards in California.

Student Assistant, 3/85 to 6/87, with Dr. E. Lee Fitzhugh, Wildlife Extension, Department of Wildlife and Fisheries Biology, U.C. Davis. Developed and implemented a statewide mountain lion track count for long-term monitoring of numbers and distribution. I've continued the

statewide track count since 1985 (the last count was in 2008). I also developed quantitative methods to identify individual mountain lions by their tracks, and to differentiate mountain lion and dog tracks.

Projects

Research to reduce avian mortality due to wind turbines at Altamont Pass. I used GPS and GIS to map and study environmental impacts of 5,400 wind turbines. I related the number of raptor fatalities at wind turbines to the degree of aggregation of prey species around the turbines, as well as many other factors related to where the turbines are located, how they are designed and operated, and how raptors behave in the Altamont Pass Wind Resource Area. I also serve on the Alameda County Scientific Review Committee, charged with recommending scientific monitoring methods and mitigation measures for reducing avian mortality.

Research to reduce avian mortality on electric distribution poles. Since about 2000 I have performed research directed toward reducing bird electrocutions on electric distribution poles. I led fatality monitoring efforts at 10,000 poles multiple times in California, spanning Orange County to Glenn County, and I have produced two large reports.

Cook *et al*. v. Rockwell International *et al*., No. 90-K-181 (D. Colorado). I provided expert testimony on the role of burrowing animals in affecting the fate of buried and surface-deposited radioactive and hazardous chemical wastes at the Rocky Flats Plant, Colorado. I provided expert reports based on four site visits and the most extensive document review of burrowing animals ever conducted. I conducted transect surveys for evidence of burrowing animals and other wildlife on and around waste facilities. I also discovered substantial intrusion of waste structures by burrowing animals. I testified in federal court in November 2005, and my clients were subsequently awarded a $553,000,000 judgment by a jury.

Hanford Nuclear Reservation Litigation. I am providing expert testimony on the role of burrowing animals in affecting the fate of buried radioactive wastes at the Hanford Nuclear Reservation, Washington. I provided three expert reports based on three site visits and extensive document review. I predicted and verified a certain population density of pocket gophers on buried waste structures, as well as incidence of radionuclide contamination in body tissue. I conducted transect surveys for evidence of burrowing animals and other wildlife on and around waste facilities. I also discovered substantial intrusion of waste structures by burrowing animals.

Expert Testimony and Declarations on Residential and Commercial Development Proposals. I have testified before the California Coastal Commission, California Energy Commission, County Boards of Supervisors, and City Councils, and I have participated with press conferences and have been deposed by attorneys. I prepared expert witness reports and court declarations, which are summarized under Reports (below).

Expert Testimony on Proposed Gas-fired Power Plants. I provided comments letters, declarations, expert reports, and oral testimony on the impacts and appropriate mitigation of about eight natural gas-fired power plants in California.

Expert Testimony on Proposed Wind Farms. I provided comment letters and oral testimony to

administrative law courts in Klickitat and Skamania Counties, Washington, which convinced the court in Skamania County to require the replacement of a negative declaration with an EIS. I provided written testimony and deposition in support of litigation brought against the development of wind turbines in Cook County, Texas, which resulted in a settlement. I also provided written comments on the first EIR for the Buena Vista Wind Energy Project in Contra County, California, prompting the withdrawal of that EIR and the preparation of an improved EIR which was later certified.

Protocol-level endangered species searches and recovery efforts. I search for special-status species using Department of Fish and Game and US Fish and Wildlife Service protocols. I have searched for, or otherwise worked with, California red-legged frog, arroyo southwestern toad, California tiger salamander, blunt-nosed leopard lizard, western pond turtle, giant kangaroo rat, Fresno kangaroo rat, San Joaquin kit fox, Sumatran tiger, willow flycatcher, least Bell's vireo, western burrowing owl, Swainson's hawk, Valley elderberry longhorn beetle and many other special-status species. I also help with recovery of the Fresno kangaroo rat at Lemoore Naval Air Station.

Conservation of the endangered Fresno kangaroo rat. I am performing applied research to identify the factors responsible for the decline of this endangered species at Lemoore Naval Air Station, and am implementing habitat enhancements designed to reverse the trend and to expand the area occupied by this species.

Impact of West Nile Virus on yellow-billed magpies. Since 2005 I have worked under contract to the Sacramento-Yolo Mosquito and Vector Control District to gather post-West Nile Virus epidemic data to pre-epidemic data I had gathered on multiple bird species in the Sacramento Valley in the 1990s, but particularly on yellow-billed magpie and American crow, which are particularly susceptible to WNV.

Workshops on HCPs. Assisted Dr. Michael Morrison with organizing and conducting a 2-day workshop on Habitat Conservation Plans, sponsored by Southern California Edison, and another 1-day workshop sponsored by PG&E. These Workshops were attended by academics, attorneys, and consultants with HCP experience. We guest-edited a Proceedings published in Environmental Management.

Mapping of biological resources along Highways 101, 46 and 41. I used GPS and GIS to delineate vegetation complexes and locations of special-status species along 26 miles of highway in San Luis Obispo County, 14 miles of highway and roadway in Monterey County, and in a large area north of Fresno, including within reclaimed gravel mining pits.

GPS mapping and monitoring at restoration sites and at Caltrans mitigation sites. I am monitoring the success of elderberry shrubs at one location, the success of willows at another location, and the response of wildlife to the succession of vegetation at both these sits. I am also using GPS to monitor the response of fossorial animals to yellow star-thistle eradication and natural grassland restoration efforts at Bear Valley, Colusa County, and at the decommissioned Mather Air Force Base in Sacramento County.

Mercury effects on Red-legged Frog. I assisted Dr. Michael Morrison and US Fish and Wildlife

B-9

Service in assessing the possible impacts of historical mercury mining on the federally listed California red-legged frog in Santa Clara County. I also measured habitat variables in numerous streams.

Opposition to proposed No Surprises rule. I wrote a white paper and summary letter explaining scientific grounds for opposing the incidental take permit (ITP) rules providing ITP applicants and holders with general assurances they will be free of compliance with the Endangered Species Act once they adhere to the terms of a "properly functioning HCP." I obtained 188 signatures of scientists and environmental professionals on the letter submitted to the US Fish and Wildlife Service and the National Marine Fisheries Service. The letter was also provided to all US Senators. It helped change the prevailing view of HCPs as beneficial to listed species.

Natomas Basin Habitat Conservation Plan alternative. I designed narrow channel marsh to increase the likelihood of survival and recovery in the wild of giant garter snake, Swainson's hawk and Valley Elderberry Longhorn Beetle. The design included replication and interspersion of treatments for experimental testing of critical habitat elements. I provided a report to Northern Territories, Inc.

Assessment of Environmental Technology Transfer to China, and Assessment of Agricultural Production System. I twice traveled to China and interviewed scientists, industrialists, agriculturalists, and the Directors of the Chinese Environmental Protection Agency and the Department of Agriculture to assess the need and possible pathways for environmental clean-up technologies and trade opportunities between the US and China. I spent a total of five weeks in China, including in Shandong and Linxion Provinces and in Beijing.

Yolo County Habitat Conservation Plan. I conducted the landscape ecology study of Yolo County to identify the priority land units to receive mitigation so as to most improve the ecosystem functionality within the County from the perspective of 29 special-status species of wildlife and plants. I used a hierarchically structured indicators approach to apply principles of landscape and ecosystem ecology, conservation biology, and local values in rating land units. I derived GIS maps to help guide the conservation area design, and then I developed implementation strategies.

Mountain Lion Track Count. I developed and conducted the carnivore monitoring program throughout California since 1985. Species counted include mountain lion, bobcat, black bear, coyote, red and gray fox, raccoon, striped skunk, badger, and black-tailed deer. Vegetation and land use are also monitored. The transect was established on dusty, dirt roads within randomly selected quadrats. These roads are searched for tracks of the carnivores, which routinely use the roads for travel paths.

Sumatran Tiger and other Felids. I designed and conducted track counts for seven species of wild cats in Sumatra, including the Sumatran tiger, fishing cat, and golden cat. I spent four months on Sumatra and Java, and learned Bahasa Indonesia (the official Indonesian language). I was awarded a Fulbright Research Fellowship to complete the project.

Wildlife in Agriculture. Beginning as my post-graduate research, I have studied pocket gophers and other wildlife in 40 alfalfa fields throughout the Sacramento Valley, and I surveyed for wildlife

B-9

along a 200 mile road transect for six years. The data were analyzed using GIS and methods from landscape ecology, and the results were published and presented orally to farming groups in California and elsewhere. I also conducted the first study of wildlife in cover crops used on vineyards and orchards.

Agricultural Energy Use and Tulare County Groundwater Study. I developed and analyzed a data base of energy use in California agriculture, and collaborated on a landscape (GIS) study of groundwater contamination across Tulare County, California.

Pocket Gopher Damage in Forest Clearcuts. I tested various poison baits and baiting regimes for pocket gopher control in forest plantations, and I developed gopher sampling methods. I conducted the most extensive field study of pocket gophers ever, involving thousands of gophers in 68 research plots on 55 clearcuts among 6 National Forests in northern California.

Risk Assessment of Exotic Species in North America. I developed empirical models of mammal and bird species invasions in North America, as well as a rating system for assigning priority research and control to exotic species in California, based on economic, environmental, and human health hazards.

B-9

Representative Clients

Law offices and environmental groups	Government agencies
Law Offices of Stephan C. Volker	
Law Offices of Berger & Montague	US Department of Agriculture
Law Offices of Roy Haber	US Forest Service
Law Offices of Edward MacDonald	US Fish & Wildlife Service
Law Office of John Gabrielli	US Navy
Law Office of Bill Kopper	California Energy Commission
Law Office of Donald B. Mooney	California Office of the Attorney General
Law Office of Veneruso & Moncharsh	California Department of Fish & Game
Law Office of Steven Thompson	California Department of Transportation
California Wildlife Federation	California Department of Forestry
Defenders of Wildlife	California Department of Food & Agriculture
Sierra Club	Ventura County Counsel
National Endangered Species Network	County of Yolo
Spirit of the Sage Council	Tahoe Regional Planning Agency
The Humane Society	Sustainable Agriculture Research & Education Program
Hagens Berman LLP	Sacramento-Yolo Mosquito and Vector Control District
Environmental Protection Information Center (EPIC)	East Bay Regional Park District
Goldberg, Kamin & Garvin, Attorneys at Law	County of Alameda
Californians for Renewable Energy (CARE)	
Seatuck Environmental Association	
Friends of the Columbia Gorge, Inc.	**Other organizations and Individuals**
Save Our Scenic Area	Don & LaNelle Silverstien
Alliance to Protect Nantucket Sound	Seventh Day Adventist Church
Friends of the Swainson's Hawk	Escuela de la Raza Unida
Alameda Creek Alliance	Susan Pelican and Howard Beeman
Center for Biological Diversity	Residents Against Inconsistent Development, Inc.
Businesses	Bob Sarvey
FloDesign Wind Turbine	Mike Boyd
NEXTera Energy Resources, LLC	Hillcroft Neighborhood Fund
Pacific Gas & Electric Co.	Joint Labor Management Committee, Retail Food Industry
Southern California Edison Co.	Lisa Rocca
Georgia-Pacific Timber Co.	Kevin Jackson
Northern Territories Inc.	Dawn Stover and Jay Letto
National Renewable Energy Lab	Nancy Havassy
David Magney Environmental Consulting	Catherine Portman (for Brenda Cedarblade)
Wildlife History Foundation	
Emerald Farms	
Terry Preston, Wildlife Ecology Research Center	
G3 Energy and enXco	
Comstocks Business (magazine)	
Californians for Renewable Energy	
BioResource Consultants	

Representative special-status species experience

Common name	Species name	Status[1]	Description
Field experience			
California red-legged frog	*Rana aurora draytonii*	FT, CSC	Protocol searches & detected at multiple sites
Foothill yellow-legged frog	*Rana boylii*	FSC, CSC	Research and search detections at multiple sites
Western spadefoot	*Spea hammondii*	FSC, CSC	Searches and search detections
California tiger salamander	*Ambystoma californiense*	FC, CSC	Protocol searches & detections at multiple sites
Coast range newt	*Taricha torosa torosa*	CSC	Searches and multiple detections
Blunt-nosed leopard lizard	*Gambelia sila*	FE, CE	Detected in San Luis Obispo County
California Horned Lizard	*Phrynosoma coronatum frontale*	FSC, CSC	Search and detected in San Luis Obispo Co.
Western pond turtle	*Clemmys marmorata*	FSC, CSC	Searches and detected at multiple sites
San Joaquin kit fox	*Vulpes macrotis mutica*	FE, CT	Protocol searches and detections
Sumatran tiger	*Panthera tigris*		Research in Sumatra
Mountain lion	*Puma concolor californicus*	CFP	Research and publications
Point Arena mountain beaver	*Aplodontia rufa nigra*	FE, CSC	Remote camera operation
Giant kangaroo rat	*Dipodomys ingens*	FE, CE	Detected in Cholame Valley
Fresno kangaroo rat	*Dipodomys nitratoides*	FE, CE	Research and conservation at Lemoore Naval Air Station – reports
Monterey dusky-footed woodrat	*Neotoma fuscipes luciana*	FSC, CSC	Non-target captures and mapping of dens
Salt marsh harvest mouse	*Reithrodontomys raviventris*	FE, CE	Habitat assessment, monitoring
Salinas harvest mouse	*Reithrodontomys megalotus distichlus*	G5T1S1	Captures in the Salinas area; habitat assessment
California clapper rail	*Rallus longirostris*	FE, CE	Surveys at Concord Naval Weapons Station
Golden eagle	*Aquila chrysaetos*	CSC	Research in Sacramento Valley
Swainson's hawk	*Buteo swainsoni*	CT	Research in Sacramento Valley
Northern harrier	*Circus cyaeneus*	CSC	Research and publication
White-tailed kite	*Elanus leucurus*	CFP	Research and publication
Loggerhead shrike	*Lanius ludovicianus*	FSC, CSC	Research in Sacramento Valley
Least Bell's vireo	*Vireo bellii pusillus*	FE, CE	Detected in Monterey County
Willow flycatcher	*Empidonax traillii extimus*	FE, CE	Research at Sierra Nevada breeding sites
Burrowing owl	*Athene cunicularia hypugia*	FSC, CSC	Research at multiple locations
Valley elderberry longhorn beetle	*Desmocerus californicus dimorphus*	FT	Research on mitigation site and publication

Analytical

Arroyo southwestern toad	*Bufo microscaphus californicus*	FE, CSC	Research and report.
Giant garter snake	*Thamnophis gigas*	FT, CE	Research and publication.
Northern goshawk	*Accipiter gentilis*	FSC, CSC	Research and publication.
Northern spotted owl	*Strix occidentalis*	FT	Research and reports. Publication in progress.

[1] FE = Federal Endangered, FT = Federal threatened, FC = Federal candidate for listing, FSC = Federal species of concern, CE = California Endangered, CT = California threatened, CFP = California Fully Protected, CSC = California Species of Concern, G5T1S1 = CNDDB rating of imperiled throughout California range.

Peer Reviewed Publications

Smallwood, K. S., D. A. Bell, S. A. Snyder, and J. E. DiDonato. 2010. Novel scavenger removal trials increase estimates of wind turbine-caused avian fatality rates. Journal of Wildlife Management 74: 1089-1097 + Online Supplemental Material.

Smallwood, K. S., L. Neher, and D. A. Bell. 2009. Map-based repowering and reorganization of a wind resource area to minimize burrowing owl and other bird fatalities. Energies 2009(2):915-943. http://www.mdpi.com/1996-1073/2/4/915

Smallwood, K. S. and B. Nakamoto. 2009. Impacts of West Nile Virus Epizootic on Yellow-Billed Magpie, American Crow, and other Birds in the Sacramento Valley, California. The Condor 111:247-254.

Smallwood, K. S., L. Rugge, and M. L. Morrison. 2009. Influence of Behavior on Bird Mortality in Wind Energy Developments: The Altamont Pass Wind Resource Area, California. Journal of Wildlife Management 73:1082-1098.

Smallwood, K. S. and B. Karas. 2009. Avian and Bat Fatality Rates at Old-Generation and Repowered Wind Turbines in California. Journal of Wildlife Management 73:1062-1071.

Smallwood, K. S. 2008. Wind power company compliance with mitigation plans in the Altamont Pass Wind Resource Area. Environmental & Energy Law Policy Journal 2(2):229-285.

Smallwood, K. S., C. G. Thelander. 2008. Bird Mortality in the Altamont Pass Wind Resource Area, California. Journal of Wildlife Management 72:215-223.

Smallwood, K. S. 2007. Estimating wind turbine-caused bird mortality. Journal of Wildlife Management 71:2781-2791.

Smallwood, K. S., C. G. Thelander, M. L. Morrison, and L. M. Rugge. 2007. Burrowing owl mortality in the Altamont Pass Wind Resource Area. Journal of Wildlife Management 71:1513-1524.

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Morrison, M. L., K. S. Smallwood, and L. S. Hall. 2002. Creating habitat through plant relocation: Lessons from Valley elderberry longhorn beetle mitigation. Ecological Restoration 21: 95-100.

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Managing for Healthy Ecosystems, Lewis Publishers, Boca Raton, Florida USA.

Wilcox, B. A., K. S. Smallwood, and J. A. Kahn. 2002. Toward a forest Capital Index. Pages 285-298 *in* D.J. Rapport, W.L. Lasley, D.E. Rolston, N.O. Nielsen, C.O. Qualset, and A.B. Damania (eds.), Managing for Healthy Ecosystems, Lewis Publishers, Boca Raton, Florida USA.

Smallwood, K.S. 2001. The allometry of density within the space used by populations of Mammalian Carnivores. Canadian Journal of Zoology 79:1634-1640.

Smallwood, K.S., and T.R. Smith. 2001. Study design and interpretation of Sorex density estimates. Annales Zoologi Fennici 38:141-161.

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Geng, S., Yixing Zhou, Minghua Zhang, and K. Shawn Smallwood. 2001. A Sustainable Agro-ecological Solution to Water Shortage in North China Plain (Huabei Plain). Environmental Planning and Management 44:345-355.

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B-9

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Smallwood, K.S. 1997. Managing vertebrates in cover crops: a first study. American Journal of Alternative Agriculture 11:155-160.

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Smallwood, K.S. and C. Schonewald. 1996. Scaling population density and spatial pattern for terrestrial, mammalian carnivores. Oecologia 105:329-335.

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B-9

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Center. Submitted to California Energy Commission on behalf of Californians for Renewable Energy (CaRE). 11 pp.

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Comments on Environmental Documents

I was retained or commissioned to comment on environmental planning and review documents, including:

- Mount Signal and Calexico Solar Farm Projects DEIR (2011; 16 pp);
- City of Elk Grove Sphere of Influence EIR (2011; 28 pp);
- Comment on Sutter Landing Park Solar Photovoltaic Project MND (2011; 9 pp);
- Statement of Shawn Smallwood, Ph.D. Regarding Proposed Rabik/Gudath Project, 22611 Coleman Valley Road, Bodega Bay (CPN 10-0002) (2011; 4 pp);
- Declaration of K. Shawn Smallwood on Biological Impacts of the Ivanpah Solar Electric Generating System (ISEGS) (2011; 9 pp);
- Comments on Draft Eagle Conservation Plan Guidance (2011; 13 pp);
- Comments on Draft EIR/EA for Niles Canyon Safety Improvement Project (2011; 16 pp);
- Declaration of K. Shawn Smallwood, Ph.D., on Biological Impacts of the Route 84 Safety Improvement Project (2011; 7 pp);
- Rebuttal Testimony of Witness #22, K. Shawn Smallwood, Ph.D, on Behalf of Intervenors Friends of The Columbia Gorge and Save Our Scenic Area (2010; 6 pp);

- Prefiled Direct Testimony of Witness #22, K. Shawn Smallwood, Ph.D, on Behalf of Intervenors Friends of the Columbia Gorge and Save Our Scenic Area. Comments on Whistling Ridge Wind Energy Power Project DEIS, Skamania County, Washington (2010; 41 pp);
- Evaluation of Klickitat County's Decisions on the Windy Flats West Wind Energy Project (2010; 17 pp);
- St. John's Church Project Draft Environmental Impact Report (2010; 14 pp.);
- Initial Study/Mitigated Negative Declaration for Results Radio Zone File #2009-001 (2010; 20 pp);
- Rio del Oro Specific Plan Project Final Environmental Impact Report (2010;12 pp);
- Answers to Questions on 33% RPS Implementation Analysis Preliminary Results Report (2009: 9 pp);
- SEPA Determination of Non-significance regarding zoning adjustments for Skamania County, Washington. Second Declaration to Friends of the Columbia Gorge, Inc. and Save Our Scenic Area (Dec 2008; 17 pp);
- Comments on Draft 1A Summary Report to CAISO (2008; 10 pp);
- Categorical Exemption of Hilton Manor Project, as determined by County of Placer (2009; 9 pp);
- Protest of CARE to Amendment to the Power Purchase and Sale Agreement for Procurement of Eligible Renewable Energy Resources Between Hatchet Ridge Wind LLC and PG&E (2009; 3 pp);
- Tehachapi Renewable Transmission Project EIR/EIS (2009; 142 pp);
- Delta Shores Project EIR, south Sacramento (2009; 11 pp + addendum 2 pp);
- Declaration of Shawn Smallwood in Support of Care's Petition to Modify D.07-09-040 (2008; 3 pp);
- The Public Utility Commission's Implementation Analysis December 16 Workshop for the Governor's Executive Order S-14-08 to implement a 33% Renewable Portfolio Standard by 2020 (2008; 9 pp);
- The Public Utility Commission's Implementation Analysis Draft Work Plan for the Governor's Executive Order S-14-08 to implement a 33% Renewable Portfolio Standard by 2020 (2008; 11 pp);
- Draft 1A Summary Report to California Independent System Operator for Planning Reserve Margins (PRM) Study (2008; 7 pp.);
- SEPA Determination of Non-significance regarding zoning adjustments for Skamania County, Washington. Declaration to Friends of the Columbia Gorge, Inc. and Save Our Scenic Area (Sep 2008; 16 pp);
- California Energy Commission's Preliminary Staff Assessment of the Colusa Generating Station (2007; 24 pp);
- Rio del Oro Specific Plan Project Recirculated Draft Environmental Impact Report (2008: 66 pp);
- Replies to Response to Comments Re: Regional University Specific Plan Environmental Impact Report (2008; 20 pp);
- Regional University Specific Plan Environmental Impact Report (2008: 33 pp.);
- Clark Precast, LLC's "Sugarland" project, Negative Declaration (2008: 15 pp.);
- Cape Wind Project Draft Environmental Impact Statement (2008; 157 pp.);

- Yuba Highlands Specific Plan (or Area Plan) Environmental Impact Report (2006; 37 pp.);
- Replies to responses to comments on Mitigated Negative Declaration of the proposed Mining Permit (MIN 04-01) and Modification of Use Permit 96-02 at North Table Mountain (2006; 5 pp);
- Mitigated Negative Declaration of the proposed Mining Permit (MIN 04-01) and Modification of Use Permit 96-02 at North Table Mountain (2006; 15 pp);
- Windy Point Wind Farm Environmental Review and EIS (2006; 14 pp and 36 Powerpoint slides in reply to responses to comments);
- Shiloh I Wind Power Project EIR (2005; 18 pp);
- Buena Vista Wind Energy Project Notice of Preparation of EIR (2004; 15 pp);
- Negative Declaration of the proposed Callahan Estates Subdivision (2004; 11 pp);
- Negative Declaration of the proposed Winters Highlands Subdivision (2004; 9 pp);
- Negative Declaration of the proposed Winters Highlands Subdivision (2004; 13 pp);
- Negative Declaration of the proposed Creekside Highlands Project, Tract 7270 (2004; 21 pp);
- On the petition California Fish and Game Commission to list the Burrowing Owl as threatened or endangered (2003; 10 pp);
- Conditional Use Permit renewals from Alameda County for wind turbine operations in the Altamont Pass Wind Resource Area (2003; 41 pp);
- UC Davis Long Range Development Plan of 2003, particularly with regard to the Neighborhood Master Plan (2003; 23 pp);
- Anderson Marketplace Draft Environmental Impact Report (2003: 18 pp + 3 plates of photos);
- Negative Declaration of the proposed expansion of Temple B'nai Tikyah (2003: 6 pp);
- Antonio Mountain Ranch Specific Plan Public Draft EIR (2002: 23 pp);
- Response to testimony of experts at the East Altamont Energy Center evidentiary hearing on biological resources (2002: 9 pp);
- Revised Draft Environmental Impact Report, The Promenade (2002: 7 pp);
- Recirculated Initial Study for Calpine's proposed Pajaro Valley Energy Center (2002: 3 pp);
- UC Merced -- Declaration of Dr. Shawn Smallwood in support of petitioner's application for temporary restraining order and preliminary injunction (2002: 5 pp);
- Replies to response to comments in Final Environmental Impact Report, Atwood Ranch Unit III Subdivision (2003: 22 pp);
- Draft Environmental Impact Report, Atwood Ranch Unit III Subdivision (2002: 19 pp + 8 photos on 4 plates);
- California Energy Commission Staff Report on GWF Tracy Peaker Project (2002: 17 pp + 3 photos; follow-up report of 3 pp);
- Initial Study and Negative Declaration, Silver Bend Apartments, Placer County (2002: 13 pp);
- UC Merced Long-range Development Plan DEIR and UC Merced Community Plan DEIR (2001: 26 pp);
- Initial Study, Colusa County Power Plant (2001: 6 pp);
- Comments on Proposed Dog Park at Catlin Park, Folsom, California (2001: 5 pp + 4 photos);
- Pacific Lumber Co. (Headwaters) Habitat Conservation Plan and Environmental Impact

Report (1998: 28 pp);

- Final Environmental Impact Report/Statement for Issuance of Take authorization for listed species within the MSCP planning area in San Diego County, California (Fed. Reg. 62 (60): 14938, San Diego Multi-Species Conservation Program) (1997: 10 pp);
- Permit (PRT-823773) Amendment for the Natomas Basin Habitat Conservation Plan, Sacramento, CA (Fed. Reg. 63 (101): 29020-29021) (1998);
- Draft Recovery Plan for the Giant Garter Snake (*Thamnophis gigas*). (Fed. Reg. 64(176): 49497-49498) (1999: 8 pp);
- Review of the Draft Recovery Plan for the Arroyo Southwestern Toad (*Bufo microscaphus californicus*) (1998);
- Ballona West Bluffs Project Environmental Impact Report (1999: oral presentation);
- California Board of Forestry's proposed amended Forest Practices Rules (1999);
- Negative Declaration for the Sunset Skyranch Airport Use Permit (1999);
- Calpine and Bechtel Corporations' Biological Resources Implementation and Monitoring Program (BRMIMP) for the Metcalf Energy Center (2000: 10 pp);
- California Energy Commission's Final Staff Assessment of the proposed Metcalf Energy Center (2000);
- US Fish and Wildlife Service Section 7 consultation with the California Energy Commission regarding Calpine and Bechtel Corporations' Metcalf Energy Center (2000: 4 pp);
- California Energy Commission's Preliminary Staff Assessment of the proposed Metcalf Energy Center (2000: 11 pp);
- Site-specific management plans for the Natomas Basin Conservancy's mitigation lands, prepared by Wildlands, Inc. (2000: 7 pp);
- Affidavit of K. Shawn Smallwood in Spirit of the Sage Council, et al. (Plaintiffs) vs. Bruce Babbitt, Secretary, U.S. Department of the Interior, et al. (Defendants), Injuries caused by the No Surprises policy and final rule which codifies that policy (1999: 9 pp).

I also issued formal comments on the following documents:

- Draft Program Level EIR for Covell Village (2005; 19 pp);
- Bureau of Land Management Wind Energy Programmatic EIS Scoping document (2003: 7 pp.);
- NEPA Environmental Analysis for Biosafety Level 4 National Biocontainment Laboratory (NBL) at UC Davis (2003: 7 pp);
- Notice of Preparation of UC Merced Community and Area Plan EIR, on behalf of The Wildlife Society—Western Section (2001: 8 pp.);
- Preliminary Draft Yolo County Habitat Conservation Plan (2001; 2 letters totaling 35 pp.);
- Merced County General Plan Revision, notice of Negative Declaration (2001: 2 pp.);
- Notice of Preparation of Campus Parkway EIR/EIS (2001: 7 pp.);
- Draft Recovery Plan for the bighorn sheep in the Peninsular Range (*Ovis candensis*) (2000);
- Draft Recovery Plan for the California Red-legged Frog (*Rana aurora draytonii*), on behalf of The Wildlife Society—Western Section (2000: 10 pp.);
- Sierra Nevada Forest Plan Amendment Draft Environmental Impact Statement, on behalf of The Wildlife Society—Western Section (2000: 7 pp.);
- State Water Project Supplemental Water Purchase Program, Draft Program EIR (1997);

- Davis General Plan Update EIR (2000);
- Turn of the Century EIR (1999: 10 pp);
- Proposed termination of Critical Habitat Designation under the Endangered Species Act (Fed. Reg. 64(113): 31871-31874) (1999);
- NOA Draft Addendum to the Final Handbook for Habitat Conservation Planning and Incidental Take Permitting Process, termed the HCP 5-Point Policy Plan (Fed. Reg. 64(45): 11485 - 11490) (1999; 2 pp + attachments);
- Covell Center Project EIR and EIR Supplement (1997).

Position Statements I prepared the following position statements for the Western Section of The Wildlife Society, and one for nearly 200 scientists:

- Recommended that the California Department of Fish and Game prioritize the extermination of the introduced southern water snake in northern California. The Wildlife Society--Western Section (2001);
- Recommended that The Wildlife Society—Western Section appoint or recommend members of the independent scientific review panel for the UC Merced environmental review process (2001);
- Opposed the siting of the University of California's 10th campus on a sensitive vernal pool/grassland complex east of Merced. The Wildlife Society--Western Section (2000);
- Opposed the legalization of ferret ownership in California. The Wildlife Society--Western Section (2000);
- Opposed the Proposed "No Surprises," "Safe Harbor," and "Candidate Conservation Agreement" rules, including permit-shield protection provisions (Fed. Reg. Vol. 62, No. 103, pp. 29091-29098 and No. 113, pp. 32189-32194). This statement was signed by 188 scientists and went to the responsible federal agencies, as well as to the U.S. Senate and House of Representatives.

Printed Mass Media

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Smallwood, K.S. 2002. Spring Lake threatens Davis. Op-Ed to the Davis Enterprise.

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Entrikan, R.K. and K.S. Smallwood. 2000. Measure O: Flawed law would lock in new taxes. Op-Ed to the Davis Enterprise.

Smallwood, K.S. 2000. Davis delegation lobbies Congress for Wildlife conservation. Op-Ed to the Davis Enterprise.

Smallwood, K.S. 1998. Davis Visions. The Flatlander, Davis, California.

Smallwood, K.S. 1997. Last grab for Yolo's land and water. The Flatlander, Davis, California.

B-9

Smallwood, K.S. 1997. The Yolo County HCP. Op-Ed to the Davis Enterprise.

Radio/Television

KXJZ Capital Public Radio -- Insight (Host Jeffrey Callison). Mountain lion attacks (with guest Professor Richard Coss). 23 April 2009;

KXJZ Capital Public Radio -- Insight (Host Jeffrey Callison). Wind farm Rio Vista Renewable Power. 4 September 2008;

KQED QUEST Episode #111. Bird collisions with wind turbines. 2007;

KDVS Speaking in Tongues (host Ron Glick), Yolo County HCP: 1 hour. December 27, 2001;

KDVS Speaking in Tongues (host Ron Glick), Yolo County HCP: 1 hour. May 3, 2001;

KDVS Speaking in Tongues (host Ron Glick), Yolo County HCP: 1 hour. February 8, 2001;

KDVS Speaking in Tongues (host Ron Glick & Shawn Smallwood), California Energy Crisis: 1 hour. Jan. 25, 2001;

KDVS Speaking in Tongues (host Ron Glick), Headwaters Forest HCP: 1 hour. 1998;

Davis Cable Channel (host Gerald Heffernon), Burrowing owls in Davis: half hour. June, 2000;

Davis Cable Channel (hosted by Davis League of Women Voters), Measure O debate: 1 hour. October, 2000;

KXTV 10, In Your Interest, The Endangered Species Act: half hour. 1997.

Posters at Professional Meetings

Smallwood, K. S. and C. G. Thelander. 2005. Lessons learned from five years of avian mortality research in the Altamont Pass WRA. AWEA conference, Denver, May 2005.

Neher, L., L. Wilder, J. Woo, L. Spiegel, D. Yen-Nakafugi, and K.S. Smallwood. 2005. Bird's eye view on California wind. AWEA conference, Denver, May 2005.

Smallwood, K. S., C. G. Thelander and L. Spiegel. 2003. Toward a predictive model of avian fatalities in the Altamont Pass Wind Resource Area. Windpower 2003 Conference and Convention, Austin, Texas.

Smallwood, K.S. and Eva Butler. 2002. Pocket Gopher Response to Yellow Star-thistle Eradication as part of Grassland Restoration at Decommissioned Mather Air Force Base, Sacramento County, California. White Mountain Research Station Open House, Barcroft Station.

Smallwood, K.S. and Michael L. Morrison. 2002. Fresno kangaroo rat (*Dipodomys nitratoides*) Conservation Research at Resources Management Area 5, Lemoore Naval Air Station. White Mountain Research Station Open House, Barcroft Station.

Smallwood, K.S. and E.L. Fitzhugh. 1989. Differentiating mountain lion and dog tracks. Third Mountain Lion Workshop, Prescott, AZ.

Smith, T. R. and K. S. Smallwood. 2000. Effects of study area size, location, season, and allometry on reported *Sorex* shrew densities. Annual Meeting of the Western Section of The Wildlife Society.

Presentations at Professional Meetings and Seminars

Comparing Wind Turbine Impacts across North America. California Energy Commission Staff Workshop: Reducing the Impacts of Energy Infrastructure on Wildlife, 20 July 2011.

Siting Repowered Wind Turbines to Minimize Raptor Collisions. California Energy Commission Staff Workshop: Reducing the Impacts of Energy Infrastructure on Wildlife, 20 July 2011.

Siting Repowered Wind Turbines to Minimize Raptor Collisions. Alameda County Scientific Review Committee meeting, 17 February 2011

Comparing Wind Turbine Impacts across North America. Conference on Wind energy and Wildlife impacts, Trondheim, Norway, 3 May 2011.

Update on Wildlife Impacts in the Altamont Pass Wind Resource Area. Raptor Symposium, The Wildlife Society—Western Section, Riverside, California, February 2011.

Siting Repowered Wind Turbines to Minimize Raptor Collisions. Raptor Symposium, The Wildlife Society—Western Section, Riverside, California, February 2011.

Wildlife mortality caused by wind turbine collisions. Ecological Society of America, Pittsburgh, Pennsylvania, 6 August 2010.

Map-based repowering and reorganization of a wind farm to minimize burrowing owl fatalities. California burrowing Owl Consortium Meeting, Livermore, California, 6 February 2010.

Environmental barriers to wind power. Getting Real About Renewables: Economic and Environmental Barriers to Biofuels and Wind Energy. A symposium sponsored by the Environmental & Energy Law & Policy Journal, University of Houston Law Center, Houston, 23 February 2007.

Lessons learned about bird collisions with wind turbines in the Altamont Pass and other US wind farms. Meeting with Japan Ministry of the Environment and Japan Ministry of the Economy, Wild Bird Society of Japan, and other NGOs Tokyo, Japan, 9 November 2006.

Lessons learned about bird collisions with wind turbines in the Altamont Pass and other US wind farms. Symposium on bird collisions with wind turbines. Wild Bird Society of Japan, Tokyo, Japan, 4 November 2006.

Responses of Fresno kangaroo rats to habitat improvements in an adaptive management framework. California Society for Ecological Restoration (SERCAL) 13th Annual Conference, UC Santa Barbara, 27 October 2006.

Fatality associations as the basis for predictive models of fatalities in the Altamont Pass Wind Resource Area. EEI/APLIC/PIER Workshop, 2006 Biologist Task Force and Avian Interaction with Electric Facilities Meeting, Pleasanton, California, 28 April 2006.

Burrowing owl burrows and wind turbine collisions in the Altamont Pass Wind Resource Area. The Wildlife Society—Western Section Annual Meeting, Sacramento, California, February 8, 2006.

Mitigation at wind farms. Workshop: Understanding and resolving bird and bat impacts. American Wind Energy Association and Audubon Society. Los Angeles, CA. January 10 and 11, 2006.

Incorporating data from the California Wildlife Habitat Relationships (CWHR) system into an impact assessment tool for birds near wind farms. Shawn Smallwood, Kevin Hunting, Marcus Yee, Linda Spiegel, Monica Parisi. Workshop: Understanding and resolving bird and bat impacts. American Wind Energy Association and Audubon Society. Los Angeles, CA. January 10 and 11, 2006.

Toward indicating threats to birds by California's new wind farms. California Energy Commission, Sacramento, May 26, 2005.

Avian collisions in the Altamont Pass. California Energy Commission, Sacramento, May 26, 2005.

Ecological solutions for avian collisions with wind turbines in the Altamont Pass Wind Resource Area. EPRI Environmental Sector Council, Monterey, California, February 17, 2005.

Ecological solutions for avian collisions with wind turbines in the Altamont Pass Wind Resource Area. The Wildlife Society—Western Section Annual Meeting, Sacramento, California, January 19, 2005.

Associations between avian fatalities and attributes of electric distribution poles in California. The Wildlife Society—Western Section Annual Meeting, Sacramento, California, January 19, 2005.

Minimizing avian mortality in the Altamont Pass Wind Resources Area. UC Davis Wind Energy Collaborative Forum, Palm Springs, California, December 14, 2004.

Selecting electric distribution poles for priority retrofitting to reduce raptor mortality. Raptor Research Foundation Meeting, Bakersfield, California, November 10, 2004.

Responses of Fresno kangaroo rats to habitat improvements in an adaptive management framework. Annual Meeting of the Society for Ecological Restoration, South Lake Tahoe, California,

October 16, 2004.

Lessons learned from five years of avian mortality research at the Altamont Pass Wind Resources Area in California. The Wildlife Society Annual Meeting, Calgary, Canada, September 2004.

The ecology and impacts of power generation at Altamont Pass. Sacramento Petroleum Association, Sacramento, California, August 18, 2004.

Burrowing owl mortality in the Altamont Pass Wind Resource Area. California Burrowing Owl Consortium meeting, Hayward, California, February 7, 2004.

Burrowing owl mortality in the Altamont Pass Wind Resource Area. California Burrowing Owl Symposium, Sacramento, November 2, 2003.

Raptor Mortality at the Altamont Pass Wind Resource Area. National Wind Coordinating Committee, Washington, D.C., November 17, 2003.

Raptor Behavior at the Altamont Pass Wind Resource Area. Annual Meeting of the Raptor Research Foundation, Anchorage, Alaska, September, 2003.

Raptor Mortality at the Altamont Pass Wind Resource Area. Annual Meeting of the Raptor Research Foundation, Anchorage, Alaska, September, 2003.

California mountain lions. Ecological & Environmental Issues Seminar, Department of Biology, California State University, Sacramento, November, 2000.

Intra- and inter-turbine string comparison of fatalities to animal burrow densities at Altamont Pass. National Wind Coordinating Committee, Carmel, California, May, 2000.

Using a Geographic Positioning System (GPS) to map wildlife and habitat. Annual Meeting of the Western Section of The Wildlife Society, Riverside, CA, January, 2000.

Suggested standards for science applied to conservation issues. Annual Meeting of the Western Section of The Wildlife Society, Riverside, CA, January, 2000.

The indicators framework applied to ecological restoration in Yolo County, California. Society for Ecological Restoration, September 25, 1999.

Ecological restoration in the context of animal social units and their habitat areas. Society for Ecological Restoration, September 24, 1999.

Relating Indicators of Ecological Health and Integrity to Assess Risks to Sustainable Agriculture and Native Biota. International Conference on Ecosystem Health, August 16, 1999.

A crosswalk from the Endangered Species Act to the HCP Handbook and real HCPs. Southern California Edison, Co. and California Energy Commission, March 4-5, 1999.

Mountain lion track counts in California: Implications for Management. Ecological & Environmental Issues Seminar, Department of Biological Sciences, California State University, Sacramento, November 4, 1998.

"No Surprises" -- Lack of science in the HCP process. California Native Plant Society Annual Conservation Conference, The Presidio, San Francisco, September 7, 1997.

In Your Interest. A half hour weekly show aired on Channel 10 Television, Sacramento. In this episode, I served on a panel of experts discussing problems with the implementation of the Endangered Species Act. Aired August 31, 1997.

Spatial scaling of pocket gopher (*Geomyidae*) density. Southwestern Association of Naturalists 44th Meeting, Fayetteville, Arkansas, April 10, 1997.

Estimating prairie dog and pocket gopher burrow volume. Southwestern Association of Naturalists 44th Meeting, Fayetteville, Arkansas, April 10, 1997.

Ten years of mountain lion track survey. Fifth Mountain Lion Workshop, San Diego, February 27, 1996.

Study and interpretive design effects on mountain lion density estimates. Fifth Mountain Lion Workshop, San Diego, February 27, 1996.

Small animal control. Session moderator and speaker at the California Farm Conference, Sacramento, California, Feb. 28, 1995.

Small animal control. Ecological Farming Conference, Asylomar, California, Jan. 28, 1995.

Habitat associations of the Swainson's Hawk in the Sacramento Valley's agricultural landscape. 1994 Raptor Research Foundation Meeting, Flagstaff, Arizona.

Alfalfa as wildlife habitat. Seed Industry Conference, Woodland, California, May 4, 1994.

Habitats and vertebrate pests: impacts and management. Managing Farmland to Bring Back Game Birds and Wildlife to the Central Valley. Yolo County Resource Conservation District, U.C. Davis, February 19, 1994.

Management of gophers and alfalfa as wildlife habitat. Orland Alfalfa Production Meeting and Sacramento Valley Alfalfa Production Meeting, February 1 and 2, 1994.

Patterns of wildlife movement in a farming landscape. Wildlife and Fisheries Biology Seminar Series: Recent Advances in Wildlife, Fish, and Conservation Biology, U.C. Davis, Dec. 6, 1993.

Alfalfa as wildlife habitat. California Alfalfa Symposium, Fresno, California, Dec. 9, 1993.

Management of pocket gophers in Sacramento Valley alfalfa. California Alfalfa Symposium, Fresno, California, Dec. 8, 1993.

Association analysis of raptors in a farming landscape. Plenary speaker at Raptor Research Foundation Meeting, Charlotte, North Carolina, Nov. 6, 1993.

Landscape strategies for biological control and IPM. Plenary speaker, International Conference on Integrated Resource Management and Sustainable Agriculture, Beijing, China, Sept. 11, 1993.

Landscape Ecology Study of Pocket Gophers in Alfalfa. Alfalfa Field Day, U.C. Davis, July 1993.

Patterns of wildlife movement in a farming landscape. Spatial Data Analysis Colloquium, U.C. Davis, August 6, 1993.

Sound stewardship of wildlife. Veterinary Medicine Seminar: Ethics of Animal Use, U.C. Davis. May 1993.

Landscape ecology study of pocket gophers in alfalfa. Five County Grower's Meeting, Tracy, California. February 1993.

Turbulence and the community organizers: The role of invading species in ordering a turbulent system, and the factors for invasion success. Ecology Graduate Student Association Colloquium, U.C. Davis. May 1990.

Evaluation of exotic vertebrate pests. Fourteenth Vertebrate Pest Conference, Sacramento, California. March 1990.

Analytical methods for predicting success of mammal introductions to North America. The Western Section of the Wildlife Society, Hilo, Hawaii. February 1988.

A state-wide mountain lion track survey. Sacramento County Dept Parks and Recreation. April 1986.

The mountain lion in California. Davis Chapter of the Audubon Society. October 1985.

Ecology Graduate Student Seminars, U.C. Davis, 1985-1990: Social behavior of the mountain lion; Mountain lion control; Political status of the mountain lion in California.

Other forms of Participation at Professional Meetings

- Workshop co-presenter at Birds & Wind Energy Specialist Group (BAWESG) Information sharing week, Bird specialist studies for proposed wind energy facilities in South Africa, Endangered Wildlife Trust, Darling, South Africa, 3-7 October 2011.

- Scientific Committee, Conference on Wind energy and Wildlife impacts, Trondheim, Norway, 2-5 May 2011.

- Chair of Animal Damage Management Session, The Wildlife Society, Annual Meeting, Reno, Nevada, September 26, 2001.

- Chair of Technical Session: Human communities and ecosystem health: Comparing perspectives and making connection. Managing for Ecosystem Health, International Congress on Ecosystem Health, Sacramento, CA August 15-20, 1999.

- Student Awards Committee, Annual Meeting of the Western Section of The Wildlife Society, Riverside, CA, January, 2000.

- Student Mentor, Annual Meeting of the Western Section of The Wildlife Society, Riverside, CA, January, 2000.

Reviews of Journal Papers (Scientific journals for whom I've provided peer review)

Journal	**Journal**
American Naturalist	Journal of Animal Ecology
Journal of Wildlife Management	Western North American Naturalist
Auk	Journal of Raptor Research
Biological Conservation	National Renewable Energy Lab reports
Canadian Journal of Zoology	Oikos
Ecosystem Health	The Prairie Naturalist
Environmental Conservation	Restoration Ecology
Environmental Management	Southwestern Naturalist
Functional Ecology	The Wildlife Society--Western Section Trans.
Journal of Zoology (London)	Proc. Int. Congress on Managing for Ecosystem Health
Journal of Applied Ecology	Transactions in GIS
Ecology	Tropical Ecology
Biological Control	The Condor

Committees

- Scientific Review Committee, Alameda County, Altamont Pass Wind Resource Area
- Ph.D. Thesis Committee, Steve Anderson, University of California, Davis
- MS Thesis Committee, Marcus Yee, California State University, Sacramento

Other Professional Activities or Products

Testified in Federal Court in Denver during 2005 over the fate of radio-nuclides in the soil at Rocky Flats Plant after exposure to burrowing animals. My clients won a judgment of $553,000,000. I have also testified in many other cases of litigation under CEQA, NEPA, the Warren-Alquist Act, and other environmental laws. My clients won most of the cases for which I testified.

Testified in Skamania County Hearing in 2009 on the potential impacts of zoning the County for development of wind farms and hazardous waste facilities.

Testified in deposition in 2007 in the case of O'Dell et al. vs. FPL Energy in Houston, Texas.

Testified in Klickitat County Hearing in 2006 on the potential impacts of the Windy Point Wind Farm.

Memberships in Professional Societies

The Wildlife Society
Raptor Research Foundation
American Museum of Natural History

Honors and Awards

Certificate of Appreciation, The Wildlife Society—Western Section, 2000, 2001
Fulbright Research Fellowship to Indonesia, 1987.
Northern California Athletic Association Most Valuable Cross Country Runner, 1984.
J.G. Boswell Full Academic Scholarship, 1981 (Paid expenses for undergraduate education).
American Legion Award, Corcoran High School, 1981, and John Muir Junior High, 1977.
CIF Section Champion, Cross Country in 1978 and Track & Field 2 mile run in 1981.
National Junior Record, 20 kilometer run, 1982.
National Age Group Record, 1500 meter run, 1978

Community Activities

District 64 Little League Umpire, 2003-2007
Dixon Little League Umpire, 2006-07
Davis Little League Chief Umpire and Board member, 2004-2005
Davis Little League Safety Officer, 2004-2005
Davis Little League Certified Umpire, 2002-2004
Davis Little League Scorekeeper, 2002
Davis Visioning Group member
Petitioner for Writ of Mandate under the California Environmental Quality Act against City of Woodland decision to approve the Spring Lake Specific Plan, 2002
Served on campaign committees for City Council candidates