

**Rio Mesa Solar Electric Generating Facility (RMSEGF)
(11-AFC-4)**

Applicant's Specific Comments on the Preliminary Staff Assessment

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SPECIFIC COMMENTS

1. **Page 5.2-1, Fourth Paragraph:** Please revise this paragraph as follows:

The paleosol is exposed at the ground surface over large areas of the project site. It is found on both sides of the road that parallels the southern border of the project, both sides of the road that parallels the Western Area Power Administration power line along the eastern part of the project, and along both sides of the proposed transmission line. It also underlies the entire "common area" (BS 2011a). It is undetermined where the paleosol is buried on the project site, how thick the unit is and the density of fossils contained within the deposit. The Chemehuevi formation equivalents and Late Pleistocene silts, sands and gravels have also been mapped at the surface of the site. Staff has informed the applicant that they have not adequately studied and delineated the limits of the fossiliferous sediments on the site and provided sufficient information for staff to complete an appropriate analysis of potential impacts. Staff has approved ~~The applicant's is currently in the process of finalizing a plan that will provide us with the information needed to complete the Final Staff Assessment. Applicant is endeavoring to provide the fieldwork results by December 3, 2012, per staff's request. Staff notified the applicant that a Supplemental Paleontological Resources Delineation Report must be submitted no later than December 3, 2012, if the schedule for publication of the Final Staff Assessment is to be maintained (CEC 2012a CEC 2012a).~~

Notwithstanding the additional information that the paleosol delineation will provide, it is possible to approximate the extent of the sensitive paleontological soils by considering the extent of the quaternary surface soils in which these resources occur. Confidential Figure 2 shows the solar arrays mapped on the Project geology. The fossiliferous red paleosol seems to be developed on the sediments mapped as "Qpv" (= Quaternary sediments of the Colorado River on the Palo Verde Mesa). Of the 170,000 pylons necessary to support the heliostats, 35,700 (21%) would be located within an approximately 799 acre portion of the Qpv sediment. Thus, 79 % of the solar arrays will completely avoid the Qpv sediment and the fossiliferous paleosol. Assuming the diametrical disturbance for each pylon is 16 inches, the 35,700 pylons would have a total footprint within the areal extent of Qpv strata of 1.1 acre, or approximately 0.14% of the 799-acre Qpv area. It is possible that some pylons in areas mapped as Qpv sediment will not intrude into the paleosol, and the total volume of the pylons that may contact paleosol materials would comprise an even more minute fraction of the total paleosol volume in the Qpv portions of the project site and in the fossiliferous paleosol as a whole. It is unlikely that impacts to macrofossils will occur from the pylons within the Qpv sediment area due to the avoidance of substantially all (at least 99.8%) of the paleosol within the project area and the virtually 100% avoidance of the entire fossiliferous paleosol geologic strata that occurs in the vicinity of the project. Any such impacts would also be insignificant due to the recovery of a substantial number of macrofossils from earlier surveys and that will occur during construction monitoring,

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which will allow for the appropriate characterization and inventory of macrofossils within the project site.

It is likely that the applicant's delineation will further refine the areal and volumetric extent of sensitive paleontological resources on the site, and that the actual ratio of potential heliostat pylon impacts will be lower than estimated above. Avoidance of over 99% of the sensitive paleontological resources within the site by the heliostat pylons, and the mitigation measures that are recommended in this PSA, will reduce any impacts to less than significant levels.

2. **Page 5.2-1, Last Paragraph, First Sentence:** Applicant suggests revising as follows:

In general, project-related ground disturbance could have adverse impacts on ~~significant~~ paleontological resources.

3. **Page 5.2-2, First Paragraph (Carryover):** Applicant suggests revising as follows:

Staff believes additional field study of the fossiliferous sediments should be completed to delineate the limits and concentrations of fossils on the site ~~so a determination of significance can be made.~~

4. **Page 5.2-2, First Full Paragraph:** Applicant suggests revising as follows:

Depending on heliostat ~~pylon pedestal foundation~~ design and installation method, staff believes that there is the potential for significant adverse cumulative impacts to paleontological resources could be low to high. The applicant's proposed heliostat foundation construction methodology (due to predrilling and vibratory pylon pedestal insertion) would destroy all fossils encountered where installation takes place in the high sensitivity fossil bearing sediments. Predrilling involves rotating and boring a solid steel drill auger into the ground to a specified depth into the subsurface. This construction method ~~would~~ crush or break ~~any~~ fossils that might be present within the soil column throughout the penetration depth interval. The subsequent vibratory insertion of the ~~pylon pedestal would~~ might not allow for ~~any~~ recovery of remaining fragments of fossils. ~~This foundation construction method would preclude an opportunity for identification, recovery or scientific interpretation of these significant paleontological resources (SVP 1995, CCR 2008).~~ Due to the lack of physical definition of the highly fossiliferous deposit, staff is unable to ~~adequately~~ precisely assess the potential impacts from project construction on this ~~valuable~~ resource. Nevertheless, as discussed above, using highly conservation assumptions, approximately 99.8% of all sub-surface paleontological impacts associated with pylon insertion will be avoided. This avoidance, in combination with existing survey fossil recoveries, allow for a representative sample of onsite resources to be characterized. Under applicable CEQA standards, since virtually all of the resource will be avoided by the heliostat poles and the significant majority of disturbance will be subject to the mitigation identified in this PSA, impacts to sensitive paleontological resources are anticipated to be less than significant.

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5. **Page 5.2-2, Second Full Paragraph:** Applicant suggests revising as follows:

~~For those areas where the applicant is proposing to limit subsurface construction to standard conventional excavation techniques such as at the power blocks, roadways, and appurtenant facilities,~~ For the reasons summarized above and as discussed in more detail below, notwithstanding potential impacts associated with heliostat pylons that may preclude recovery to a certain extent, potential impacts to paleontological resources due to construction activities would be mitigated through worker training and monitoring by qualified paleontologists, as required by proposed Conditions of Certification **PAL-1** through **PAL-7**.

6. **Page 5.2-2, Fourth Full Paragraph:** Applicant suggests revising as follows:

Energy Commission staff believes that the potential for ~~significant~~ adverse cumulative impacts to project facilities from geologic hazards during the project's design life, if any, is ~~low~~ less than significant. Similarly, staff believes the potential for ~~significant~~ adverse cumulative impacts to potential geological and mineralogical resources from the construction, operation, and closure of the proposed project, if any, is ~~low~~ less than significant.

7. **Page 5.2-2, Last Paragraph:** Applicant suggests revising as follows:

In this section, California Energy Commission (Energy Commission) staff discusses the potential impacts of geologic hazards on the proposed Rio Mesa SEGF as well as the Rio Mesa SEGF's potential impact on geologic, mineralogical, and paleontological resources. Staff's objective is to identify resources that could be ~~negatively~~ adversely affected, evaluate the potential of the project construction and operation to impact the resources and provide mitigation measures as necessary to ensure that there would be no ~~significant consequential~~ significant adverse impacts to ~~significant~~ geological and paleontological resources during the project construction, operation, and closure and to ensure that operation of the plant would not expose occupants to high-probability geologic hazards. A brief geological and paleontological overview is provided. The section concludes with staff's proposed Conditions of Certification - i.e., monitoring and mitigation measures that, if implemented, would reduce any project-related impacts from ~~for~~ geologic hazards and to geologic, mineralogical, and paleontological resources to less than significant ~~with the proposed conditions of certification~~.

8. **Page 5.2-3, Table 1, Federal, Second Row:** Applicant suggests revising as follows:

Provides for protection of objects of antiquity on federal lands. ~~Protects and permits collection of paleontological resources on federal lands; requires inventory, assessment of effects, and mitigation if appropriate.~~

9. **Page 5.2-3, Table 1, Federal, Third Row:** Applicant suggests revising as follows:

Directs the Secretaries of the Interior and Agriculture to manage paleontological resources and on BLM and USFS land using scientific principles and expertise, and to inventory paleontological resources on those lands. ~~Causes the management and~~

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~~protection of paleontological resources on Federal land using scientific principles and expertise. Requires appropriate plans for inventory, monitoring, and the scientific and educational use of paleontological resources, in accordance with applicable agency laws, regulations, and policies.~~

10. **Page 5.2-3, Table 1, Last Row under State and First Row under Standards:** Applicant requests that the CEQA summary be revised as shown below to accurately reflect legal requirements and that reference to the SVP guidelines be deleted as they may be used by a CEQA lead agency to evaluate impacts but are not a law, ordinance, regulation or standard.

CEQA, Appendix G	Requires that impacts on paleontological resources be assessed and <u>feasibly</u> mitigated on all discretionary projects, public and private.
Society for Vertebrate Paleontology (SVP), 1995	The “ <u>Measures for Assessment and Mitigation of Adverse Impacts to Non-Renewable Paleontological Resources: Standard Procedures</u> ” is a set of procedures and standards for assessing and mitigating impacts to vertebrate paleontological resources. The measures were adopted in October 1995 by the SVP, a national organization of professional scientists.

11. **Page 5.2-11, Third Full Paragraph:** Applicant suggests revising as follows:

To assess potential impacts on paleontological resources, staff reviewed existing paleontologic information and reviewed the information obtained from the applicant’s requested records searches from the San Bernardino County Museum for the surrounding area. The University of California (at Berkeley) Museum of Paleontology’s website, which gives generalized information for locality records of their collection, was consulted as well (UCMP 2008). Site-specific information generated by the applicant for the proposed Rio Mesa SEGF was also reviewed. All research was conducted in accordance with accepted assessment protocol (BLM 2008 and SVP 1995) to determine whether any known paleontologic resources exist in the general area. If unique paleontological resources are found to be present or likely to be present, PAL-1 through PAL-7, which outline required procedures to mitigate adverse effects to potential resources, will be implemented to reduce potential impacts to less than significant levels ~~conditions of certification are proposed~~ as part of the project’s approval.

12. **Page 5.2-13, First Paragraph (Carryover):** Applicant suggests revising as follows:

Based on the information above, it is staff’s opinion that the Project would not have any potential for significant adverse direct or indirect impacts ~~from the project to potential~~ geologic and mineralogic resources ~~would be low~~.

13. **Page 5.2-13, Paleontological Resources, First Paragraph:** Applicant suggests revising as follows:

~~It is the position of t~~The Society of Vertebrate Paleontologists considers that an identifiable vertebrate fossil is to be considered “scientifically important” unless otherwise demonstrated (SVP 1995). This position is based on the relative rarity of vertebrate fossils. Vertebrate fossils are so uncommon that, in many cases, each recovered specimen will provide additional important information about the

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morphological variation or the geographic distribution of its species. The SVP's guidelines recommendations also mention that certain invertebrate or botanical fossils are considered significant paleontological resources. The SVP recommendations provide helpful information for reviewing potential impacts to paleontological resources but must be interpreted in the context of CEQA, which requires that a lead agency identify legally defensible thresholds of significance and applicable mitigation measures. Under CEQA, the SVP recommendations suggest that impacts to "scientifically important" fossils should be avoided or mitigated under CEQA to the extent feasible and do not mean that all impacts must be avoided or that all impacted fossils must be recovered to have less than a significant impact to the applicable resource.

This approach is consistent with numerous applications of CEQA and the federal National Environmental Policy Act (NEPA) to paleontological resource, including the following:

- (a) The June 2012, Draft Environmental Impact Report/Environmental Impact Statement for the I-710 Corridor (Long Beach Freeway) Project in Los Angeles County (<http://www.dot.ca.gov/dist07/resources/envdocs/docs/710corridor/>) which concluded that "[e]arthmoving operations could result in the destruction of fossils and fossiliferous rock units within the construction disturbance limits. It is often not possible to completely eliminate impacts to fossil resources. It is understood that earthmoving activity could, unavoidably, destroy some fossils. These types of impacts can be mitigated by collecting and preserving a representative sample of the entire fossil assemblage and associated geological information in the areas disturbed by project construction" (I-710 Draft EIR/EIS at p. 3.11-6).
- (b) The Bureau of Land Management (BLM) Manual H-8720-1, *General Procedural Guidance For Paleontological Resource Management* which acknowledges that mitigation is required for impacts to vertebrate or other important fossils, but expressly provides that, even in the case of scientifically important fossil impacts, mitigation "may be accomplished...by obtaining representative samples of the fossils" rather than full avoidance or recovery and does not require full monitoring of excavations and earth moving in fossil-bearing strata designated under the BLM's classification approach up to the level of "Class 4" soils, the most sensitive level identified within and adjacent to the project site.
- (c) BLM *Guidelines for Assessment and Mitigation of Potential Impacts to Paleontological Resources* (IM 2009-11) state that "factors such as locality or specimen significance, economics, safety, and project urgency will be considered when developing mitigation measures" and that a mitigation planner has discretion to recommend whether "total or partial recovery or sampling" is appropriate for a specific site (BLM IM 2009-11, 1-10 through 1-11).
- (d) San Diego County *Guidelines for Determining Significance of Paleontological Resources*, (adopted in 2007 and amended in 2009) do not require paleontological-specific monitoring even in areas considered to have the highest potential for paleontological resources when the volume of soil disturbed is 2,500 cubic yards or less. The guidelines also consider fossil finds of less than 12

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inches to be consistent with a negative result (San Diego County Guidelines, pages 15-17).

- (e). The San Bernardino County Development Code (Code), one of the most comprehensive paleontological protection requirements enacted by any local jurisdiction in California, which requires fossil monitoring and recovery when development occurs in high-potential or highly sensitive rock strata in a manner consistent with the SVP recommendations. It, however, limits such mitigation to specific levels of expense that vary with by type and size of the applicable project (Code § 82.20.030(f)).
- (f). Five solar energy projects approved by the CEC, all of which involve boring or augering to fix support structures into strata that were determined to have high paleontological sensitivity. In each case, the final CEC certification decision concluded that project impacts to paleontological resources were less than significant with the incorporation of mitigation measures that were substantially similar to the proposed measures in this PSA (see, e.g., Rice Solar Energy (certification approved in 2010), Beacon Solar Energy (certification approved in 2009), Genesis Solar (certification approved in June 2010), Palen Solar (certification approved in 2010), and Abengoa Mojave Solar (certification approved in 2010)).
- (g). Renewable energy projects reviewed by other lead agencies in which potential impacts to formations with high paleontological sensitivity due to the insertion of supporting posts or piles were determined to be mitigated to less than significant levels through monitoring programs consistent with the SVP and PSA recommendations, included Kern County (see, e.g., Antelope Valley Solar DEIR (2011), Catalina Renewable Energy Project DEIR (2011), and Beacon Photovoltaic Project (2012)), and Imperial County (Campo Verde Solar Project DEIR (2012)).

14. Page 5.2-18, Literature and Records Review: Applicant suggests revising as follows:

An archival database search was executed by staff of the San Bernardino County Museum (SBCM) to determine whether any of the stratigraphic units found within the project vicinity had previously yielded significant paleontological resources and whether any known localities lie within or near the project site. A records search obtained from SBCM (contained within Appendix 5.8B of the AFC) indicated that no vertebrate paleontology localities were known within several miles of the Project footprint. SBCM concluded that excavation in conjunction with project development will have high potential to adversely impact significant nonrenewable paleontologic resources present within the boundaries of the proposed power plant property.

15. Pages 5.2-21 and 5.2-22, Last and Carryover Paragraphs: Applicant suggests revising as follows:

While the AFC discussed the discovery of a previously unrecognized paleontological resource and provided proposed mitigation measures related to the discovery of fossils during construction excavations, there was no discussion regarding the potential

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significant impact to existing paleontological resources caused by heliostat ~~pedestal~~ pylon installation. The Palo Verde Mesa paleosol and Chemehuevi equivalents are classified as highly sensitive units. Current field survey results indicate there is potential for a significant number of fossils to be encountered on the site in these units. The applicant has not ~~sufficiently completed the delineation of~~ the extent of these units on the site. Where predrilled and vibratory inserted heliostat ~~pedestals~~ pylons are proposed, recovery of fossils ~~would~~ might not occur and fossils encountered with this construction technique would be destroyed without obtaining any scientifically valuable information. ~~Predrilling involves rotating and boring a solid steel drill auger into the ground a specified depth into the subsurface. This construction method would crush or break any fossils that might be present throughout the penetrated depths. The subsequent vibratory insertion of the pedestal would not allow for any recovery of remaining fragments of fossils.~~ Without adequate delineation (horizontal extent and thickness) of these fossil bearing units, staff is unable to precisely evaluate whether the extent to which insertion of heliostat ~~pedestals~~ pylons using vibratory techniques could have a significant impact sensitive units. Notwithstanding this limitation, and as detailed above, the heliostat pylons will likely affect only 0.2% of the paleontological resources anticipated to occur within the Project boundary. Under these circumstances, impacts that could be associated with the heliostats are less than significant and would be further mitigated by the recovery of an adequate and representative sample of fossils within the project area. This recovery process, in fact, will contribute to the scientific understanding of the eras represented by the fossils that would otherwise not be achieved without the implementation of the project.

16. Page 5.2-22, First Full Paragraph: Applicant suggests revising as follows:

Staff ~~approved~~ has emphasized this position with the applicant on numerous occasions and requested that the applicant's provide a plan to adequately delineate the resource (CEC 2012ar and CEC 2012at). Once delineated, staff could more precisely analyze the impacts to the resource caused by heliostat ~~pedestal~~ pylon insertion. ~~Staff provided the applicant with some guidance on the type of elements that should be addressed in an excavation plan (CEC 2012ar CEC 2012at).~~ To date, the delineation of the paleontological resource in the project area is incomplete, though staff approved the applicant's is finalizing a plan to obtain the information needed by staff. ~~The lack of definition of the paleontological resource that would be adversely impacted by heliostat pedestal insertion precludes staff's ability to adequately assess the potential effects that the proposed project would have on the paleontological resources or to recommend a construction monitoring plan appropriate to the project. Staff notified the applicant that a Supplemental Paleontological Resources Delineation Report must be submitted no later than December 3, 2012, if the schedule for publication of the Final Staff Assessment is to be maintained (CEC 2012ar CEC 2012at).~~ As detailed above, the heliostat pylons will likely affect only 0.2% of the paleontological resources anticipated to occur within the Project boundary. Based on these estimates, potential heliostat impacts to the resource will be less than significant.

17. Page 5.2-22 and 5.2-23, Last and Carryover Paragraphs: Applicant suggests revising as follows:

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The applicant proposes that where fossils are encountered in excavations associated with all project construction, earthwork would be halted and the Paleontological Resource Specialist (PRS) notified of the find. Steps to avoid significant adverse impacts to discovered fossils are clearly described in Conditions of Certification **PAL-1** through **PAL-7**. When properly implemented, the conditions of certification would yield a net gain to the science of paleontology since fossils that would not otherwise have been discovered can be collected, identified, studied, and properly curated. A PRS would be retained for the proposed project by the applicant to produce a monitoring and mitigation plan, conduct the worker training, and provide the on-site monitoring. During the monitoring, the PRS can make changes to the monitoring protocol with notification to could petition the CPM Energy Commission for a change in the monitoring protocol. ~~Most commonly, this would be a request for lesser monitoring after sufficient monitoring has been performed to ascertain that there is little chance of finding significant fossils. In other cases, the PRS can propose increased monitoring due to unexpected fossil discoveries or in response to repeated out-of-compliance incidents by the earthwork contractor.~~ As noted above, Staff believes these conditions would be appropriate to mitigate impacts to paleontologic resources to less than significant levels notwithstanding the results of the pending additional delineation of the sensitive paleontologic resources on the site that might be affected by heliostat pylon insertion.

18. **Page 5.2-23, Carryover Paragraph:** Applicant disagrees with CEC’s characterization that “additional information” is needed to define impacts associated with the heliostat installation. Applicant suggests revising as follows:

~~Staff needs additional information however, to analyze the impacts to the resource caused by heliostat pedestal predrilling and vibratory insertion, and determine whether the proposed mitigation is adequate to address impacts.~~ Impacts associated with heliostat installation represent approximately 15 percent of the overall sediments disturbed by the project. Furthermore, only 21% of this amount is underlain by Qpv sediment. Since several hundred fossil specimens representing the project area are in the process of being curated, and with mitigation measures PAL-1 through PAL-7 in place, impacts to paleontological resources caused by heliostat pylon installation are considered less than significant.

19. **Page 5.2-26, Subsidence, Second Paragraph, Third Sentence:** Applicant is not aware of earth fissure areas at the proposed Rio Mesa SEGF. Applicant suggests revising as follows:

~~Precipitation runoff control should be utilized to prevent infiltration of surface water into exiting or suspected earth fissure areas.~~ Analysis of and mitigation for precipitation runoff is presented in the Soil and Surface Water section of this document.

20. **Page 5.2-27, First Full Paragraph, Second Sentence:** Applicant suggests revising the language as follows to clarify the extent of expansive soils as described in the project’s geotechnical report.

Mitigation would normally be accomplished by over-excavation and replacement of the expansive soils as addressed in a project specific geotechnical report.

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21. **Page 5.2-29, First Full Paragraph:** Applicant disagrees with CEC's characterization that heliostat installation techniques designed to minimize overall impacts will cause an "unmitigable adverse impact" to paleontological resources. Applicant suggests revising as follows:

The site contains ~~valuable (high sensitivity sensitive)~~ paleontological resources. As discussed in the direct impacts section, if heliostats ~~pylons~~ are inserted into the subsurface using vibratory techniques in areas underlain by sediments containing ~~high sensitivity sensitive~~ paleontological resources, ~~any~~ paleontological resources contained within these areas ~~would be impacted, precluding an opportunity to identify, recover, or interpret those resources causing an unmitigable adverse impact.~~ However, construction of the project provides opportunities for observation and recovery of uncovered paleontological resources that would otherwise go undiscovered. Therefore, the potential for additional discovery, along with the hundreds of fossils recovered to date on-site, would mitigate any potential impacts to paleontological resources. Therefore, project-specific impacts will be less than significant to sensitive paleontological resources.

22. **Page 5.2-29, Third Paragraph:** Applicant suggests revising as follows:

Staff believes the LORS and conditions of certification discussed above would ensure adequate protection of paleontological resources. This conclusion is based on the fact that typical grading and excavation activities that are conducted with heavy equipment create open excavations and spread excavated materials thereby providing adequate opportunities for observation and recovery of uncovered paleontological resources and therefore would mitigate any potential cumulative impacts to paleontological resources to less than significant levels. Projects that include pile or pole insertion would also mitigate impacts to less than significant levels provided that the impacts associated with such activities comprised a minute potential proportion of the sensitive resources and a representative sample of such resources could be obtained from monitoring recovery associated with typical grading and excavation activities.

23. **Page 5.2-30, Conclusions, Third Paragraph:** Applicant suggests revising as follows:

Significant paleontologic resources have been identified on the site. Proposed Conditions of Certification PAL-1 through PAL-7 would mitigate potential impacts to paleontologic resources to less than significant levels where conventional grading and excavation construction is conducted. Moreover, construction of the project provides opportunities for observation and recovery of uncovered paleontological resources that would otherwise go undiscovered.

24. **Page 5.2-30, Conclusions, Fourth Paragraph:** Applicant suggests revising as follows:

~~Where predrilled and vibratory inserted heliostat pedestals are constructed, any opportunity for identification, recovery or scientific interpretation of these significant paleontological resources would be precluded. Due to the lack of physical definition of the paleontologic resources, sStaff is unable to adequately precisely assess the potential impacts from heliostat pedestal-pylon construction pending completion of further surveys that will delineate significant resources onsite. Staff has met with the applicant~~

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~~repeatedly to discuss further delineation of this resource. To date, the delineation of the paleontological resource in the project area is incomplete, though Staff has approved the applicant's is finalizing a plan to obtain this information needed by staff. Staff notified the applicant that a Supplemental Paleontological Resources Delineation Report must be submitted no later than December 3, 2012, if the schedule for publication of the Final Staff Assessment is to be maintained (CEC 2012ar CEC 2012at). Applicant is endeavoring to provide the fieldwork results by December 3, 2012, per staff's request. Nevertheless, as discussed above, using highly conservation assumptions, approximately 99.8% of all sub-surface paleontological impacts associated with pylon insertion will be avoided. This avoidance, in combination with existing survey fossil recoveries, allow for a representative sample of onsite resources to be characterized. Under applicable CEQA standards, since virtually all of the resource will be avoided by the heliostat poles and the significant majority of disturbance will be subject to the mitigation identified in this PSA, impacts to sensitive paleontological resources are anticipated to be less than significant.~~