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From: Don Decker
625 W Ward Ave
Ridgecrest, CA 93555

To: Eric Solorio
Project Manager
Siting, Transmission and Environmental Protection Division
California Energy Commission
1516 Ninth Street, MS-15
Sacramento, CA 95814-5504
esolorio@energy.state.ca.us

Janet Eubanks
Project Manager
California Desert District
22835 Calle San Juan De Los Lagos
Moreno Valley, CA, 92553
carspp@blm.gov

Subj: Comments on the draft SA/DEIS Document, Docket Number 09-AFC-9, "Solar Millennium, Ridgecrest Solar Power Project"

Mr Solorio and Ms Eubanks:

This letter is being written to offer constructive criticism of the California Energy Commission (CEC)/ Bureau of Land Management (BLM) Staff Assessment/Draft Environmental Impact Statement (SA/DEIS) Document for the Ridgecrest Solar Power Project (RSPP). I want to offer to yourself, the CEC and BLM staff authors my appreciation for the efforts made during the very compressed schedule in assessing the AFC put forth by Solar Millennium (SM) for the RSPP. I strongly support the CEC Staff Assessment of "No Project". I submit that although this assessment is based entirely on the findings in the biological values section, C.2, other sections if examined as critically would also have presented an assessment that inadequate mitigation was being offered by Solar Millennium for other environmental impacts as well.

General Comments and Criticisms

The stage was set for these less critical evaluations when the Commission accepted the Application for Certification (AFC) as "data adequate" on 11/18/2009. I realize that the "fast track" process itself undoubtedly led directly to this circumstance. However, I believe that a more critical evaluation by staff at that point would have been appropriate. I have been manager for many DoD programs and am completely familiar with the content and appearance of well-organized and complete proposals. That said, I offer the observation that the AFC and its amendments are very weak, incomplete and contradictory in many critical areas. It is clear that standard industry practices and standards for a proposal of this magnitude have not been followed. To what standards has the SM AFC and amendments been held? **Many of the omissions and**

contradictions make it impossible to assess whether or not a given mitigation is a real offering or is even possible.

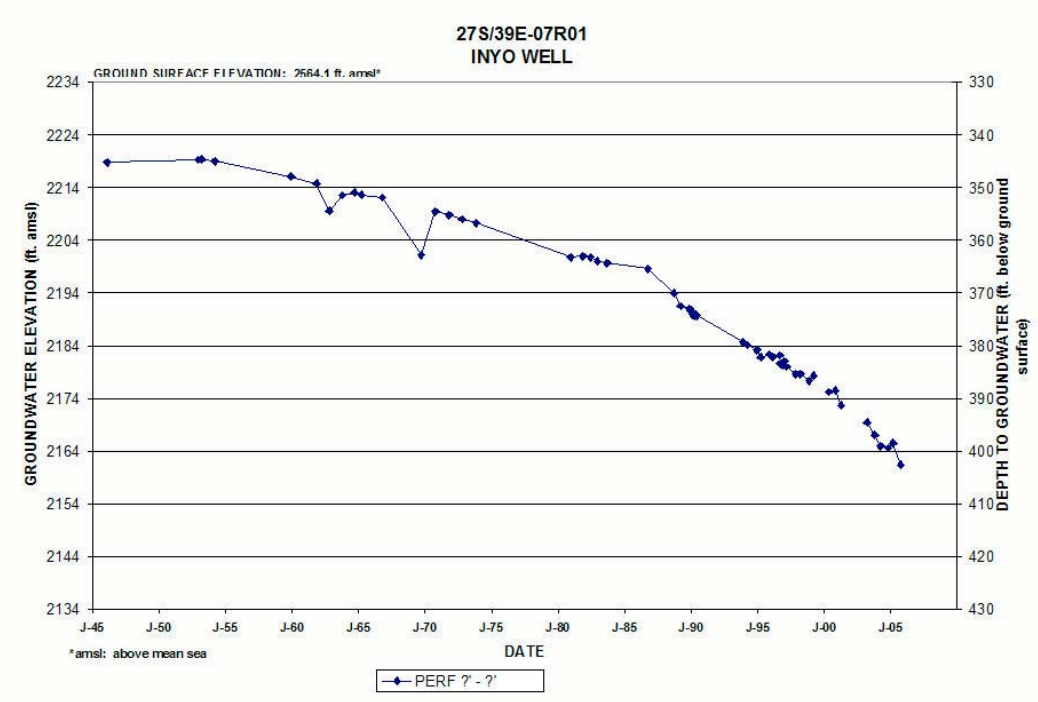
The most serious omission in the AFC is the complete lack of a timeline for the tasks comprising the engineering design, mitigation and construction of the project. Many if not virtually all of the tasks are interrelated and interlocked. With this level of complexity, a "Gantt" type flow chart with several levels of detail is essential to just provide a top-level analysis of the project. It was very apparent from the oral response that Mr. S. Galati offered to my question at the workshop on 5/4/2010 concerning when SM expected to start construction after project approval, that SM does not have more than a rudimentary timeline worked out. In regard to mitigation, it is critical that the project task timeline register with the mitigation requirements for removal of tortoise or trapping of Mojave ground squirrels. I submit that making the assumption that "everything will fall into place" once the project gets started is not acceptable.

Traffic, Air Quality and Soil and Water Resources

From a project perspective, it is essential to identify the critical path and the items associated with it. This is far from being just a question for SM management to be concerned with. The omission of a top-level task timeline directly impacts the viability of many of the proposed mitigations. For example, in my scoping letter I pointed out that a huge number per day of truck crossings of US 395 would be required to bring construction water to the RSPP site for dust mitigation, at least initially. It will take months to complete the water supply pipeline to the project site and to provide a distribution system within the site itself. Judging from other similar projects in the Indian Wells Valley (IWV) area it is likely that more than 6 months will be required. The project sequence will involve working up a detailed engineering design of the project, pulling permits, ordering and receiving materials, obtaining Right of Way (ROW) easements, writing Statements of Work (SOW)'s, advertising for bids, securing a contractor, and completing the pipeline that is described in the Indian Wells Valley Water District (IWVWD)/ SM Memorandum of Understanding (MOU). Is SM going to hold up project construction for the pipeline completion? Apparently they are, as there is no mention whatsoever of any water truck traffic *across* US 395 in the traffic section of the AFC. However, Mr. Galati indicated in his answer to my schedule question at the workshop on May 4'th that construction might start in as short a time as a month or two after project approval. To demonstrate how inconsistent the AFC really is, here is a quote from the Soils and &Water Data Request 132-192 page 24: "Onsite wells will not be used for construction water. Construction water will be provided by Indian Wells Valley Water District initially by trucking and then through the water supply pipeline." The existing IWVWD facility for obtaining bulk water is a very low flow rate facility and not in any way suited to filling hundreds of water trucks per day. How can an assessment be made of this confused situation? **An assessment that the SM proposed construction methods including water use will mitigate dust and other impacts to less than significant when the number of truck crossings of US 395 will be in the hundreds per day doesn't seem warranted.** A more specific number of crossings cannot be stated because we do not know what the grading construction period will be or when grading will start. Depending on what section of the AFC you are reading you can get stated durations from 12 months to 28 months. Please see my scoping letter for more

detail on this aspect with references into specific sections of the AFC. **I pointed out these inconsistencies in my scoping letter and am pointing them out again here to make sure the CEC staff is aware of the implications.**

There are many more examples where the omission of a task timeline makes the mitigations proposed completely uncertain or even invalid. By ignoring the timeline SM is apparently free to prorate construction water use over the life of the project. This was done by incrementally adding of the construction water to the annual operational water use. However, the construction water impacts occur in the earliest phases of the project, and these impacts demand not only a quantitative mitigation but a *timely* mitigation as well. This is not a casual criticism, as the construction water use will increase the annual quantity of groundwater pumped from the IWVWD SW well-field during construction by as much as 50%. The percentage increase depends upon the length of the construction period. The IWVWD has in recent years shifted a major portion of its pumping for existing customers into the very area that the water for SM will also be taken. Wells in the area were showing declines of about 1 foot per year through the 1980's and into the 90's. As the IWVWD pumping has increased in this area, water levels in monitoring wells in the area have experienced accelerating declines in water levels. These same wells are now showing water level drops of approximately 3 feet per year.



Hydrograph of the "Old Inyo well" in the vicinity of the IWVWD SW wellfield area. This well is especially important as a reference since the well data dates to the 1940's. The well shows a very consistent decline of somewhat less than 1ft/yr from the 50's into the 80's with an accelerating decline since. The recent decline is at a rate of about 3 ft/yr. This behaviour is the very definition of overdraft. This plot is taken from: http://www.iwvgroundwater.org/data/hydorgraphs_histograms/hydrograpy_07r.html

The pumping of SM construction water will place an additional *immediate* burden on the already overdrafted aquifer and would have a serious negative impact on the overlying

water right well owners in the greater vicinity. **Spreading out the construction water mitigation over the life of the project completely ignores this reality and is not a mitigation that meets CEQA requirements for a *timely* and accurate mitigation of impact**.

Many comment letters have been written over concerns with dust that would be primarily produced during construction. These comments are based on observations by residents who have directly observed how hard it is to control dust on disturbed soils in this valley. The AFC is notably lacking any detail concerning the methods to be actually used to control dust during construction and any explanation of the apparent very low water use that is being claimed compared to other similar projects. In my scoping letter, I did give a real example of water use on disturbed soil at a rate entirely comparable to that proposed by SM that resulted in a serious lack of dust control on a windy day. At the CEC/BLM Workshop in April, SM provided a verbal description of the actual cut and fill methods they intend to use. The following paragraph (in italics) is taken directly from my notes of that workshop. *The plan is to work a small area of land at a time, perhaps 20 acres. A special drip type irrigation system will be installed on the area where the rock and dirt removal will be made. The watering system will be allowed to operate for many hours so as to soak the soil to a depth of perhaps 12 inches. The drip system will then be removed and the earthmoving commenced. Only wet soil would be cut and immediately placed in the fill areas. Since only wet soil would be handled, no dust would be produced.* Although this plan seems to be viable, there are many assumptions implicit in these ideas that are not realistic. **These plans are not consistent with standard grading industry practice.** In the next paragraph I will provide a top level analysis of the methods proposed by SM.

As stated earlier, we do not have a consistent answer from SM for the duration of the grading phase. I will use 24 months as is stated in AFC Section 2.5.7. SM has stated that the total volume of rock and dirt to be moved is 7.5 million cubic yards or about 10,000 cubic yards per day assuming a 7 day work week. For a work area of 20 acres (10 acres of cut, 10 acres of fill) a depth of 0.64 feet would be removed and placed every day on average. There are several problems immediately obvious with these ideas. If the soil were very uniform, a consistent depth of penetration of the dust controlling water could be anticipated. However, the soil at the RSPP site is very nonuniform and contains a significant content of extreme particle sizes- from boulders to clays. The deeper soils are very compact and in many zones are cemented (caliche). It will be impossible to get consistent water penetration and accurate cut depths over the working area. Even with a drip-type irrigation system, the top layer of soil will in many areas be saturated with some water ponding and in the summer months will lose water to evaporation at rates even higher than an inch per day. **Water application efficiency will be much lower than projected. Every scraper pass will expose some unwetted soil and with the mechanical action of the scraper on the rocks and exposed soil, dust will be produced**.

The standard emitter spacing for an expected 12 inch penetration is 24 inch centers. A ten acre field would require over 100,000 emitters with this spacing. The logistics of operating such a drip system that would be deployed and then picked up and moved out of the way every day is seriously impractical with standard components –

especially when the lines are full of water. Even if a "soaker hose" approach were to be used, 24 inch spacing would still be observed between hoses. The manifolding to pressurize the soaker hose would be complex and unwieldly since the commercially available hose is intended for use in lengths not exceeding 150 ft. Even at that length, the flow reduction from the inlet to the end of the hose is a factor of two for standard supply pressures. The flow rates that will exist for the emitter scheme are far too high and the required water delivery will take place over such a short amount of time as to guarantee ponding. Even for the soaker hose plan, the delivery rates are too high and ponding will occur. The supply pressure could be reduced but then the soaker hose performance becomes unreliable as the smaller pores simple no longer provide any flow at all. **To summarize: there is simply no commercial hardware available to assemble a low flow rate portable system to irrigate a large area reliably and uniformly.**

If the grading contractor were to use standard midsize self-loading scrapers, which typically have a can volume of 34 cubic yards, 306 roundtrip loads would be required per day to cut and place 10,000 cubic yards of material. In the rocky and nonuniform soil of the site it could easily take 15 minutes just to take up a load. This is based on observations made at the Kern County Landfill in identical soil and using similar equipment. Neither elevating or auger loaders can reliably handle the larger rocks that continually jam up the loading mechanisms. Clearly several scrapers would be necessary under even optimum conditions. Assuming the cut and fill part of the operation could work as long as 10 hours per day, 10 or 11 machines would be necessary. It would pose a major logistical problem to operate these machines on such a small area with safety and efficiency. In addition, these large machines could not be used at the margins of either the cut or fill areas. Large front loaders would necessarily also be present and working on the pads. **This scenario is not realistic either in the available hours or in the capabilities of the equipment. The ideas offered by SM are not based on standard grading industry practices, and there is no reason to expect they would be effective**.

The standard methods of using water trucks to deliver water to the soils to be worked will be resorted to and larger areas worked than described. As I offered in my scoping letter, approximately 850 ac-ft of water will be consumed by compaction requirements alone. If we assume that 1500 ac-ft of construction water is all that is available, that leaves 650 ac-ft for dust control itself. This number is totally unrealistic. This leads to the conclusion that water use will be much higher as a result of evaporation losses and ineffective attempts at dust control. **How can the SA/DEIS claim that construction impacts can be reduced to less than significant using mitigation measures that involve nonstandard practices where there is no evidence they could actually be employed and could work?**

A thorough AFC would have a detailed grading plan for examination not just a plot diagram of the final layout. Specific locations where the cuts would be made as well as the corresponding placements would be shown with the grading cross-sections provided. Every section would have an annotated table showing material to be removed and material to be placed. Although for simplification I assumed that the material from each cut would be immediately placed on a corresponding fill area this is not usually possible and much material will have to be stored until a later time for placement in a suitable area. Water for dust control of these piles would be accounted for in detail. A far

more detailed examination of site soils would also be included to assess the proposed grading techniques.

Cultural resources

I submit to staff that another critical SA/DEIS omission is the failure to fully recognize the significance of cultural findings at and near the RSPP site. I will summarize comments that I made in the 5/3/2010 workshop, concerning cultural resource values at the RSPP site and the significance of the area in a regional context that includes the Coso petroglyph area to the north[1]. **The Coso petroglyphs have been extensively studied and represent the premier petroglyph assemblage in all of North America[2]. The Coso petroglyph area is about 25 miles N-NE of the RSPP site in the Coso Range**. The assessment made in the cultural section, C.3, is based on a regional evaluation of prehistoric Indian activity. Only National Registry databases were consulted. There is no mention even of the presence of the incredibly rich nearby Coso sites. There are many published papers concerning the Coso area and several on a Coso style site in the Black Mountain complex very close to the RSPP site itself[3]. There are many more Coso style sites in the Black Mountain complex that have not been described or registered. The full understanding of the interrelationships of the occupancy and use of these sites and others nearby in the Coso Hot Spring area is yet to be made. It is clear that the story includes human travels for ceremonial or spiritual purposes on a very large scale. It is another interconnectivity story, now involving humans instead of ground squirrels or desert tortoise. If even a casual examination is made of a map it will be seen that the El Paso Wash provides a nearly direct route for most of the distance from "North" Coso to "South" Coso, at the Black Mountain complex. In earlier days, when the western climate was wetter, washes such as the El Paso would have run year around. China Lake would have been at least partially full. Actually, many washes in the IWV did run year around even into the 20'th Century and this water was the basis for the agricultural homesteading activity in the early 1900's. A careful examination of the El Paso Wash further north than the RSPP site reveals significant evidence of prehistoric Indian use all along its route.

The mitigation proposed for the cultural resources within or near to the RSPP is careful mapping, photography and curation of significant artifacts. However, such an approach would totally destroy any possibility of studying the regional interrelationships which clearly do exist on the RSPP site. The physical connectivity to the spectacular North Coso petroglyphs is an important thread to preserve. Further study of South Coso will undoubtedly also lead to important discoveries as its secrets are revealed - but only if the areas to study are preserved. There were two scoping letters besides my own that addressed the cultural value of the Black Mountain complex. I would like to respectfully direct staff attention to the letters by Mr.Matt Boggs and by Ms.Jane McEwan.

Public Health and Safety

I will close my comments by pointing out another serious omission in the SM AFC that appears to also have escaped recognition in the SA/DEIS. In the AFC and then in SA/DEIS there is inadequate recognition of the inherent fire danger posed by the heat transfer fluid (HTF) at operating (high) temperature. There is at least one example of a disastrous fire in a facility very similar to that proposed for the RSPP[4]. There is no detail

concerning fluid control methods to minimize fire danger except the statements that isolation valves would be present in the HTF loop lines which would allow for the control of the HFT in the event of a break. Since the HTF is pyrophoric at the elevated operating temperatures, any leakage will result in instant flame. The potential for serious public health impacts has not been adequately discussed in the AFC nor has the brief discussion of mitigation in the SA/DEIS HAZ-4 been adequate. The problem is that the RSPP is not in a low population density area. The heart of the Ridgecrest community is less than 5 miles away. For the prevailing SW wind direction, this community is directly downwind from the proposed site. In a fire, the plume of smoke and hazardous gases would be carried directly into inhabited areas. A large scale HTF fire would rapidly deplete the available oxygen resulting in a smoke plume with a lot of partially oxidized components. There would be a huge amount of soot, carbon monoxide, partially oxidized aromatic compounds coming directly from the phenol molecules as well as vaporized biphenol molecules themselves. This plume would be especially noxious and at even low concentrations would be dangerous to human health. The fire itself cannot be controlled with water alone. Some benefit could be obtained by the use of a foaming agent but at the high temperatures of the fire this effort would not be of much additional benefit. The fire would be a lot like a petroleum refinery fire and in the end would burn itself out.

In reading the AFC very carefully, there is only a listing of the applicable American Society of Mechanical Engineers (ASME) boiler and pressure vessel codes and no detail whatsoever as to how these codes would be applied. More critically, there is no mention or discussion of the applicable American Petroleum Institute (API) piping and fire codes. Given the similarity of the circulating hot oil in the SM power plant design to conditions in a petroleum refinery it is totally apparent that API codes directly apply here and should be rigorously followed[5]. The SA/DEIS does list the API codes on C.4-28 but there is no mention of applicability. The one aspect that the API codes do bring forth very clearly is the use of excess flow valves (EFV) in providing a critical degree of fire protection for control of leaks of flammable liquids and gases. An EFV provides a nearly instantaneous closure of a fluid line in the event of a break. The EFV provides this function by sensing the increase in flow that results from the break. The valve does not depend on any outside sensors for closure. The EFV can limit the quantity of fluid lost and can thus minimize the consequences of a leak including fire. The EFV does not replace manual and automated shutoff valves but is a supplement. It provides an added level of safety. **All HTF loops for the RSPP should be protected by suitable excess flow valves as a specific condition of certification**. I would go further in this recommendation that all solar power plants that are currently being proposed to the CEC be specifically required to employ this additional protection. It is in the best interest of the plant owners, the plant workers and the public.

There are many more sections in the SA/DEIS that I would like to comment on but there is inadequate time to do so. I will close by saying again that my comments have been offered in the spirit of trying to clarify and strengthen the SA/DEIS assessments. I hope staff will find them to be useful.

Signed, Don Decker

[1] Paradigm Shifts, Rock Art Studies, and the "CosoSheep Cult" of Eastern California by Alan P Garfinkel, published in North American Archeologist Spring 2007

[2] Dating "Classic" Style Sheep Petroglyphs in the Coso range and El Paso Mountains: Implications for Regional Prehistory, by Alan P Garfinkel, at http://petroglyphs.us/article_the_terese_site.html;

[3] Progress Report of the Terese Site (CA-KER-6188) by Sandy and Fran Rogers in California Archeological Site Stewardship Program Newsletter, Vol 2, issue 3, Dec 2003, p7

4 LA Times article: http://articles.latimes.com/1990-01-11/news/mn-202_1_solar-power-plant

5 see for example, section 12.25.3 in Lees' loss prevention in the process industries: hazard ..., Volume 1 By Sam Mannan, Frank P. Lees, Elsevier press, 3'rd ed, Dec2004.

Cc: Hector_Villalobos@ca.blm.gov, RFO