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July 30, 2007

DOCKET
07-AFC-1
DATE JUL 30 2007
RECD. AUG 02 2007

California Energy Commission
Attn: Docket No. 07-AFC-1
1516 Ninth Street, MS-4
Sacramento, CA 95814-5512

Re: Victorville 2 Hybrid Power Project, 07-AFC-1

Dear Docket Clerk:

Enclosed are an original and 13 copies of CURE Data Requests, Set Two. Please process and return a copy in the envelope provided. This document was previously forwarded to the Docket Office via email.

Thank you for your assistance.

Sincerely,

Bonnie Heeley

:bh
Enclosures

1994-007a

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STATE OF CALIFORNIA

Energy Resources Conservation and Development Commission

In the Matter of:

The Application for Certification for the VICTORVILLE 2 HYBRID POWER PROJECT

Docket No. 07-AFC-1

CALIFORNIA UNIONS FOR RELIABLE ENERGY DATA REQUESTS, SET TWO

July 30, 2007

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Attorneys for the CALIFORNIA UNIONS FOR RELIABLE ENERGY

1994-006a

The following data requests are submitted by California Unions for Reliable Energy. Please provide your responses via email (if available) by August 29, 2007 to each of the following people:

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Please identify the person who prepared your responses to each data request. If you have any questions concerning the meaning of any data requests, please let us know.

1994-006a

VICTORVILLE 2 HYBRID POWER PROJECT

CURE Data Requests Set Two (# 1-153)

AIR QUALITY

Background: FUGITIVE DUST EMISSIONS DURING CONSTRUCTION

The AFC estimated fugitive dust PM10 and PM2.5 emissions during construction from five sources: a) entrained road dust from vehicle travel on paved roads; b) soil handling; c) wind erosion from temporary storage piles; d) bulldozing and grading; and e) entrained road dust from vehicle travel on unpaved surfaces.[1] Several sources of fugitive dust appear to have been incorrectly calculated or omitted.

a. **Soil handling:** Soil handling drop operations, such as adding material to a storage pile, removing material from a storage pile, loading material onto a truck bed, dumping material from an excavator, etc., generate substantial amounts of fugitive dust emissions. The AFC calculated uncontrolled fugitive dust PM10 and PM2.5 emission factors for soil handling using equations contained in the U.S. EPA's *Compilation of Air Pollutant Emission Factors* ("AP-42"), Section 13.2.4, based on a soil moisture content of 15% for moist soil. Yet, for most of the year, the soil in the Mojave Desert is essentially bone dry, not moist, as assumed by the AFC's calculations. The Mojave Desert Air Quality Management District ("MDAQMD") recommends using a conservative moisture content default value of 0.5%.[2] The AFC applied a 50% control factor for watering the site twice per day to calculate controlled PM10 and PM2.5 emission factors. Based on the MDAQMD-recommended conservative moisture content and using the AFC's watering control efficiency of 50%, uncontrolled and controlled PM10 emission factors for soil handling are 0.116[3] and 0.058[4] pounds

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[1] AFC, Appx. G.3, pp. G.3-3 through G.3.8.

[2] Mojave Desert Air Quality Management District and Antelope Valley Air Pollution Control District, Emissions Inventory Guidance, Mineral Handling and Processing Industries, April 10, 2000, p. 13.

[3] Uncontrolled PM10 emissions from soil handling:
$(0.0011) \times (12/5)^{1.3} \times (0.5/2)^{1.4} \times (1.215) \times (4) = 1.16E\text{-}01$ lb/cuyd.

per cubic yard ("lb/cuyd") of soil handled, respectively, several orders of magnitude higher than the respective factors of 0.000994 and 0.000497 lb/cuyd of soil handled calculated by the AFC. Analogously, uncontrolled and controlled PM2.5 emission factors, which are calculated based on a fraction of 0.208 PM2.5 in PM10 fugitive dust, are proportionally higher than the respective emission factors calculated by the AFC. As a result, fugitive dust PM10 and PM2.5 emissions from bulldozing and grading of the VV2 Project are substantially underestimated.

Further, the AFC calculated fugitive dust PM10 emissions from soil handling of only 158.6 pounds per month ("lb/month") during the first two construction months for the combined cycle facility as well as for the third and fourth construction month for the solar array based on soil handling of 319,184 cubic yard per month ("cuyd/month") during each of the four construction months.[5] The AFC contained no support for the amount of soil handled during these construction months. Using the revised controlled PM10 emission factor of 0.058 lb/cuyd based on a soil moisture content of 0.5% and the amount of soil handling indicated in the AFC, 319,184 cuyd/month, revised controlled PM10 emissions are 18,543 lb/month or 9.27 ton/month.

Finally, the AFC failed to calculate any fugitive dust emissions from soil handling during construction of the reclaimed water and sewer pipelines,[6] the gas and backup water supply lines[7], or the transmission line segments 1, 2, and 3.[8]

b. **Bulldozing and grading:** The AFC calculated an uncontrolled PM10 emission factor of 0.348 pounds per hour ("lb/hr") for bulldozing and grading using a predictive equation from AP-42, Section 11.9, based on a moisture content of 15% for moist soil.[9] As discussed above, the soil in the Mojave Desert is typically dry, not moist. Thus, using a soil moisture content of 15%, considerably underestimates actual uncontrolled fugitive PM10 emissions during grading and bulldozing. Based on the MDAQMD-recommended moisture content of 0.5%, the

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[4] Controlled PM10 emissions from soil handling:
(1.16E-01 lb/cuyd) × (1-50/100) = 5.81E-02 lb/cuyd.

[5] AFC, Appx. G.3, Tables 3-K through 3-M; Tables 6-K through 6-M

[6] AFC, Appx. G.3, Tables 9-K through 9-M.

[7] AFC, Appx. G.3, Tables 11-K through 11-M.

[8] AFC, Appx. G.3, Tables 13-D, 15-D, and 17-D.

[9] AFC, Appx. G.3, Table 22.

uncontrolled PM10 emission factor is 40.7 lb/hr.[10] Fugitive dust control by watering would reduce these emissions by 34 to 68%[11] to between 13 and 28 lb/hr.[12]

Further, the AFC did not calculate any fugitive dust PM10 emissions from bulldozing and grading for construction of transmission line segment 2.[13]

c. **Storage pile wind erosion:** The AFC calculated fugitive dust PM10 emissions from storage pile wind erosion during construction of the cogeneration facility and the solar array but not for construction of the reclaimed water and sewer pipelines,[14] the gas and backup water supply lines,[15] or the transmission line segments 1, 2, and 3.[16]

d. **Wind erosion from exposed areas:** After grading the VV2 Project area, linear facilities, and temporary construction laydown areas, the graded surfaces will be exposed to wind erosion. The AFC did not calculate any fugitive dust PM10 emissions due to wind erosion from graded areas.[17]

e. **Mud/dirt trackout:** Mud and dirt on the tires and bodies of equipment leaving the construction site are deposited on adjacent paved roads. This increases the surface loading of dust, which is entrained by passing vehicles. These emissions can be substantial, if not controlled using street sweeping. A recent study found that mud/dirt trackout from an active construction site increased PM10 emissions from every vehicle passing over the affected roadway by roughly 6 grams.[18] These emissions were not included in the AFC's construction emission inventory.

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[10] Controlled PM10 emission factor from bulldozing and grading:
$(0.75) \times (7.5)^{1.5} / (0.5)^{1.4} = 40.7$ lb/hr

[11] South Coast Air Quality Management District, CEQA Air Quality Handbook, April 1993; Table 11-4.

[12] (40.7 lb/hr) × (1-68/100) = 13.0 lb/hr; (40.7 lb/hr) × (1-30/100) = 28 lb/hr

[13] AFC, Appx. G.3, Table 15-D.

[14] AFC, Appx. G.3, Tables 9-K through 9-M.

[15] AFC, Appx. G.3, Tables 11-K through 11-M.

[16] AFC, Appx. G.3, Tables 13-D, 15-D, and 17-D.

[17] AFC, Appx. G.3, p. G.3-4.

[18] G.E. Muleski and A.E. Page, Characterization of PM Emissions from Mud/Dirt Carryout, Proceedings of the Air &Waste Management Association's 94th Annual Conference & Exhibition, June 24-28, 2001.

Data Requests

1. Please provide support for the volume of soil handled used for calculating fugitive dust emissions during the excavation phase of the combined cycle facility and the solar array.

2. Please revise calculations of uncontrolled and controlled fugitive dust PM10 and PM2.5 emissions to reflect emissions from:

   a. soil handling and bulldozing and grading using a conservative moisture content default value appropriate for the Mojave Desert or discuss why a moisture content of 15% is deemed appropriate;

   b. soil handling during construction of the reclaimed water and sewer pipelines, the gas and backup water supply lines, and the transmission line segments 1, 2, and 3, and from bulldozing and grading of the transmission line segment 2;

   c. fugitive dust emissions from storage pile wind erosion during construction of the reclaimed water and sewer pipelines, the gas and backup water supply lines, and the transmission line segments 1, 2, and 3;

   d. wind erosion from graded areas including the Project site, linear facilities, and temporary construction laydown areas; and

   e. mud and dirt trackout.

Background: CONSTRUCTION MITIGATION MEASURES

The AFC disclosed significant emissions of NO_2, PM10, and PM2.5 during construction of the VV2 Project resulting in exceedance of the 1-hour California Ambient Air Quality Standard ("CAAQS") for NO_2, the 24-hour CAAQS and NAAQS for PM10, and the 24-hour CAAQS and NAAQS and annual CAAQS for PM2.5.[19] To mitigate these significant impacts, the AFC proposed to use "standard construction practices ... including ... Use of Tier 3 engines with particulate filters on the scrapers used for grading. Frequent watering of haul roads and disturbed surfaces to reduce fugitive dust emissions. Use of good engineering practice in the maintenance of all construction equipment."[20] The AFC did not provide any further details what constitutes "standard construction practices" nor does it calculate the

[19] AFC, Table 6.3-29, p. 6.3-62.

[20] AFC, p. 6.3-84.

emission reductions due to implementation of these mitigation measures. Therefore it is impossible to verify whether the proposed mitigation measures would provide sufficient emission reductions to reduce the emissions from VV2 Project construction to less than significance.

Further, the preliminary draft drainage, erosion, and sediment control plan ("DESCP") variously indicates that parking and temporary construction laydown areas would be stabilized with coarse gravel during construction or dust-controlled by using Dirt Glue or similar products.[21] In contrast, the AFC indicated that disturbed surfaces would be watered frequently.[22]

Data Requests

3. Please list all measures constituting "standard construction practices" that would be implemented for the VV2 Project and provide their respective emission reduction efficiency. Please indicate whether the City is willing to include these mitigation measures as a condition of certification ("CoC").

4. Please clarify whether the temporary construction laydown area would be dust-controlled by graveling, application of a dust control agent, or watering twice per day.

5. Please quantify emission reductions resulting from implementation of the proposed measures, summarize mitigated construction emissions, and compare the mitigated emissions to appropriate thresholds of significance or conduct ambient air quality modeling to determine whether mitigated construction emissions would result in or contribute to a violation of an ambient air quality standard.

Background: OPERATIONAL FUGITIVE DUST EMISSIONS ESTIMATES

The emissions estimates for VV2 Project operations contained in the AFC do not contain any fugitive dust emissions.[23] Operational fugitive dust emissions would include entrained road dust emissions from vehicle travel on on-site and offsite paved and unpaved roads, including delivery vehicles, commuter

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[21] Inland Energy, Drainage, Erosion, and Sediment Control Plan, Victorville 2 Hybrid Power Plant, City of Victorville, California, (07-AFC-01), Preliminary Draft Plan, July 2007, Section 4.1.1 and Figure "Clearing and Grading Plans."

[22] AFC, p. 6.3-84.

[23] AFC, Table 6.3-27, p. 6.3-57.

vehicles and maintenance vehicles within the facility, *e.g.*, the solar array area, and off-site, *e.g.*, on access roads to the transmission line. In addition, wind erosion would occur from the graded and largely unvegetated VV2 Project site. Fugitive dust emissions from wind erosion can be considerable, particularly from the solar array area, which has to be kept free of vegetation to avoid grass or brush fires that would have the potential to destroy the solar plant.[24] The City indicated that it would apply a dust-controlling agent such as Dirt Glue or a similar product to the solar field and that the power block area would be covered with gravel in areas other than foundations and asphalt-paved roads.[25] The AFC indicated that The City did not discuss the control efficiency of the dust controlling agent or how frequently the dust control agent would have to be applied.

Data Requests

6. Please provide the expected control efficiency for application of a dust control agent.

7. Please provide an estimate for uncontrolled and controlled fugitive dust emissions for VV2 Project operations, including entrained road dust from vehicle travel on on-site and offsite paved and unpaved roads and wind erosion from the power block area, solar field, and unpaved roads. Please include these emissions in a revised ambient air quality modeling for VV2 Project operations.

8. Please discuss the maintenance plan for areas treated with a dust control agent, including the type and frequency of dust control agent application.

Background: FUGITIVE DUST ERCS FROM ROAD PAVING

The AFC proposed to mitigate the VV2 Project's operational PM10 emissions of 121 tons per year via nontraditional emission reduction credits ("ERCs") for reducing fugitive dust PM10 emissions by paving unpaved roads within the Mojave Desert Air Basin ("MDAB").[26] The Mojave Desert Air Quality Management District ("MDAQMD" or "District") has developed and is

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[24] Leitner A., RDI Consulting, Fuel from the Sky, Solar Power's Potential for Western Energy Supply, NREL/SR-550-32160, July 2002.

[25] Response to CEC Staff Data Request No. 83, p. SW-27; AFC, p. 2-33.

[26] AFC, p. 6.3-94.

currently reviewing proposed Rule 1406 to allow f banking of PM10 ERCs.[27] The MDAQMD patterned proposed Rule 1406 after a similar rule that has been proposed by the Maricopa County, Arizona, Air Quality Department ("MCAQD"). However, in order for the MDAQMD to create and use nontraditional ERCs in compliance with the federal Clean Air Act ("CAA") and EPA policy, it must meet certain fundamental requirements. It appears that the MDAQMD does not meet these requirements.

The District must have a U.S. EPA-approved nonattainment plan or maintenance plan for the nonattainment area in which the ERCs will be created and used. CAA section 172(c)(5) specifically requires that such plans include provisions that require permits for the construction and operation of new or modified major stationary sources anywhere in the nonattainment area, in accordance with section 173 of the CAA. A federally approved PM10 plan is essential for proper creation and use of ERCs because it provides the overall legal and regulatory framework for a new source review ("NSR") program, especially the provision for a detailed emission inventory that identifies in detail the emissions from, as well as control requirements for, each source category, including unpaved roads if they contribute to the nonattainment problem (Section 172(c)(3)). In response to this requirement, the MDAQMD adopted three plans: the Mojave Desert Planning Area Federal Particulate Matter (PM10) Attainment Plan (July 31, 1995); the Searles Valley PM10 Plan (June 28, 1995); and the Final Attainment Demonstration, Maintenance Plan, and Redesignation Request for the Trona Portion of the Searles Valley PM10 Nonattainment Area (March 25, 1996). Significantly, the U.S. EPA has not approved *any* of the three plans. In fact, due to profound deficiencies contained in each, the U.S. EPA will not be approving these plans as written.

Unlike the MDAQMD, the MCAQD has a U.S. EPA-approved PM10 Nonattainment Plan, which includes a very detailed emission inventory (including unpaved roads) and a control strategy that provides the information needed to identify that any proposed ERCs are indeed surplus to existing requirements. Importantly, the Maricopa PM10 plan includes a very detailed emission inventory (including unpaved roads) and a thorough control strategy which provides the necessary information to identify whether any proposed ERCs are indeed surplus to existing requirements. In contrast, the MDAQMD has no mechanism for establishing whether the Rule's implementation would satisfy federal requirements. Further, the calculations in proposed Rule 1406 overstate emission reductions achieved by paving unpaved roads and the rule as proposed is inconsistent with the CAA SIP

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[27] Mojave Desert Air Quality Management District, Rules and Plans; http://www.mdaqmd.ca.gov/rules_plans/rules-plans.htm

requirements because it fails to restrict ERCs to the designated PM10 nonattainment portion of the District.[28] At present, the MDAQMD is reviewing comments received on the proposed rule and has continued the hearing to August 27, 2007.

Data Requests

9. Because the availability of fugitive dust road paving ERCs at this point is uncertain, please identify any other known, valid sources for ERCs or other mitigation measures for Project operational PM10 emissions.

Background: OPERATIONAL VEHICLE EXHAUST EMISSIONS

The emissions estimates for VV2 Project operation contained in the AFC did not contain exhaust emissions for worker commuter vehicles or delivery and waste disposal trucks.[29] The VV2 Project is expected to employ a total of 36 full-time personnel during operation.[30] The VV2 Project will also require an array of on-site O&M vehicles, *e.g.*, for inspection and cleaning of the solar array. The AFC did not contain an inventory of O&M vehicles or a schedule for delivery and waste disposal trucks. Delivery trucks would deliver large quantities of aqueous ammonia (estimated at 168 deliveries per year, with a one-way distance of 90 miles), sulfuric acid, sodium hydroxide, sodium hypochlorite, boiler water treatment chemicals, detergent, heat transfer fluid, lube oil, diesel fuel, and insulating oil, and smaller quantities of other materials.[31] Waste disposal trucks are required to haul non-hazardous and hazardous waste such as used hydraulic fluid, used filters, cooling tower sludge, oily rags, etc. off-site to disposal or recycling facilities.[32] Emissions from these vehicles increase the VV2 Project's operational emissions. These emissions are not included in the AFC's emissions inventory and are not mitigated by the proposed mitigation measures.

Data Requests

10. Please provide an inventory for all hazardous and non-hazardous materials delivered to or hauled from the VV2 Project site including

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[28] *See* Letter from Gloria Smith, Adams Broadwell Joseph & Cardozo to Mojave Desert Air Quality Management District, June 14, 2007.

[29] AFC, Table 6.3-27, p. 6.3-57.

[30] AFC, p. 2-38.

[31] AFC, pp. 6.7-18 – 6.7-19.

[32] AFC, pp. 6.16-12 – 6.16-13.

estimated quantities, schedule of delivery or disposal, and expected roundtrip distances for the delivery and disposal vehicles.

11. Please provide an inventory of all O&M vehicles including a description of typical tasks performed, average roundtrip distances on- and off-site, and a schedule of operation for each of these vehicles.

12. Please estimate exhaust emissions from vehicle travel for VV2 Project operations, including commuter vehicles, on-site O&M vehicles, and delivery and waste disposal trucks. Please include these emissions in a revised operational ambient air quality modeling.

Background: HEAT TRANSFER FLUID LOSSES

The operational emissions presented in the AFC, Appendix G.4, do not account for fugitive emissions from heat transfer fluid ("HTF") system leaks or larger equipment leaks and breaches.[33] Experience at other solar facilities has shown that volatilization accounts for an annual loss of approximately 0.08% of the total circulating heat transfer fluid. Current total plant loss of heat transfer fluid at the Kramer Junction, CA, Solar Energy Generating Systems ("SEGS") III through VII facilities through volatilization, spills, and leaks is estimated at about 0.5% per year.[34] The VV2 Project's solar facility will contain 260,000 gallons of Therminol VP-1 in the HTF circulating system.[35] Thus, based on experience at other facilities, the VV2 Project would likely experience an annual loss of about 1,300 gallons of heat transfer fluid. The heat transfer fluid proposed for the VV2 Project, Therminol VP-1 is classified as a volatile organic compound and has a high vapor pressure.[36] Thus, it can be assumed that 100% of the annual loss of heat transfer fluid would be emitted as VOCs. These emissions would contribute to but are not accounted for in the VV2 Project's operational emissions inventory and are not mitigated by the VV2 Project's proposed VOC offsets.

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[33] AFC, p. 6.3-57, Table 6.3-27.

[34] Gilbert E. Cohen, KJC Operating Company, David W. Kearney, Kearney & Associates, and Gregory J. Kolb, Sandia National Laboratories, Solar Thermal Technology Department, Final Report on The Operation and Maintenance Improvement Program for Concentrating Solar Power Plants, SAND99-1290, June 1999; p. 30 and Appendix Z, Fugitive Emissions; http://www.p2pays.org/ref/17/16933/1693303.pdf.

[35] AFC, p. 6.7-12.

[36] http://www.therminol.com/pages/products/eu/vp-1.asp.

Data Requests

13. Please provide an estimate for annual operational VOC emissions from fugitive HTF system components and from larger equipment leaks and breaches and include these in the operational emissions inventory.

Background: SECONDARY PARTICULATE FORMATION

As cooling tower makeup water, the VV2 Project proposes to use reclaimed water supplied by the Victor Valley Wastewater Reclamation Authority ("VVWRA") which has ammonia concentrations ranging from 0.2 to 15.9 mg/L, with an average of 2.2 mg/L.[37,38] Ammonia would be emitted with the drift and stripped from the cooling water as a gas. Ammonia could form secondary ammonium nitrate particulates, which would contribute to the Project's PM10 and PM2.5 emissions. The AFC's estimate of PM10 emissions from the cooling tower did not include the potential formation of secondary particulates from ammonia emitted from the cooling tower.[39]

The Project also uses ammonia injection in the selective catalytic reduction ("SCR") system to reduce NOx emissions.[40] The excess residual ammonia downstream of the SCR system, *i.e.* the ammonia slip, would react with the SO_3 from the SCR catalyst as well as NO_2 and water vapor in the stack gases and downwind in the atmosphere to form secondary particulates in the form of ammonium sulfate, ammonium bisulfate, and ammonium nitrate. Depending on ambient temperature, relative humidity, turbine load, and the use of duct burners, the Project would emit between 6.4 and 14.4 lb/hr of residual ammonia, some of which would form secondary particulates downwind.[41]

Data Requests

14. Please provide a conservative estimate for secondary PM10 formation from cooling tower ammonia emissions due to drift and ammonia stripping from the circulating water.

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[37] AFC, p. 2-23.

[38] Victor Valley Wastewater Reclamation Authority, Annual Treatment Process and Discharge Monitoring Report 2005.

[39] AFC, Appendix G.4, Table G.4-9.

[40] AFC, p. 2-27.

[41] AFC, Appx. G.4, Table G.4-9.

15. Please provide a conservative estimate for secondary PM10 formation due to ammonia slip from the SCR system.

16. Please model atmospheric deposition of secondary PM10 to determine nitrogen deposition on the soils of the desert ecosystem in the Project's vicinity.

Background: LAER/BACT FOR COOLING

Because the VV2 Project has the potential to emit more than 25 tons per year of PM10, the use of lowest achievable emissions rate ("LAER")[42] is required for PM10 emissions. The AFC concluded that LAER for PM10 from evaporative cooling towers is the use of high-efficiency drift eliminators with a drift rate of 0.0005% on the wet cooling tower and that no other control technology has been identified that could reduce emissions of PM10 from an evaporative cooling tower beyond levels that can be achieved with state-of-the-art drift eliminators.[43] While it is correct that drift eliminators with a drift rate of 0.0005% currently represent the best control technology for cooling towers, the AFC should have analyzed LAER for cooling, not for the wet cooling tower. LAER for cooling is dry cooling, which would eliminate nearly all of the particulate matter emissions from the cooling process, rather than a cooling tower with drift eliminators.

The AFC concluded that the use of dry cooling, or air-cooled condensers ("ACC"), is not economically feasible for the VV2 Project.[44] However, for a LAER/BACT analysis, the use of an ACC cannot be eliminated based on cost alone. A LAER/BACT technology determination does not include an explicit economic feasibility component other than the technology must be in commercial use on a similar source type and thus "achieved in practice." The use of dry cooling within the definition of LAER/BACT, *i.e.* on commercially operating combined-cycle cogeneration power plants is well established, and thus "achieved in practice." Therefore, unless an ACC can be rejected in a top-down LAER/BACT analysis, based on site-specific collateral impacts, it must be used to establish LAER.

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[42] Because the MDAQMD's definition of Best Available Control Technology ("BACT") is similar to the definition of LAER under the Federal non-attainment NSR regulations, the AFC refers to BACT as required by MDAQMD rules as LAER throughout its discussion of control technology assessment to avoid confusion with the Federal requirement for the use of BACT (which is less stringent than LAER) for attainment pollutants under the PSD regulation. The use of these terms in these comments is consistent with the AFC's usage.

[43] AFC, p. 6.3-46.

[44] AFC, p. 6.3-43.

Examples of commercially operating combined-cycle projects using dry cooling include the 700-MW Salamanca II unit in northern Mexico which entered service in June 1998 and is very similar to the Project in terms of size, complexity, and operating environment (arid desert);[45] the 506-MW Samalayuca II 3-unit; the 495-MW Rio Bravo I facility; the 248-MW Saltillo facility; the 495-MW Bajio facility, the 259-Chihuahua III facility; the 423-MW Chihuahua II facility; all in Mexico. Two other facilities in Mexico using dry cooling, the 495-MW Rio Bravo III and the 500-MW Rio Bravo IV facilities are currently under construction. Examples of combined-cycle facilities using dry cooling in California include the 510-MW Otay Mesa Generating Project now under construction[46] and the 540-MW Sutter Power Project that has been in operation for six years.[47] Proposed projects in California include the 660 MW Colusa Generating Station, the 530 MW Gateway Generating Station (under construction and proposed to change to dry cooling), and the 630 MW El Segundo Power Redevelopment Project.[48]

Dry cooling is capable of handling the entire cooling load up to an ambient temperature of 85-90 F. Beyond that point, the air temperature becomes too high for effective cooling and results in decreased efficiency. The AFC estimates that the gross power output of the VV2 combined-cycle equipment would be between 6 to 7% lower with dry cooling than with wet cooling. This estimate is based on a report cited in the AFC that was not provided.[49] The CEC has consistently identified the average efficiency penalty for dry cooling as approximately 1.5% relative to wet cooling towers, including at hot desert sites like the Blythe Energy Project. Thus, the AFC's estimate of a 6 to 7% efficiency penalty appears to be too high. In addition, the dry cooling system can also be sized more conservatively, *i.e.* designed larger, if a primary project objective is to minimize the MW efficiency penalty.

To offset the energy penalty limitation of dry cooling systems, parallel dry/wet systems have been developed, with a wet-cooling component to augment dry-cooling on hot days. These hybrid systems have the advantage of achieving essentially the same hot-day performance as a wet cooling

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[45] Frank Thiel, A Landmark for Private Power in Mexico, Modern Power Systems, July 1998.

[46] California Energy Commission, Otay Mesa Power Plant Licensing Case; http://www.energy.ca.gov/sitingcases/otaymesa/index.html.

[47] California Energy Commission, Sutter Power Plant Project; http://www.energy.ca.gov/sitingcases/sutterpower/index.html.

[48] California Energy Commission, El Segundo Power Redevelopment Project Dry Cooling Amendment Proceeding; http://www.energy.ca.gov/sitingcases/elsegundo_amendment/index.html.

[49] AFC, p. 5-13.

system, with an evaporation loss of less than five percent on an annual basis when compared to a wet system. A further advantage is that the parallel system requires a much smaller water transport, treatment and cooling tower/condensing plant infrastructure. Review of 30-year average temperature data shows that maximum temperatures exceed 85 degrees from mid May through end of September. The other times, the Project could be operated with a dry cooling system without large energy penalties. Like ACC, this alternative results in lower emissions and, therefore, must be considered in a top-down LAER/BACT analysis.

Finally, the proposed 0.0005% drift for the drift eliminators on the wet cooling tower is not an enforceable emission limit. The drift rate, by itself, is not a measure of particulate emissions. Particulate matter is formed by dissolved solids in the circulating water. The drift emitted from the cooling towers evaporates, leaving the solids that become particulate matter. Thus, if the City would use a wet cooling tower, it must establish a mass emission rate calculated from the drift fraction, TDS, and circulating water flow rate as the permit limit for the wet cooling tower. (However, as discussed above, because a cooling tower with drift eliminators is not the least polluting technology, it should not be used as the basis for LAER.) Monitoring of dissolved solids in the cooling tower circulating water and an initial test and periodic tests of drift rates is required to guarantee that cooling tower performance does not exceed the established mass emission rate. The AFC does not require monitoring of the cooling tower, initial and periodic tests of drift rates, or inspections for the mechanical integrity of drift eliminators.[50]

Data Request

17. Please provide a revised top-down LAER/BACT for the Project's cooling demand including an analysis of dry cooling and dry/wet hybrid systems.

18. If the City would use a wet cooling tower, please include a mass emission rate for PM10 as a CoC and indicate how the City would guarantee that cooling tower performance would not exceed the established mass emission rate, e.g., by monitoring dissolved solids in the cooling tower circulating water or periodic inspection of the mechanical integrity of the drift eliminators.

19. Please provide a copy of the Bibb, September 2006, report "Comparison between Wet Cooling Tower Technology, Air Cooled Condenser

[50] AFC, p. 6.3-7.

Technology, and Hybrid Cooling Tower Technology at the Victorville 2 Hybrid Power Project."

20. Please discuss the discrepancy between the average efficiency penalty for dry cooling identified by the CEC and presented in the AFC.

Background: GREENHOUSE GAS EMISSIONS

The VV2 Project would emit greenhouse gases during operation of the power plant and from combustion exhaust emissions during construction. These additional greenhouse gases would contribute to global climate change, aggravating an existing widely acknowledged significant problem. The AFC does not quantify or attempt to mitigate the VV2 Project's greenhouse gas emissions or discuss the VV2 Project's contribution to global warming.

Rising concentrations of greenhouse gases in the atmosphere have already caused perceptible changes in global climate and will lead to further global climate change in the future. In California, the impact of climate change may be particularly significant in the areas of water resources, agriculture, and sensitive coastal and forest ecosystems. In turn, these impacts could have serious repercussions for the economy and public health of the State, and for California's agricultural and recreation industries. California contributes roughly 6% to the total global greenhouse gas emissions, and is the second largest emitter after Texas among U.S. states. Only nine nations worldwide have greater greenhouse gas emissions than California.[51] Electric power generation is responsible for about 20% of California's emissions of greenhouse gases.[52]

The largest source of greenhouse gas emissions from the VV2 Project are carbon dioxide ("CO_2") emissions from combustion sources, mainly the turbines. Other emissions include methane ("CH_4"), which is the major component of natural gas and is emitted from fugitive components handling these fuels, including pumps, compressors, valves, and connectors. The global warming potential ("GWP") of methane is 23 times greater than that of CO_2 over a 100-year period.[53] Methane also contributes to tropospheric ozone

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[51] The California Climate Change Center at UC Berkeley, Managing Greenhouse Gas Emissions in California, January 2006; http://calclimate.berkeley.edu/managing_GHGs_in_CA.html, accessed November 9, 2006.

[52] G. Bemis and J. Allen, California Energy Commission, Inventory of California Greenhouse Gas Emissions and Sinks: 1990 to 2002 Update, Prepared in Support of the 2005 Integrated Energy Policy Report, June 2005, CEC-600-2005-025, p. 7.

[53] Intergovernmental Panel on Climate Change, Climate Change 2001: Working Group I: The Scientific Basis, 6.12.2 Direct GWPs; http://www.grida.no/climate/ipcc_tar/wg1/248.htm.

formation. Emissions of NOx, VOC, and CO would also contribute to the formation of tropospheric ozone during both construction and operation of the VV2 Project. Tropospheric ozone also acts as a greenhouse gas.[54]

In addition, the VV2 Project may use sulfur hexafluoride ("SF_6") gas in switchgear and other electrical equipment.[55] Sulfur hexafluoride is one of the most potent greenhouse gases with a CO_2-equivalent global warming potential of 22,200 over a 100-year period and an atmospheric lifetime of 3,200 years. In the U.S, the electric industry is responsible for about 73% of total SF_6 emissions.[56]

Scientists overwhelmingly agree that in order to prevent the most devastating consequences of global climate change, greenhouse gas emissions worldwide must be significantly reduced. Many scientists agree that reductions must be on the order of 80% by mid-century. In response to this warning from the scientific community, the state of California committed to reduce its global warming emissions. In June 2005, Governor Schwarzenegger signed Executive Order S-3-05 committing California to reducing its global warming emissions. The California Global Warming Solutions Act of 2006 ("AB 32") calls for reduction of greenhouse gas emissions back to 2000 levels by 2010 (11% below business as usual), to 1990 levels by 2020 (25% below business as usual), and 80% below 1990 levels by 2050. The new law applies to power plants.

There are many ways that the VV2 Project could reduce its greenhouse gas emissions. For example, in two recent settlements utilities agreed to significant reductions in greenhouse gas emissions. In the first, Kansas City Power and Light ("KCP&L") agreed to offset 100% of the increase in CO_2 emissions from building a new 850-MW coal-fired power plant that otherwise would have increased CO_2 emissions by over 6 million tons per year. The agreement requires KCP&L to add 400 MW of wind energy to its service area; create 300 MW of energy efficiency; reduce CO_2 emissions from its other facilities by 20% by 2020; and finance community projects to reduce greenhouse gas emissions, among others.[57] In the second, the City of Springfield, Illinois, agreed to purchase 120 MW of wind capacity; establish a

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[54] Quantifying the greenhouse gas potency of ozone is difficult as it is not present in uniform concentrations across the globe. However, the most recent scientific review on climate change suggests that the radiative forcing of tropospheric ozone is about 25% that of carbon dioxide.

[55] AFC, p. 6.7-12.

[56] U.S. Environmental Protection Agency, SF_6 Emission Reduction Partnership for Electric Power Systems; http://www.epa.gov/electricpower-sf6/overview.html.

[57] Collaboration Agreement between Kansas City Power & Light Company, the Sierra Club, and the Concerned Citizens of Platte County, March 19, 2007.

green-pricing program; limit the load on existing coal-fired units; shutdown an existing coal-fired power plant; and pay a carbon tax dedicated to energy efficiency, conservation, and purchase of renewable energy, among others.[58]

Data Requests

21. Please describe any use of SF_6 in electrical equipment including circuit breakers, current-interruption equipment, gas-insulated transmission lines, gas-insulated transformers, and gas-insulated substations planned for the VV2 Project.

22. Please provide the quantity of SF6 that will be used in equipment and the quantity of the gas that will be stored on site.

23. Please estimate annual and life-time SF_6 emissions due to leakage, storage, and handling from the VV2 Project.

24. Please identify best management practices for storage, handling, recovery, and recycling of SF_6 and how these would be implemented at the VV2 Project.

25. Please specify the type of leak detection system that would be employed at the VV2 Project. Please indicate whether advanced leak detection systems would be installed, *e.g.*, laser imaging systems, or justify if not.

26. Please discuss maintenance of high-voltage equipment and leak detection and repair procedures that would be implemented at the VV2 Project.

27. Please discuss whether the VV2 Project would install SF_6 recycling equipment that would allow capturing and recycling SF_6 during equipment maintenance and retirement. If the answer is no, please provide a justification.

28. Please discuss whether the City would be willing to install state-of-the art equipment with the guaranteed lowest leak rates.

29. Please indicate whether the City would be willing to participate in the U.S. EPA's *SF_6 Emission Reduction Partnership for Electric Power Systems*.

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[58] Agreement between the City of Springfield, Illinois, a Municipal Corporation, and the Sierra Club, August 2006.

30. Please quantify annual emissions of greenhouse gases including CO_2, CH_4, N_2O and SF_6 for both the construction phase and operational phase of the VV2 Project.

31. Please indicate whether the City would be willing to implement measures to reduce the VV2 Project's greenhouse gas emissions. If not, please discuss why the City does not deem mitigation of greenhouse gas emissions necessary.

32. Please indicate whether the City would be willing to participate in the California Climate Action Registry. If yes, please identify the methodology for estimating greenhouse gas emissions, *e.g.*, methodologies developed by the Intergovernmental Panel on Climate Change ("IPCC"). If the answer is no, please explain why the City does not deem participation necessary.

PUBLIC HEALTH

Background: TOXICS EMISSIONS FROM SULFUR HEXAFLUORIDE

The greenhouse gas sulfur hexafluoride, which is used for insulation and current-interruption in electric transmission and distribution equipment, also forms highly toxic and corrosive compounds, including disulfur decafluoride ("S_2F_{10}"), sulfur tetrafluoride oxide ("SOF_2"), hydrogen fluoride ("HF"), and sulfur dioxide ("SO_2") when subjected to electrical discharges. Electrical discharges include, *e.g.*, partial corona discharges caused by insulation defects, spark discharges that occur at insulation defects or during switching operations, switching arcs that occur in load break switches and power circuit breakers, and failure arcs that occur due to insulation breakdown or switchgear interruption failure.[59]

[59] U.S. Environmental Protection Agency, J. Blackman and R. Kantamaneni, EPA's SF_6 Emissions Reduction Partnership For Electric Power Systems: Progress And Accomplishments, 1999-2001, 2003; http://www.epa.gov/electricpower-sf6/pdf/doble2003_cb7.pdf; and U.S. Environmental Protection Agency, Byproducts of Sulfur Hexafluoride (SF_6) Use in the Electric Power Industry, January 2002; http://www.epa.gov/electricpower-sf6/pdf/sf6_byproducts.pdf.

Data Requests

33. Please discuss and quantify potential emissions of toxic byproducts from SF_6 due to electrical discharges.

34. Please indicate how VV2 Project personnel would be trained to handle SF_6 and its hazardous byproducts.

Background: COOLING TOWER TOXICS EMISSIONS

The AFC calculated toxics emissions from the cooling tower based on the average concentration of pollutants in VVWRA effluent water and a maximum expected total dissolved solids ("TDS") content in the circulating water of 4,000 ppmw.[60] This method underestimates toxic air contaminant emissions from the cooling towers.

First, the maximum concentration of TDS in the recirculating water was assumed elsewhere in the AFC to be 5,000 ppmw, not 4,000 ppmw as assumed by the AFC's toxics calculations.[61] Second, the calculation only considers toxics that are contained in the VVWRA effluent used as makeup water but it does not include contributions from waste streams that would be routed to the cooling tower basin, *e.g.*, from, the HRSG steam cycle, the evaporative cooler blowdown, the reclaim and fire water tank, the plant drains, etc. or conditioning chemicals that would be added to the circulating water such as biocides, scale inhibitor, sodium bromide, and corrosion inhibitor; and, finally, it does not include entrained dust.[62]

Data Request

35. Please revise the cooling tower toxic emissions to account for the maximum TDS content of 5,000 ppmw in cooling tower circulating water and include emissions resulting from makeup water conditioning chemicals and waste streams routed to the cooling tower.

Background: CUMULATIVE TOXICS EMISSIONS

Under CEQA, the impacts of the VV2 Project must be considered together with those of other past, present, and reasonably foreseeable future projects

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[60] AFC, p. 6.11-6.

[61] AFC, p. 6.3-57 and Appx. G.4, Table G4-9.

[62] AFC, Figures 2-12a through 2-12c.

in the area that may produce related or cumulative impacts. The AFC's cumulative impact analysis only addresses present and reasonably foreseeable projects including the Southern California Logistics Airport ("SCLA") expansion, the SCLA Rail Service, and the VVWRA expansion project. The AFC's analysis fails to address and account for emissions past projects, *e.g.*, from the High Desert Power Plant ("HDPP"), which is located and operating approximately 3 miles south of the VV2 Project site.

The AFC determined a cancer risk of 0.73-in-one-million for the VV2 Project at the point of maximum impact ("PMI"), approximately 3 miles east of the project site.[63] The HDDP project also found a maximum cancer risk of 0.7-in-one-million.[64] Because of the proximity of the HDPP and the Southern California Logistics Airport ("SCLA") to the VV2 Project, it is conceivable that the combined emissions would exceed the significance threshold of 1-in-one-million.

Data Requests

36. Please discuss the cumulative impacts due to toxics emissions from the VV2 Project, the HDPP, and the SLCA. Please provide a quantitative health risk assessment for the combined emissions including cancer and non-cancer acute and chronic health impacts.

HAZARDOUS MATERIALS HANDLING

Background: ANNUAL QUANTITY OF HAZARDOUS MATERIALS USED ON SITE

The AFC provided the storage capacity for hazardous materials at the site but with the exception of aqueous ammonia does not provide information about the quantities of these materials used annually for the VV2 Project.[65]

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[63] AFC, p. 6.11-27.

[64] California Energy Commission, Commission Decision, Application for Certification for the High Desert Power Project, High Desert Power Project, LLC, Docket No 97-AFC-1, P800-00-003, May 2000, p. 120; http://www.energy.ca.gov/sitingcases/highdesert/documents/2000-05-03_HD_DECISION.PDF.

[65] AFC, p. 6.7-11.

Data Request

37. Please amend Table 6.7-3 to include the quantity of each hazardous chemical used at the VV2 Project per year and the annual number of deliveries for each hazardous chemical.

Background: AQUEOUS AMMONIA SOLUTION

In the hazardous materials handling narrative, the AFC indicated that the VV2 Project would use aqueous ammonia with less than 20% concentration by weight of ammonia. Table 6.7-3 indicates that 30,000 gallons of aqueous ammonia would be stored on site with an ammonia content of greater than 20%.[66]

Data Request

38. Please clarify the ammonia content of aqueous ammonia that would be used for the VV2 Project.

Background: HERBICIDE USE

The VV2 Project would use parabolic troughs as solar collectors containing flammable heat transfer fluid. The land below parabolic troughs, which would be graded at a 0.5 percent slope,[67] must be kept free of all vegetation in order to avoid grass or brush fires that would have the potential to destroy the solar plant. The City indicated that infiltration would be expected to be similar or higher than existing conditions.[68] At present, weed control at solar power plants using trough technology is accomplished with herbicides to control weed growth.[69] The AFC did not discuss the use of herbicides or other weed growth control method to prevent of grass or brush fires.

Data Requests

39. Please provide information which type(s) of herbicide(s) would be used, provide an MSDS for each herbicide and formulation ingredient that would be used, and discuss the toxicity of each.

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[66] AFC, p. 6.7-11.

[67] Response to CEC Staff Data Request No. 83, p. SW-27.

[68] Ibid.

[69] Leitner A., RDI Consulting, Fuel from the Sky, Solar Power's Potential for Western Energy Supply, NREL/SR-550-32160, July 2002.

40. Please provide information regarding the estimated frequency of herbicide application at the solar field, the annual quantity of herbicide(s) used, the active ingredient content in the formulation(s), the type of application, and the amount active ingredient of applied per application.

41. Please discuss herbicide container storage and disposal.

42. Please indicate whether professional pesticide applicators or Project personnel would apply the herbicide(s). If the latter, please indicate how personnel would be trained in pesticide application. If not, please discuss any pesticide application training Project personnel would receive.

43. Please discuss applicator exposure to the selected herbicides and how worker protection standards would be implemented.

44. Please discuss best management practices for herbicide applications to ensure protection of groundwater and indicate how this would be implemented at the Project.

Background: ACCIDENTAL RELEASES OF HAZARDOUS MATERIALS

The AFC calculated the probability of off-site accidents for the VV2 Project's ammonia deliveries (but not other hazardous materials) based on a "frequency for serious hazardous material incidents involving large trucks [of] approximately 0.0022 per million vehicle miles traveled." According to the AFC, this incident frequency factor of 0.0022 per million vehicle miles traveled ("VMT") is based on a report by the Department of Transportation ("DoT"), National Traffic Safety Administration, entitled *Traffic Safety Facts 2002: A Compilation A Compilation of Motor Vehicle Crash Data from the Fatality Analysis Reporting System and the General Estimates System.*[70] This factor is not provided in the cited document and we were unable to reproduce it from the information contained in the document.

45. Please provide your definition of "serious hazardous materials incidents."

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[70] AFC, p. 6.7-17

46. Please demonstrate how the frequency factor of 0.0022 incidents per million vehicle miles traveled for serious hazardous materials incidents was derived. Please provide all calculations and cite to the appropriate tables or text for any values from the cited DoT document. Please demonstrate that this frequency factor is applicable to estimating catastrophic tanker truck failure.

47. Please estimate the probability for accidents and catastrophic failure for all hazardous materials transports including but not limited to ammonia, sulfuric acid, sodium hydroxide, and sodium hypochlorite.

48. Please identify all hazardous materials transportation routes to the VV2 Project including a description of the types and names of roads traveled, *e.g.*, interstate, highway, local paved or unpaved road, etc. Please identify any sensitive receptors along these transportation routes.

49. Please model the potential airborne ammonia concentrations associated with an accidental catastrophic release of ammonia during delivery (*e.g.*, with the U.S. EPA computer model RMP*COMP). Please determine out to which distance from the accident airborne ammonia concentrations would exceed the significance criterion and determine how many people would potentially be affected along the transportation routes.

50. Please indicate whether the VV2 Project would require that hazardous materials transports would be conducted outside rush hours.

Background: HEAT TRANSFER FLUID LEAKS

Leaks and spills of heat transfer fluid appear to be a common occurrence at solar generating facilities.[71] Some common equipment failures include flange leaks due to poor piping flexibility, poor gasket compression, poor flange alignment, or overpressure; pump seal leakage due to solid contaminants in system, dry-startup, fluid oxidation at seal, and high vibration at operating temperature; valve system leaks due to defective packaging; heat exchanger tube leaks due to weakened connection of tube to tube sheet; and expansion tank corrosion due to high moisture content or high acidity of the heat transfer fluid.[72]

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[71] Governor's Office of Emergency Services, Hazardous Materials Spill Report; http://www.oes.ca.gov/operational/malhaz.nsf/.

[72] Conrad E. Gamble, Solutia Inc., Keep Heat-transfer-System Repairs Uneventful; http://www.chemicalprocessing.com/articles/2005/532.html?page=1, accessed June 18, 2007.

For example, the SEGS I and II solar generating facilities near Daggett, CA, repeatedly report heat transfer fluid spills. On June 2, 1994, a flex hose failure caused release of approximately 150 gallons of heat transfer fluid onto the ground; on June 19, 1994, a heat collection element weld flange failed at SEGS I causing a leak in the system and a spill of approximately 900 gallons of heat transfer fluid onto the ground; on June 26, 1994, another flex hose failure resulted in release of about 80 gallons of Therminol; on February 10, 1995, a gasket failure resulted in the release of 100 gallons of heat transfer oil; on March 3, 1995, a drain was left open due to human error resulting in release of approximately 100 gallons of Therminol onto the soil; on March 14, 1995, a set of isolation valves opened allowing 100 gallons of heat transfer fluid to spill onto the ground; on March 24, 1995, a heat collection pipe element weld failure resulted in release of 15 gallons of heat transfer fluid; on April 18, 1995, the failure of a relief valve resulted in a spill of 30 gallons of heat transfer fluid; on October 16, 1995, a drain valve failed, allowing the heat exchanger to release 75 gallons of heat transfer fluid directly onto bare soil; on March 9, 1996, a flex hose failure resulted in release of 50 to 75 gallons of heat transfer fluid; the next day, another 70 gallons of Therminol were released due to equipment failure; on December 12, 1997, a flange failure caused the release of 50 gallons of Therminol; and on December 18, 1999, an improper valve lineup resulted in a tank overflow of 300 gallons of Therminol onto the soil.[73]

The solar generating facilities SEGS III through VII at Kramer Junction, CA, also frequently report spills. For example, on January 18, 1995, a break in the fluid containment system within the solar field of SEGS V resulted in a spill of unknown quantity; on March 4, 1997, an isolated system leaked through a flange due to pressure resulted in a leak of 300 gallons of Therminol of which 50 gallons contaminated about 10 cubic yards of soil; on March 3, 2002, failure of a flexible connection hose resulted in the release of 150 gallons of Therminol; on December 26, 2002, a large amount of heat transfer fluid was spilled due to a broken valve; and on May 2, 2004, equipment failure resulted in release of 140 gallons of Therminol.[74]

At the Hinkley, CA, solar generating station, reports of heat transfer fluid leaks are also frequent. On April 3, 2002, 70 gallons of Therminol were released when a vent valve was left open during valving of a solar field loop.[75]

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[73] Governor's Office of Emergency Services, Hazardous Materials Spill Report; http://www.oes.ca.gov/operational/malhaz.nsf/.

[74] *Ibid.*

[75] *Ibid.*

The AFC stated that the fluid level in the heat transfer system would be continuously and automatically monitored and that a leak in the system would be detected immediately and promptly repaired to minimize the volume of the leak.[76] The AFC did not provide a discussion of the continuous automated monitoring system. Further, the AFC stated that no additional storage for heat transfer fluid would be on site.[77] Yet, losses of heat transfer fluid in the HTF circulating system would have to be periodically replenished. The AFC does not discuss how this would be accomplished.

Data Requests

51. Please provide a detailed description of the automated continuous monitoring device for the VV2 Project's heat transfer system.

52. Please discuss the potential for leaks and spills of heat transfer fluid at the VV2 Project.

53. Please discuss the procedures for cleanup in the event of a spill.

54. Please confirm that no additional heat transfer fluid storage is planned on site other than the fluid circulating in the HTF system.

55. Please discuss the logistics, quantities, and schedule for replenishing/replacing heat transfer fluid in the HTF circulating system.

Background: HEAT TRANSFER FLUID FIRE RISK

Therminol VP, the heat transfer fluid used in the solar component of the Project, is a Class III-B combustible liquid.[78] The AFC did not discuss potential risks of fire due to the flammability of the heat transfer fluid. Fires in parabolic trough solar generating facilities are serious threats, which have occurred in the past. For example, in 1999, a storage tank containing 900,000 gallons of Therminol exploded at the SEGS II solar power plant in Daggett, CA.[79] In another incident on August 21, 1995, a heat transfer pump oil transfer that allowed the release of fluid caught fire at the Daggett

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[76] AFC, p. 6.7-18.

[77] AFC, p. 6.7-12.

[78] AFC, Table 6.7-3, p. 6.7-12.

[79] CBS News, Blast: Big Flames, No Injuries, February 27, 1999; http://www.cbsnews.com/stories/1999/02/27/national/main36899.shtml?source=search_story

facility.[80] On August 2, 1994, one of the heat transfer fluid pipes at the SEGS VI facility at Kramer Junction, CA, ruptured and the spilled heat transfer fluid caught fire.[81]

Data Request

56. Please provide a discussion of potential fire and explosion risks due to the flammability of Therminol VP.

57. Please provide a risk minimization plan.

NOISE

Background: PILE DRIVING

The preliminary geotechnical report for the Project indicated that the use of cast-in-drilled hole piles or driven piles may be required to support the Project's structures.[82]

Data Requests

58. Please discuss whether support piles would be necessary for the VV2 Project. If the answer is yes, please identify what type of piles, cast-in-hole piles or driven piles, would be used for the VV2 Project.

59. If support piles are necessary for the VV2 Project, please identify the type of pile driver that will be used to construct the supporting piles. Please identify the construction month during which pile drivers will be used. Please identify the number of hours per day pile driving would be conducted. Please identify the daily schedule for pile driving.

60. Please provide a discussion of potential noise impacts from pile driving on wildlife.

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[80] Governor's Office of Emergency Services, Hazardous Materials Spill Report; http://www.oes.ca.gov/operational/malhaz.nsf/.

[81] Ibid.

[82] AFC, Appx. C, p. 18.

Background: SOLAR MIRROR CLEANING

Solar field performance is directly dependent on mirror reflectivity level. Many factors affect soiling rates of reflectors including the time of year, frequency of rainfall, proximity of mirrors to roads and other sources of airborne particulates, proximity of power plant equipment, and frequency of washing. Mirror soiling rates near the cooling tower are particularly high because of cooling tower drift.[83] Because parabolic trough reflectors must have high specular reflectivity for proper concentration, dirt accumulation is a significant concern with solar collectors.

The AFC stated that the VV2 Project's solar mirrors would be sprayed with deionized water on a periodic basis to facilitate dust and contaminant removal. According to the AFC, this operation would generally be carried out at night and would involve a water truck spraying deionized water onto the mirrors in a drive-by fashion. The AFC did not specify what type of cleaning method would be employed beyond stating that "[d]evelopment of an efficient and cost-effective program for monitoring mirror reflectivity and washing mirrors is critical. ... O&M procedures at the SEGS plants are well established and thus available for use on VV2."[84]

At the SEGS plants, three different cleaning methods are currently employed; high-volume "deluge" cleaning, high-pressure cleaning, and spraying mirrors using a specialized vehicle, the so-called "Mr. Twister." Deluge cleaning is fast and requires less manpower than the other two mirror cleaning methods but uses considerably more water and is not as effective in increasing reflectivity. Therefore, it is typically used in combination with the other cleaning methods. At the workshop on June 8, 2008, the City showed a film showing a high-volume cleaning method, which uses a large-capacity water truck with fixed nozzles on each side of the truck to spray the rows of mirrors simultaneously with a "deluge-type" stream of water. To achieve

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[83] Gilbert E. Cohen, KJC Operating Company, David W. Kearney, Kearney & Associates, and Gregory J. Kolb, Sandia National Laboratories, Solar Thermal Technology Department, Final Report on The Operation and Maintenance Improvement Program for Concentrating Solar Power Plants, SAND99-1290, June 1999; Appendix E, Mirror Cleanliness; http://www.p2pays.org/ref/17/16933/1693303.pdf.

[84] AFC, p. 2-14.

maximum cost-effectiveness, the current O&M procedures for the SEGS plants alternate "Mr. Twister" cleaning with deluge cleaning.

Total water demand for solar mirror washing is projected at 46 acre-feet per year.[85] The AFC expects that rinsate from the washing operation would evaporate on the mirror surface with no appreciable runoff. This assumption contradicts the purpose of cleaning the solar mirrors. If water was mostly evaporating on the mirror surface without runoff, the accumulated dust would not be rinsed off the mirrors.

Over the years, degradation of the reflectivity occurs on the lower edge of solar mirrors. Consequently, more rigorous cleaning than rinsing is required every two to three years. At the SEGS plants, this cleaning consists of hand cleaning with demineralized water and a hard brush. The SEGS plant at Kramer Junction has experimented with using a 3% hydrofluoric acid wash to clean heavily soiled mirrors near the cooling towers.[86]

Data Requests

61. Please document how the AFC's estimated water demand of 46 acre-feet for solar mirror washing was derived.

62. Please provide a maintenance schedule for rinsing including expected frequency of rinsing of the solar mirrors.

63. Please demonstrate that no appreciable runoff would occur from the solar mirrors when cleaning the mirrors.

64. Please discuss the effects of routine watering on the desert soil below the solar troughs.

65. Please discuss whether the City expects to use hydrofluoric acid to clean heavily soiled mirror surfaces. If the answer is no, please indicate whether the City would be willing to accept this as a CoC.

66. Please discuss whether the location of the cooling tower relative to the solar field was optimized for the least impact on reflector soiling from cooling tower drift.

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[85] AFC, p. 2-24.

[86] Gilbert E. Cohen, KJC Operating Company, David W. Kearney, Kearney & Associates, and Gregory J. Kolb, Sandia National Laboratories, Solar Thermal Technology Department, Final Report on The Operation and Maintenance Improvement Program for Concentrating Solar Power Plants, SAND99-1290, June 1999; Appendix E, Mirror Cleanliness; http://www.p2pays.org/ref/17/16933/1693303.pdf.

MITIGATION

Background: NO DUCT BURNER

The AFC discussed a number of power generation technology options but failed to discuss mitigating the Project's impacts by omitting the duct burners.[87] The elimination of duct burners would decrease Project operational emissions.

67. Please estimate the change in impacts if duct burners were eliminated.

BIOLOGICAL RESOURCES

Background: LEGALLY PROTECTED SPECIES

The Project will affect numerous legally protected plant and wildlife species at the Project site and within its vicinity. Specifically, the AFC indicated that the Project will impact 116 plant species, 131 vertebrates which encompasses 14 reptile species, 104 bird species and 13 mammal species; with another 39 'special status' species impacted within the Project's vicinity.[88] A number of these species are listed as endangered or threatened by either the U.S. Fish and Wildlife Service or the California Department of Fish and Game or both. Other species may not be listed but are still managed pursuant to other state and/or federal legal mandates. However, the AFC and its appendices failed to indicate the specific legal status of species affected by the Project. Instead, the AFC lumped all species together, vaguely referring to protected species as "sensitive" or "special status."[89]

Data Requests

68. Please provide a list of all legally protected species and their specific legal status pursuant to state and/or federal law, e.g. federal

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[87] AFC, pp. 5-20—5-24.

[88] AFC at 6.4-17.

[89] E.g. see AFC at 6.4-22;

Endangered Species Act, California Endangered Species Act, Migratory Bird Treaty Act, etc.[90]

69. Please provide any and all documentation between the applicant and agencies regarding compliance requirements for the protection of plants and wildlife.

Background: The PROJECT'S VARIOUS COMPONENTS

The AFC failed to enumerate the specific species occurring at or impacted by the Project's various components.[91] For example, for the construction laydown areas, the AFC stated: "Special status and common wildlife species are consistent with, but not limited to, species mentioned above in Section 6.4.2.2."[92] The AFC contained the same ambiguity in the transmission line segment descriptions. Given that the transmission line is proposed to be 21 miles long, it is particularly important that the City disclose the specific plant and wildlife communities impacted by that part of the project. For all aspects of the Project, the City must be clear as to the specific species that occur at or within the vicinity of these project areas. The City must also describe the legal status of each species and the pertinent management requirements to which the applicant must adhere.

Data Requests

70. For each project component (i.e., power plant site, construction laydown area or particular transmission line segment), please list all of the species that occur at or within the vicinity of the particular project component, and describe each species' legal status, if any.

71. For each project component, please describe the direct and indirect impacts associated with each species listed above.

Background: Federal Endangered Species Act Compliance

The Project must comply with the federal Endangered Species Act. According to the AFC, federal ESA compliance will be achieved through formal consultation pursuant to section 7 of the Act.[93] Section 7 consultation occurs between federal agencies only, covering a specific, discretionary federal action

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[90] For an example of an AFC that described the specific legal status of each affected species, see South Bay Replacement Combined Cycle - L.S. Power, 04-AFC-3, section 8.2.

[91] See AFC at 6.4-11-13.

[92] AFC at 6.4-12.

[93] AFC at 6.4-30.

that may affect a listed species (a federal nexus).[94] The AFC states that EPA will initiate section 7 consultation with FWS. However, the AFC also indicates that the Army Corps of Engineers may initiate section 7 consultation.[95]

72. Please clarify which federal action agency or agencies would initiate section 7 consultation with the FWS for the Project.

73. Please describe the specific federal action(s) associated with the Project that would trigger section 7 consultation.

74. Please provide any correspondence or other documentation among the City, federal action agencies and state and federal wildlife agencies regarding section 7 consultation for the Project.

75. Please explain whether section 7 consultation as described in the AFC would cover all components of the Project.

Background: METHODS FOR BIOLOGICAL RESOURCES AND HABITAT ASSESSMENT

The AFC described the methods used to conduct the biological resources and habitat assessment. However, in some instances this information appears to be conflicting, or the AFC failed to adequately describe the methodology associated with the work. Additional information on methodology is needed to better judge the accuracy and thoroughness of the assessment, as well as the potential impacts that may occur.

Data Requests

76. For all field survey dates listed in the AFC, please specify the type of survey conducted (*e.g.*, general biological assessment only, general biological assessment concurrent with desert tortoise survey) and the actual portion of the study area that was covered.

77. Please specify which other biological reports were used to augment the field surveys and specify the "other" biologists that were consulted.[96]

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[94] Section 7 requires that federal agencies consult with the Fish and Wildlife Services if they are proposing an "action" that may affect listed species or their designated habitat. 16 U.S.C. § 1536. Action is defined broadly to include funding, permitting and other regulatory actions. 50 CFR § 402.02 . For local governments, any project that requires a federal permit or receives federal funding is subject to Section 7.

[95] AFC, at 6.4-9.

[96] *See* AFC, pp. 6.4-13 and 6.4-14.

Background: VEGETATION COMMUNITY CLASSIFICATION

Scale is an important consideration when classifying plant communities. This is especially true when classifying potential habitat for wildlife species with small home ranges (e.g., Mohave ground squirrel (*Spermophilus mohavensis*)), or when rare plant communities may be present. The AFC failed to provide any information on the scale at which vegetation was classified, and the rationale for selecting that scale. Without this information, it is impossible to assess whether particular vegetation community "patches" were missed, or clumped with other vegetation communities. These omissions, in turn, make it impossible to assess the accuracy in which plant community classification documented sensitive or important vegetation resources on the Project site.

Data Request

78. Please discuss the accuracy of the surveys the City conducted to estimate the number of special-status species on the Project site.

79. Please detail any alterations to proposed mitigation that could be necessary if surveys resulted in lower estimates of abundance than the site's actual abundance.

Background: VEGETATION COMMUNITY CHARACTERISTICS

Vegetation features are often associated with habitat. However, determining vegetation's function in providing habitat involves much more than determining vegetation type. Some important habitat features associated with vegetation include vertical and horizontal structure, spatial and temporal variability, density, and relative abundance of individual plant species.[97]

The AFC adequately described the features that are typically associated with each vegetation community that occurs at the Project site. However, the AFC provided very little information on the actual community characteristics within the Project area. The AFC should have included a description of elements that may be important to special-status species known to occur in the region. Important features generally include dominant plant species, seral stage, height, cover, plant distribution, and intra-community variance.

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[97] M.L. Morrison, B.G. Marcot, and R.W. Mannan, Wildlife-Habitat Relationships: Concepts and Applications, 3rd Edition, Island Press, Washington, DC, 2006.

In addition, although the AFC provided a list of plant species detected within the Project site, it did not provide any means of linking these species with the various plant communities, and it provided no information on the abundance of the various plant species detected. Additional characterization of plant communities within the study area must assess the ecological integrity and value of each plant community, and the effect the Project will have on plant and animal resources.

Data Requests

80. Please provide a plant species list that indicates:
    a. The vegetation community (or communities) in which each plant was detected;
    b. The relative abundance of each plant species detected; and,
    c. Whether the plant's occurrence was localized or widespread. If relative abundance data is unavailable, please estimate using a qualitative scale.

81. Please specify the extent (*i.e.*, distribution and relative abundance) to which exotic species have colonized the Project site (omit areas classified as disturbed/developed).

82. Please specify the degree to which vegetation communities within the Project site have been degraded (omit areas classified as disturbed/developed).

Background: WILDLIFE COMMUNITY CHARACTERISTICS

The AFC provided a list of the vertebrate species observed on or adjacent to the Project site.[98] The only information provided in the list is the name of the species detected. The absence of additional information precludes analysis of potential impacts, and prevents accurate characterization of wildlife communities on the site. For some species, the "special-status" designation only applies to a certain part of the species' life history (*e.g.*, at the nest site). For example, the great egret (*Ardea alba*) is provided special protection at breeding sites, but not at locations used during other times of the year.[99] As a

[98] AFC, Appx. 5 to Appx. H.

[99] California Department of Fish and Game, Biogeographic Data Branch, Special Animals, State of California, Dept. of Fish and Game, 2006; http://www.dfg.ca.gov/bdb/html/animals.html.

result, the time of year each species was detected may have implications on potential impacts.

Many bird species are migratory. Because the AFC does not specify when each species was detected, analysis of the importance of the site to wildlife species during different times of the year is impossible. Relative abundance data is also important for analysis of potential impacts. For example, the AFC lists several duck species that were detected on or adjacent to the site (presumably within the Mojave River corridor).[100] The presence of thousands of ducks may indicate the proposed site is adjacent to an important migratory stopover point, whereas the presence of only a few ducks may indicate only occasional use. Additional characterization of the wildlife community within and adjacent to the Project site is needed to better assess the site's ecological value, and the potential effects the Project will have on wildlife resources.

Data Requests

83. For each vertebrate species listed in AFC Appendix 5, please list:

    a. Whether the species was detected onsite or offsite (or both);

    b. the vegetation community (or communities) in which the species was detected;

    c. the relative abundance of the species detected; and

    d. whether the species' occurrence was localized or widespread. If relative abundance data is unavailable, please estimate using a qualitative scale.

84. For each special-status vertebrate species listed in the AFC, please indicate whether special-status designation applies year-round or only to a certain part of the species' life history.

Background: DETERMINATION OF HABITAT SUITABILITY

The AFC evaluated the Project site's capacity to provide "suitable habitat" for the various special-status species known to occur in the region. For example, the AFC stated that the Project site provides potentially suitable habitat for the Mohave ground squirrel (*Spermophilus mohavensis*) and marginally

[100] AFC, Appx. 5 to Appx. H.

suitable habitat for several special-status plant species.[101] Although the AFC provided life history accounts for the various special-status species, it did not provide information on the methods used to determine habitat suitability. Information on methods used to determine habitat suitability is particularly important in evaluating the AFC's conclusions that the Project would not have an adverse effect on a given species.

Data Request

85. In order to help determine habitat suitability at the Project site, please provide specific information on how the City determined habitat suitability for each of the special-status species addressed in the AFC. If the City relied on published literature, please provide appropriate references. If habitat suitability indices were calculated, please provide them. If habitat suitability indices were not calculated, please discuss the rationale.

Background: RESULTS OF FOCUSED SURVEYS

The AFC's impact analyses and proposed mitigation measures appeared to place undue weight on the results of focused surveys conducted for the desert tortoise (*Gopherus agassizii*) and burrowing owl (*Athene cunicularia*) and other general surveys that documented the presence of other special-status species surveys. According to the AFC, these surveys involved transects that generally covered 100 percent of all areas of the Project site involving proposed ground disturbance.[102] Surveys conducted for the biological resource assessment qualify as sampling, not a census in which all target species are inventoried. Research indicates that when compared to more detailed methods, transect counts usually provide poor estimates of density.[103] In conducting impact analysis and proposing mitigation measures, the City must consider the strong possibility that many more special-status species are present within the Project area than recorded during surveys.

Data Request

86. Please detail the methodology of surveys the City conducted for the project, and detail any alterations to proposed mitigation that could be

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[101] AFC, pp. 6.4-10 – 6.4-11.

[102] AFC, Appx. H, p 25.

[103] D.G. Dawson, The Usefulness of Absolute ("Census") and Relative ("Sampling" or "Index") Measures of Abundance, Studies in Avian Biology, 1981, No. 6, pp. 554-558.

necessary if surveys resulted in lower estimates of abundance than the site's actual abundance.

Background: DIRECT IMPACTS TO REGULATED PLANT SPECIES

The proposed project would result in impacts to Joshua trees (*Yucca brevifolia*) and at least three species of native cacti (*Opuntia* spp.).[104] Joshua trees are protected by ordinances issued by the Cities of Victorville and Hesperia. Both Joshua trees and native cacti are protected by the Native Plant Protection Act.[105] In addition to Joshua trees and native cacti (which are known to occur in the Project area), several other special-status plant species have the potential to occur in areas that would be affected by the project. The City has indicated that impacts to special-status plant species would be mitigated through avoidance, focused surveys conducted before construction, and transplanting plants to areas outside the Project site.[106] The AFC omitted scientific information to support these mitigation measures. As a result, impacts to special-status plants may remain unmitigated.

Data Requests

87. Please specify the number of Joshua trees and native cacti that the City expects would be directly impacted in the Project area.

88. Please specify the botanical survey methods the City would use to ensure thorough coverage of impact areas.

89. Please discuss any additional oversight and/or protective measures (*e.g.*, watering) the City would take to ensure that transplanted special-status plant species survive transplant and thrive over time.

90. Please specify if a monitoring plan would be implemented to track survivorship of transplanted plants. If monitoring would occur, please specify the duration.

91. Please list any studies that have documented the successfulness of transplanting the special-status plant species that would (or may) be impacted by the Project.

92. Please specify any additional mitigation that would be enacted if transplanted plants would die.

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[104] AFC, pp. 101–102.

[105] Fish & Game Code sections 1900 *et seq.*

[106] AFC, Appendix H: p 110-111.

Background: INDIRECT IMPACTS TO RIPARIAN HABITAT

According to the AFC, the Project may lower the water table in the Mojave River.[107] Adequate groundwater is necessary to maintain native riparian vegetation.[108] Riparian vegetation is a habitat requisite to many special-status wildlife species, including species protected under the federal and state Endangered Species Acts ("ESA" and "CESA") (*e.g.*, the southwestern willow flycatcher and least Bell's vireo). The AFC did not adequately address the impact the Project would have on the water table, and the resulting impacts a lower water table will have on special-status species associated with riparian vegetation.

Data Requests

93. Please clarify the extent to which the Project is expected to lower the water table of the Mojave River.

94. Please provide any studies that were conducted to assess the potential effect of the Project on the water table of the Mojave River.

Background: INDIRECT IMPACTS TO CRITICAL HABITAT FOR THE DESERT TORTOISE AND SOUTHWESTERN WILLOW FLYCATCHER

Under the ESA, a project's effects analysis should include consideration of exposure of critical habitat to project emissions (including noise, dust, smoke, and chemicals among other emissions). The Project site is three miles from designated critical habitat for the desert tortoise,[109] and portions of transmission line segments 1 and 2 are 150 feet from critical habitat for the southwestern willow flycatcher.[110] The AFC indicated that the Project may indirectly impact biological resources offsite in a variety of ways.[111] The AFC did not specifically address the potential for the Project to affect critical

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[107] AFC, Appx. H, p. 105.

[108] G.C. Lines GC, Riparian Vegetation along the Mojave River, Presentation Abstracts: Mojave Desert Science Symposium Las Vegas, February 25–27, 1999, U.S. Geological Survey, Western Ecological Research Center, Sacramento, CA; http://www.werc.usgs.gov/mojave-symposium/abstracts.html.

[109] AFC, Appx. H, p. 75.

[110] Draft Biological Assessment, p. 5-2.

[111] AFC, Appx. H, p. 105.

habitat, including the potential severity of any impacts, monitoring that will be conducted, and mitigation that would be required.

Data Requests

95. Please indicate whether critical habitat for either the desert tortoise or the southwestern willow flycatcher would be exposed to Project emissions. If so, please discuss the ambient concentrations for each pollutant at the respective critical habitat boundaries and any measures that would be taken to mitigate such impacts to critical habitat.

96. Please specify any potential indirect impacts the Project would have on critical habitat. Discuss the potential severity of these impacts, any monitoring that would be conducted, and mitigation measures designed to minimize such impacts.

Background: HABITAT RESTORATION FOR TEMPORARILY DISTURBED AREAS

Without revegetation and restoration, temporarily disturbed areas within the Project site (*e.g.*, laydown areas) would be left heavily disturbed, vulnerable to invasion by exotic plant species, and generally unsuitable for native species use.[112] The City has proposed habitat restoration as mitigation for temporarily disturbed areas. According to the AFC, techniques used for these efforts may include: 1) vertical mulching; 2) raking tracks; 3) imprinting; 4) transplantation of salvaged Joshua trees and cacti; and, 5) hand broadcasting of native seed from locally-collected seed stock. The AFC described these methods but provided very little information on measures that would be implemented to ensure restoration efforts are successful in establishing native plants. A watering plan in particular may be required to ensure native plants are reestablished.

Data Request

97. Please specify any additional measures the City would take to ensure the establishment of native plant species in the restoration of temporarily disturbed areas.

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[112] AFC, p. 109.

Background: NOXIOUS WEED PREVENTION PRACTICES

Site disturbance often encourages proliferation of exotic plant species. A shift in the vegetation community from native to exotic will have adverse effects on habitat for native wildlife, including the desert tortoise.[113] The spread of invasive and noxious weeds is a significant issue for construction projects. Earth moving activities can contribute to the spread of weeds, as does the use of contaminated construction fill, seed, or erosion-control products.[114] Although the AFC indicated that one purpose of the revegetation plan would be to prevent the colonization of exotic species, it did not specify any other actions the City would take to prevent the Project from contributing to the colonization of noxious weeds. If the Project enables the spread of noxious weeds onto adjacent undisturbed lands, it may negatively impact the remnant desert tortoise population (among other species).

Data Request

98. Please indicate whether the City would implement a noxious weed prevention program. If so, please provide a copy of the program or cite the established protocol the City would use.

Background: IMPACTS TO THE DESERT TORTOISE

The desert tortoise is listed as threatened under both the state and federal Endangered Species Acts. The Project would result in direct, indirect, and cumulative impacts to the desert tortoise and its habitat.[115] Potential impacts include:

- loss of 408 acres of desert tortoise habitat;[116]
- incidental destruction of habitat in the buffer area around the footprint;
- fragmentation of remaining habitat;
- damage to soil and cryptogams on the periphery of the Project site;

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[113] U.S. Fish and Wildlife Service, Region 1-Lead Region, Portland, OR, The Desert Tortoise (Mojave Population) Recovery Plan, 1994, 73 pp. and Appendices.

[114] S. Siegel, S. Donaldson, Measures to Prevent the Spread of Noxious and Invasive Weeds During Construction Activities, University of Nevada, Reno, NV, 2003; http://www.weedcenter.org/prevention/nv_prev_fact_sheet1.pdf.

[115] AFC, Appx. H, pp. 102, 106, 108.

[116] BA, p. 5-32.

- incidental death of unseen tortoises along roads, beneath crushed vegetation, or in undetected burrows;
- destruction of burrows;
- entrapment of tortoises in pits or trenches dug for linear facilities;
- attraction of ravens and facilitation of their survival by augmenting food or water;
- fugitive dust;
- disruption in tortoise communication and damage to the auditory system through noise and vibrations;
- introduction of disease to healthy tortoises; and,
- alteration of hierarchical social interactions among tortoises.[117]

Utility projects in particular are known to be extremely harmful to desert tortoises. Of 234 Biological Opinions issued by the U.S. Fish and Wildlife Service, 80% (47/59) of the tortoises reportedly killed in California and Nevada were associated with utility corridors.[118] In addition to the habitat destruction or alteration that occurs, trenches opened for laying or maintaining pipes may serve as traps for tortoises and other animals.[119]

The City's proposed measures to mitigate impacts to the desert tortoise include translocating resident tortoises to an offsite location, purchase of offsite compensation land, and revegetation of temporarily disturbed desert tortoise habitat.[120] Wildlife translocation has the potential to affect both the individuals released and the ecological community into which the species is introduced.[121] Potential problems with desert tortoise translocation efforts include increased risk of mortality, spread of disease, and reduced reproductive success.[122] Desert tortoises have complex social behaviors and

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[117] W.I. Boarman, Threats to Desert Tortoise Populations: A Critical Review of the Literature, U.S. Geological Survey, Western Ecological Research Center, Sacramento, CA, 2002, 86 pp.

[118] Ibid.

[119] T.E. Olson, K. Jones, D. McCullough, and M. Tuegel, Effectiveness of Mitigation for Reducing Impacts to Desert Tortoise along an Interstate Pipeline Route, Proceedings of the 1992 Desert Tortoise Council Symposium, 1993, pp. 209–219.

[120] AFC, Appx. H, p. 112.

[121] L.S. Mills, J.M. Scott, K.M. Strickler, and S.A. Temple, Ecology and Management of Small Populations, in: T.A. Bookhout, Ed, Research and Management Techniques for Wildlife and Habitats, fifth ed., rev., The Wildlife Society, Bethesda, MD.

[122] W.I. Boarman, Threats to Desert Tortoise Populations: A Critical Review of the Literature, U.S. Geological Survey, Western Ecological Research Center, Sacramento, CA, 2002, 86 pp.

intimate familiarity with their home ranges, which are large.[123] Several studies have shown that translocated tortoises frequently leave (or vanish) from their relocation site[124]. As a result most relocation efforts have been marginal at best to unsuccessful at worst.[125] As a result, the Fish and Wildlife Service's desert tortoise recovery plan concluded that translocating desert tortoises is unlikely to succeed until further research efforts reveal how translocation can be used as a successful recovery tool.

These issues were not adequately addressed in the AFC. In particular, the AFC did not address many of the known indirect impacts of the Project, or the indirect impacts associated with translocating tortoises. Additionally, the AFC provided very little specific information on how acquired compensation land would aid recovery efforts for the desert tortoise. This information is essential to evaluating the likelihood that the City's mitigation measures will succeed, and not contribute to the continued decline of this species.

Data Requests

99. Please specify whether proposed translocation efforts would adhere to the recovery plan's *Guidelines for Translocation of Desert Tortoises.*[126]

100. Please indicate how "impacts to both translocated tortoises and receiving population tortoises" would be "fully analyzed and mitigated."[127]

101. Please provide information on possible relocation areas, including the City's criteria for selecting such sites.

102. Please specify how desert tortoise habitat suitability would be evaluated for potential relocation sites, and how habitat suitability at potential relocation sites compares to the Project site.

103. Please specify any habitat enhancement or management actions that would be taken to ensure the fitness of individuals and the viability of

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[123] U.S. Fish and Wildlife Service, Region 1-Lead Region, Portland, OR, The Desert Tortoise (Mojave Population) Recovery Plan, 73 pp. and Appendices, 1994.

[124] W.I. Boarman, Threats to Desert Tortoise Populations: A Critical Review of the Literature, U.S. Geological Survey, Western Ecological Research Center, Sacramento, CA, 2002, 86 pp.

[125] Ibid.

[126] U.S. Fish and Wildlife Service, Region 1-Lead Region, Portland, OR, The Desert Tortoise (Mojave Population) Recovery Plan, 1994, 73 pp. and Appendices: Appendix B.

[127] AFC, p. 6.4-48.

the local population at the relocation site. Please include a discussion on how introduction of additional tortoises would affect carrying capacity.

104. Please outline the scientific information that would be relied upon to minimize possibility of take when capturing, handling, and translocating desert tortoises.

105. Please describe how essential tortoise behavior patterns (*e.g.*, breeding, feeding, or sheltering) would be monitored at translocation sites so as to avoid take.[128]

106. Please show that cumulative impacts to the desert tortoise would be mitigated.

107. Please provide a citation for the in-text reference *Desert Tortoise Council 1999* or provide a copy of the document.[129]

Background: INDIRECT IMPACTS TO DESERT TORTOISE FOOD SOURCE

The AFC stated that fugitive dust generated by construction activities may drift offsite and settle on adjacent habitat and vegetation.[130] The AFC went on to state that fugitive dust generated by project construction may decrease offsite germination of annual plant species, which comprise a large portion of the desert tortoise's diet.[131]

Data Requests

108. Please specify the impacts fugitive dust may have on plants.

109. Please specify the impacts fugitive dust may have on food sources for the desert tortoise.

110. Please discuss how any project-related reduction in desert tortoise food will be mitigated.

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[128] 50 CFR 17.3.

[129] AFC, p. 114.

[130] AFC, p. 6.4-43.

[131] AFC, p. 6.4-44.

Background: IMPACTS TO THE MOHAVE GROUND SQUIRREL

Rather than conduct surveys, the City has elected to assume presence of the Mohave ground squirrel (*Spermophilus mohavensis*) within the Project site.[132] The Mohave ground squirrel is listed as threatened under CESA. Currently, the species occupies less than 10 percent of its historic range and its current distribution is extremely patchy.[133] The squirrel is nearly extirpated from the Victorville area, an important portion of its historic range.[134] Habitat fragmentation and genetic isolation threaten the continued existence of the species.[135]

Approximately 401 acres of the Project site provide suitable habitat for the Mohave ground squirrel[136]. Relatively recent records (1987 to 2004) have documented the squirrel's presence near, and perhaps even on the Project site.[137] If the Mohave ground squirrel is present on the Project site, any project-related ground squirrel mortality (either direct or indirect) would likely have a significant adverse effect on the local population, and perhaps even the genetic diversity of the entire population. Additionally, given the limited amount of habitat remaining for this species, any loss of potentially suitable habitat would be significant (certainly to the local population) and could result in a direct violation of CESA.

The cornerstone of the City's proposed mitigation plan is off-site habitat compensation. However there is no evidence in the AFC that this strategy would reduce impacts on the Mohave ground squirrel to a less than significant level. At a minimum, for off-site habitat compensation to provide a net benefit to the species, land must be converted from unsuitable to suitable habitat using peer-reviewed, scientific data on Mohave ground squirrel habitat selection.

Even if offsite habitat compensation efforts were successful, compensation habitat would need to be fully colonized by the species to benefit the

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[132] AFC, Appx. H, p. 115.

[133] California Department of Fish and Game, California Wildlife Action Plan, Chapter 7: Mojave Desert Region, 2005; http://www.dfg.ca.gov/habitats/wdp/report.html.

[134] Defenders of Wildlife, Petition to List the Mohave Ground Squirrel (*Spermophilus mohavensis*) as a Federally Endangered Species, 2005; http://www.defenders.org/california/MGS_Petition.pdf.

California Department of Fish and Game, California Wildlife Action Plan, Chapter 7: Mojave Desert Region, 2005; http://www.dfg.ca.gov/habitats/wdp/report.html.

[136] AFC, Appx. H, p. 102.

[137] AFC, Appx. H, p. 83.

population. It is not clear that this would be possible given the extremely patchy distribution of the species, the extent of habitat fragmentation that has already occurred, and the potential lack of immigration corridors. The AFC did not demonstrate that its mitigation measures would conserve the Mohave ground squirrel population.[138]

Data Requests

111. Please provide documentation showing that the proposed mitigation will conserve the Mohave ground squirrel and not illegally jeopardize its continued existence.

112. Please specify how off-site habitat compensation will conserve this species.

113. Please indicate how off-site habitat compensation will be connected with core population areas.

Background: IMPACTS TO THE BURROWING OWL

The Western burrowing owl (*Athene cunicularia hypugea*) is a species of special concern in California. Surveys conducted for the Project documented four live owls interspersed throughout the study area. Because the surveys constitute a sample and not a census, the actual number of burrowing owls in the study area is unknown, but likely much greater than four. In fact, surveys conducted for the Project identified over 100 suitable burrows, many of which exhibited sign of the species' previous use.[139] Due to the species' site tenacity and semi-colonial behavior, it is reasonable to assume that many more burrowing owls occur at the Project site and within its vicinity than were documented.

The Project would result in the loss of approximately 342 acres of burrowing owl habitat.[140] The project also may result in the direct take of burrowing owls through crushing of occupied burrows.[141] Other impacts to the species include habitat fragmentation, the possibility of increased predation, and the possibility of increased collision with vehicles. Habitat fragmentation is

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[138] Fish and Game Code, Section 2061.

[139] BA, p. 5-22.

[140] AFC, Appx. H, p. 88.

[141] BA, p. 5-34.

especially problematic to small and localized populations.[142] To mitigate these impacts, the City has proposed eviction of owls from occupied burrows, creation or enhancement of off-site burrows, acquisition of 6.5 acres of foraging habitat permanently protected per pair or unpaired resident bird, and the enhancement and management of acquired land over the long term for the benefit of the species.[143]

The rates of survival and reproduction of burrowing owls relocated to artificial burrows, as well as the long-term use of artificial burrows and the ability to maintain populations are unknown[144] Translocating owls as a "mitigation" strategy eliminates occupied habitat without consideration of the actual effects on displaced individuals. If the species is already present on the land to which individuals are displaced, it may already be at the carrying capacity of the habitat. If the species is not present, rigorous study would be necessary to understand the complex factors rendering the site potentially unsuitable for owls. To consider the Project's impact on burrowing owls as "less than significant," the City must demonstrate that its proposed mitigation strategy would conserve the burrowing owl population, and not jeopardize its continued existence in the region.

Data Requests

114. Please provide a scientifically-defensible program that shows how the proposed mitigation strategy centering around translocation would conserve burrowing owls.

115. Please define success criteria for the burrowing owl translocation program, describe any monitoring that would occur, and the management techniques that would be used.

116. Please discuss material to be provided in the annual report submitted to the CDFG, and the years in which a report would be submitted.[145]

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[142] D.S. Klute, L.W. Ayers, M.T. Green, W.H. Howe, S.L. Jones, J.A. Shaffer, S.R. Sheffield, and T.S. Zimmerman, Status Assessment and Conservation Plan for the Western Burrowing Owl in the United States, U.S. Fish and Wildlife Service, Washington, DC, Bio Tech Pub FWS/BTP-R6001-2003, 2003; http://mountain-prairie.fws.gov/birds.

[143] AFC, Appx. H, p. 119; BA, p. 5-47.

[144] D.S. Klute, L.W. Ayers, M.T. Green, W.H. Howe, S.L. Jones, J.A. Shaffer, S.R. Sheffield, and T.S. Zimmerman, Status Assessment and Conservation Plan for the Western Burrowing Owl in the United States, U.S. Fish and Wildlife Service, Washington, DC, Bio Tech Pub FWS/BTP-R6001-2003, 2003; http://mountain-prairie.fws.gov/birds..

[145] AFC, Appx. H, p. 120.

Background: NESTING BIRD SURVEYS

Special-status and other bird species nest within areas where project construction would occur. To mitigate adverse effects to nesting birds and comply with the Migratory Bird Treaty Act, the City has proposed conducting at least one nesting bird survey in areas where vegetation removal and/or grading would occur during the nesting season.[146] If no nests are found during the survey, construction would proceed.[147] If nests are found, The AFC proposes "impact avoidance measures."[148]

The AFC failed to provide any information on the methods the City would use to conduct the nesting bird survey, or the factors that would determine the need for multiple surveys. More importantly, the City appeared to have incorrectly presumed that a nesting bird survey would enable compliance with the Migratory Bird Treaty Act, and reduce potential impacts to special-status bird species to a level considered less than significant. Importantly, however, many bird nests are camouflaged or otherwise concealed; some are extremely small (*e.g.*, Costa's hummingbird, *Calypte costae*); and some are located in locations generally out of human sight (*e.g.*, underground or high in vegetation). These characteristics make locating nests for the majority of species extremely difficult. Accordingly, it is unreasonable to assume that all nests could be located through a single survey (or even multiple surveys).

Besides the difficulty associated with locating nests, nest surveys have the potential to reduce nest success.[149] Studies indicate that humans can alert predators to a nest's location, or cause disturbance that results in nest abandonment.[150] Additionally, irregular timing of nesting seasonally, and among both individuals and entire species, assures a single survey will be inadequate. The AFC failed to address these issues even though the City proposed to remove vegetation and conduct grading during nesting season. In addition, he City failed to provide a concrete protocol for nest surveys to show the Project complies with the Migratory Bird Treaty Act. Such a plan should describe criteria that will enable the City to be reasonably sure no nests are located in areas where vegetation removal or grading will occur.

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[146] Ibid.

[147] Ibid.

[148] *Ibid.*

[149] F. Gotmark F, The Effects of Investigator Disturbance on Nesting Birds, Current Ornithology, 1992, Vol. 9, pp. 63–104.

[150] T.E. Martin, G.R. Geupel, Nest-Monitoring Plots: Methods for Locating Nests and Monitoring Success. Journal of Field Ornithology, 1993, Vol. 64, No. 4, pp. 507–519.

Data Requests

117. Please provide a detailed, scientifically based plan for nesting bird surveys.

118. Please provide the specific methods the City would use for its nesting bird surveys.

119. Please list and discuss the criteria the City would use to ensure nests are not disturbed or destroyed by pre-construction and/or construction activities.

120. Please describe preventive and/or avoidance measures the City would employ to ensure no migratory bird eggs or fledglings are disturbed or injured by pre-construction or construction activities.

121. Please discuss the methods the City would use to minimize surveyor-induced predation.

122. Please discuss the methods the City would use to minimize surveyor-induced nest disturbance and/or abandonment.

Background: PRESENCE OF BIOLOGICAL MONITORS IN RIPARIAN AREAS

The City has proposed placing biological monitors in the Mojave River corridor to ensure the Project would not impact associated bird species.[151] However, the AFC and the May 2007 biological assessment are not consistent with one another regarding the timing monitors would be located in the Mojave River corridor, and the species the City would monitor.

Data Requests

123. Please clarify when monitors would be located in the Mojave River corridor.

124. Please clarify the species (or guilds of species) that would be monitored.

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[151] AFC, Appx. H, p. 121; BA, p. 5-49.

125. Please indicate what, if any, actions the City would take in response to monitoring reports indicating impacts to biological resources in the Mojave River corridor.

Background: DIRECT IMPACTS TO THE SAN EMIGDIO BLUE BUTTERFLY

The San Emigdio blue butterfly (*Plebulina emigdionis*) is a special-status species.[152] According to the AFC, the Project would impact approximately 100 square feet of potentially suitable habitat for the San Emigdio blue butterfly. Given the size of the habitat, the AFC stated that impacts to this species would be negligible.[153] However, the Project's impact analysis appears to have focused on the vegetation community generally associated with the San Emigdio blue butterfly rather than the specific habitat element required by the species. Specifically, fourwing saltbush (*Atriplex canescens*) is the host plant for the San Emigdio blue butterfly.[154] According to the AFC, fourwing saltbush was detected on the Project site.[155] Unfortunately, no other information about the presence of fourwing saltbush was provided. If fourwing saltbush plants would be impacted by the Project, it may have an adverse effect on the San Emigdio blue butterfly.

Data Request

126. Please provide additional information on the presence of fourwing saltbush within the Project site, including its abundance, geographic location(s), and physical characteristics.

Background: MITIGATION FOR SAN DIEGO COAST HORNED LIZARD

The San Diego coast horned lizard (*Phrynosoma coronatum blainvillii*), a species of Special Concern in California, has the potential to occur at the Project site and within its vicinity. As mitigation, the AFC stated that a biological monitor would conduct daily clearance surveys for horned lizards,

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[152] AFC, Appx. H, p. 104.

[153] Ibid.

[154] California Department of Fish and Game, California Interagency Wildlife Task Group, California Wildlife Habitat Relationships Version 8.1, personal computer program, Sacramento, CA, 2005.

[155] AFC, Appx. 4 to Appx. H.

and any individuals found would be captured and relocated off-site.[156] The AFC did not provide a description of the methods that would be used to conduct these clearance surveys. Horned lizards rely on camouflage for protection and often hesitate to move at the approach of a predator.[157] Periods of inactivity and winter hibernation are spent burrowed into the soil under surface objects such as logs or rocks, in mammal burrows, or in crevices.[158] Given the species' coloration and habits, clearance surveys that rely on capturing individuals by hand are likely to be ineffective. The AFC did not provide enough information on San Diego horned lizard clearance methods to ensure potential impacts to the species would be appropriately mitigated.

Data Request

127. Please describe the methods that would be used in proposed clearance surveys conducted for the San Diego coast horned lizard.

Background: RAVEN CONTROL PLAN

Predation on juvenile desert tortoises by the common raven (*Corvus corax*) is intense.[159] Raven population increases can occur as a result of human development. The City has indicated that any common raven nesting incidence encountered during construction, operation or maintenance of the Project would be reported to the appropriate authorities. When determined necessary, removal of raven nests from proposed facilities would occur during the inactive nesting season.[160] Additionally, the City has proposed a trash abatement program to control human-related food sources for ravens. Current studies indicate that implementation of several management strategies is the most effective means of controlling raven predation on desert tortoises.[161,162] As a result, additional information on the City's proposed

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[156] AFC, Appx. H, p. 120.

[157] California Department of Fish and Game, California Interagency Wildlife Task Group, California Wildlife Habitat Relationships Version 8.1, personal computer program, Sacramento, CA, 2005.

[158] Ibid.

[159] U.S. Fish and Wildlife Service, Region 1-Lead Region, Portland, OR, The Desert Tortoise (Mojave Population) Recovery Plan, 1994, 73 pp. and Appendices B.

[160] AFC, Appx. H, p. 115

[161] W.I. Boarman, Reducing Predation by Common Ravens on Desert Tortoises in the Mojave and Colorado Deserts, U.S. Geological Survey, Western Ecological Research Center, Sacramento, CA, 2002.

[162] J.R. Liebezeit and T.L. George, A Summary of Predation by Corvids on Threatened and Endangered Species in California and Management Recommendations to Reduce Corvid

raven control program is necessary to evaluate its likely effectiveness in reducing raven predation of desert tortoises.

Data Requests

128. Please specify at what point in Project development the City would implement common raven control programs for both Project construction and operation.

129. Please specify whether the plans referred to above would include proactive efforts to locate common raven nests at the Project site.

130. Please clarify whether the proposed raven control program would apply to the Project's linear features.

131. Please discuss the rationale for, and effectiveness of, common raven nest removal during the non-breeding season.

Background: THE PROJECT'S INDIRECT IMPACTS

The Project's indirect impacts include increases in ambient night lighting, noise increases, and run-off of hazardous materials (among other impacts).[163] The AFC did an adequate job of describing these impacts, but failed to provide information on how such impacts would be mitigated.

Data Request

132. Please provide project-specific mitigation measures or management practices that would reduce impacts from:
    a. ambient light;
    b. noise;
    c. hazardous material runoff; and
    d. human activity on biological resources.

Predation, Department of Fish and Game, Species Conservation and Recovery Program Report 2002-02, Sacramento, CA, 103 pp., 2002.

[163] AFC, Appx. H, p. 105.

Background: ENVIRONMENTAL AWARENESS AND PROJECT APPROVAL COMPLIANCE TRAINING

The City has proposed an environmental awareness and project approval compliance training for Project personnel.[164] The AFC failed to provide details on this training program, including the material that would be presented, any monitoring to ensure compliance, and any corrective measures that would be taken if personnel do not comply with environmental procedures.

Data Requests

133. Please describe the material that would be presented in the environmental awareness and project approval compliance training, and how Project personnel would be monitored to ensure compliance with material presented in the training session.

134. Please discuss the corrective measures that would be taken if Project personnel do not comply with environmental procedures.

Background: NITROGEN DEPOSITION

The Project would use ammonia injection in the SCR to reduce NOx emissions. The excess residual ammonia downstream of the SCR system, *i.e.* the ammonia slip, would react with the SO_3 from the SCR catalyst as well as NO_2 and water vapor in the stack gases and downwind in the atmosphere to form secondary particulates in the form of ammonium sulfate, ammonium bisulfate, and ammonium nitrate. In addition, the cooling tower would emit ammonia stripped from the circulating water and dissolved in the drift, which would contribute to secondary ammonium nitrate particulate formation. These particulates would be deposited onto the nitrogen-poor soil of the surrounding desert floor and nearby hills. The AFC did not discuss or model the impact of Project nitrogen deposition on surrounding soils.

Data Requests

135. Please provide an analysis of nitrogen deposition on soils due to Project emissions and discuss the potential for adverse effects on vegetation and wildlife and the existing desert ecosystem.

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[164] AFC, Appx. H, p. 109.

Background: TEMPORARY CONSTRUCTION STAGING AREA

The temporary construction laydown areas to the west and south of the Project site would be graded. The City provided contradictory information on dust control during construction at the construction laydown areas. The preliminary Draft Drainage, Erosion, and Sediment Control Plan ("DESCP") variously indicates that parking and temporary construction laydown areas would be stabilized with coarse gravel during construction or dust-controlled by using Dirt Glue or similar products.[165] In contrast, the AFC indicated that disturbed surfaces would be watered frequently.[166]

Further, the AFC indicated that upon completion of Project construction, areas that were temporarily disturbed by construction activities would be reclaimed, revegetated, and/or restored.[167] Yet, the preliminary Draft Drainage, Erosion, and Sediment Control Plan ("DESCP") indicates that areas that were temporarily disturbed by construction activities (*e.g.*, transmission line pulling sites, transmission structure assembly areas, ROWs for buried Project pipelines, construction laydown areas) would be stabilized using Dirt Glue or similar dust control products.[168] The AFC indicated that techniques used for these efforts would be subject to approval by the CPM and the applicable resources agencies (*e.g.*, USFWS, CDFG) and/or other involved agencies and may include any or all of the following methods: 1) vertical mulching; 2) raking tracks; 3) imprinting; 4) transplantation of salvaged Joshua trees and cacti; and 5) and hand broadcasting of native seed from locally-collected seed stock. The AFC did not discuss how the City would guarantee that the areas disturbed by construction activities would, in fact, be reclaimed, revegetated, and/or restored.

Data Requests

136. Please clarify whether the temporary construction laydown areas would be graveled or dust-controlled by Dirt Glue or a similar product.

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[165] Inland Energy, Drainage, Erosion, and Sediment Control Plan, Victorville 2 Hybrid Power Plant, City of Victorville, California, (07-AFC-01), Preliminary Draft Plan, July 2007, Section 4.1.1 and Figure "Clearing and Grading Plans."

[166] AFC, p. 6.3-84.

[167] AFC, p. 6.4-23, p. 6.4-53, CoC Bio-25.

[168] Inland Energy, Drainage, Erosion, and Sediment Control Plan, Victorville 2 Hybrid Power Plant, City of Victorville, California, (07-AFC-01), Preliminary Draft Plan, July 2007, Section 4.1.4 and Figures "Clearing and Grading Plans."

If gravel is used for dust control, please discuss whether and how the gravel would be removed upon completion of construction.

137. Please clarify whether the areas that were temporarily disturbed by construction activities would be reclaimed, revegetated, and/or restored or whether the City would stabilize these areas with Dirt Glue or a similar product upon completion of Project construction.

138. Please discuss how the City would guarantee that that the areas disturbed by construction activities would, in fact, be reclaimed, revegetated, and/or restored. Please provide the City's definition for each of these three terms. Please discuss how the City would decide whether the areas would be reclaimed, revegetated, or restored for each disturbed area (*e.g.*, transmission line pulling sites, transmission structure assembly areas, ROWs for buried Project pipelines, construction laydown areas).

Background: HERBICIDE USE

The VV2 Project would require the use of herbicides to keep the area below parabolic troughs free of all vegetation in order to avoid grass or brush fires that would have the potential to destroy the solar plant. Operation of the solar field also has the potential for spills of heat transfer fluid. The AFC did not discuss potential impacts on biological resources due to application of herbicides or HTF spills.

Data Request

139. Please discuss potential impacts on biological resources (including listed and other special status species) due to application of herbicides at the solar field. Please include a discussion of herbicide drift across the Project boundaries.

140. Please provide a discussion of potential adverse impacts of a heat transfer fluid spill and associated cleanup activities on biological resources.

Background: FIELD SURVEY WORK ON SCLA PORTION OF PROJECT

The AFC's biological resources section relies on the biological field survey work conducted for the SCLA Specific Plan Amendment and Rail Service Project. The City did not provide the associated reports.

141. Please provide a copy of the reports *"Tom Dodson & Associates. 2003. Focused Desert Tortoise, Focused Burrowing Owl, and General Biological Survey for The SCLA Specific Plan Amendment and Rail Service Project"* and *"Tom Dodson & Associates. 2005. Updated General Biological Survey and Focused Desert Tortoise Survey (Gopherus agassizii) for Victor Valley Wastewater Reclamation Authority's Proposed Wastewater Treatment Facility Expansion Project"* cited in the AFC, Appendix H, on page 129.

Background: ALTERNATIVES ANALYSIS

In the alternatives analysis conducted for the Project, the City made the assumption that because the various sites considered have the same habitat types and relatively undisturbed conditions, the same special-status species (*e.g.*, desert tortoise, burrowing owl, Mohave ground squirrel) are expected to occur at all sites in the same numbers and distribution.[169] As a result, the alternatives analysis appears to have focused on the differences in length of the various linear facilities for each potential site, and the effect the length of these facilities would have on biological resources.[170]

Habitat selection and use by wildlife is much more complex than simply the presence of a particular habitat type. Several factors influence the presence and abundance of wildlife species. [171] These factors include plant community structure, presence or absence of other animals, diversity of plants and animals, physical characteristics such as water availability, types of disturbance, and physiographic features. For example, because burrows are an essential element for burrowing owl habitat, the presence and abundance of suitable burrows is more likely to determine the species' presence than

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[169] AFC, p. 5-6.

[170] AFC, p. 5-6.

[171] S.H. Anderson and K.J. Gutzwiller KJ, Habitat Evaluation Methods, pp. 691–713, in: C.E. Braun, Ed., Techniques for Wildlife Investigations and Management, sixth ed., The Wildlife Society, Bethesda, MD, 1996.

habitat "type."[172] In addition, the AFC appeared to give undue weight to the length of linear facilities. The greatest impact to most special-status species in the region would be from habitat loss, and less so from habitat fragmentation that results from linear facilities. Additional analysis of special-status species habitat and use is required before the City can conclude impacts to biological resources at the preferred site are equal to or less than alternative sites.

Data Requests

142. Please provide any data or reports that support the assumption that the same special-status species are expected to occur in the same abundance and distribution at all sites considered in the alternatives analysis.

143. Please provide a map that depicts the California Natural Diversity Database records for the three alternative sites.

HAZARDOUS MATERIALS

Background: **TRANSMISSION LINE ROUTES, KNOWN HAZARDOUS WASTE AREAS AND SOIL AND GROUNDWATER CONTAMINATION**

The Project's transmission line segments were mapped along two different routes in the AFC and supporting documentation. For example, the AFC, in Figure 2-1 (Mapsheets 1 and 2), depicted the transmission line extending southward from mile point (MP) 2.0 to 5.0 along a route approximately 500 feet to 2000 feet east of the former George Air Force Base. However, the Phase I environmental site assessment, included as Appendix M to the AFC, depicted the transmission line route to extend south through the eastern portion of the former George Air Force Base.

Understanding the actual proposed transmission line route is important because George AFB has been the subject of numerous environmental investigations dating back to 1982.[173] In 1990, George AFB was listed on the

[172] State of California, Department of Fish and Game, Staff Report on Burrowing Owl Mitigation, 2005; http://www.dfg.ca.gov/hcpb/species/stds_gdl/bird_sg/burowlmit.pdf.

[173] George Air Force Base, California, Second Five-Year Review Report, Installation Restoration Program, December 2005 http://www.epa.gov/superfund/sites/fiveyear/f2006090001449.pdf

U.S. EPA Superfund National Priorities List.[174] In that connection, the U.S. Air Force signed a federal facilities agreement (FFA) with the U.S. EPA Region 9, the California Department of Health Services, and the California Regional Water Quality Control Board in 1990. The FFA established a plan for ongoing environmental assessment, remediation and restoration activities at the base. (See Figure 1, below).

Data Requests

144. Please clarify the actual transmission line route from MP 2.0 to MP 5.0, especially with respect to known areas of contaminated soil and groundwater associated with George AFB.

145. Please clarify whether the transmission lines, including construction of access roads and support structures, will impact areas of soil and groundwater contamination as identified in Figure 1, including:

    a. Operable Unit 1, Upper Aquifer TCE Groundwater Plume and Lower Aquifer TCE Groundwater Plume;

    b. Operable Unit 3, Landfill 12, Landfill 14, and non-CERCLA Dieldrin Plume.

146. Please clarify and provide documentation on whether construction workers may be exposed to contaminants in the areas identified above through excavation of contaminated soils, or through potential exposure of contaminated groundwater.

147. Please also clarify whether construction activities would impact ecologic receptors, such as wildlife and plant communities, though exposure to soil or groundwater contaminants.

148. Please describe any impacts the transmission lines, including support structures and access roads, will have on existing groundwater monitoring wells and extraction wells that the U.S. Air Force installed to address contaminated groundwater.

149. Please specifically discuss whether the construction or maintenance of the lines will in any way affect the effectiveness of the groundwater cleanup that is in progress by destroying or relocating extraction wells used to pump contaminated groundwater to treatment facilities. For example, we have mapped (in green) the route of the transmission line

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[174] http://www.epa.gov/superfund/sites/npl/f900221.htm

that is depicted in AFC Figure 2-1 to be located within 500 feet of 3 extraction wells (see Figure 1, below).

150. Please discuss whether groundwater monitoring wells, installed to determine if contamination is present at specific locations in aquifers impacted by former operations at George AFB, will be destroyed by transmission line construction activities. For example, we have mapped (in green) the route of the transmission line that is depicted in AFC Figure 2-1 to be located within 500 feet of 10 groundwater monitoring wells (Figure 1).

151. Please also provide documentation that the proposed transmission line routes have been disclosed to the U.S. Air Force, U.S. EPA and the California Regional Water Quality Control Board and any necessary approvals have been obtained to ensure the groundwater remedy is not compromised and human and ecologic exposure to potentially contaminated soils is limited.

152. Please provide documentation that the City has obtained all necessary approvals from the agencies listed in the request above to ensure that the groundwater remedy is not compromised, and human and ecologic exposure to potentially contaminated soils is avoided or strictly limited.

Background: STATUS OF SITE PURSUANT TO HEALTH AND SAFETY CODE SECTION 25229

The Border Zone Property statute, enacted in 1980, restricts certain new land uses within 2,000 feet of a site contaminated with hazardous waste, and where there is a potential for human exposure to hazardous substances that may cause significant health risks.[175] In a 2005 Initial Study/Mitigated Negative Declaration for the Victor Valley Wastewater Reclamation expansion Project, the VVWRA facility was identified as within a hazardous waste border zone under the Health and Safety Code. Accordingly, the City complied with all statutory requirements for the VVWRA project, and implemented best management practices in consultation with a hazardous materials specialist when groundwater was encountered.[176]

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[175] Health & Saf. Code § 25221 et seq; 39 Cal. Code Regs § 67390.2 et seq.

[176] Initial Study/Mitigated Negative Declaration, Victor Valley Wastewater Reclamation Authority 18 MGD Regional Wastewater Treatment Facility Expansion Project, August 31, 2005.

Data Request

153. Pursuant to requirements of the Border Zone statute, please clarify whether the City has notified the California Department of Toxics Substances Control for a determination of whether proposed transmission lines from MP 2.0 to MP 5.0 are within 2000 feet of hazardous waste property or border zone property and therefore lie within a "Border Zone" of George AFB.

Dated: July 30, 2007

Respectfully submitted,

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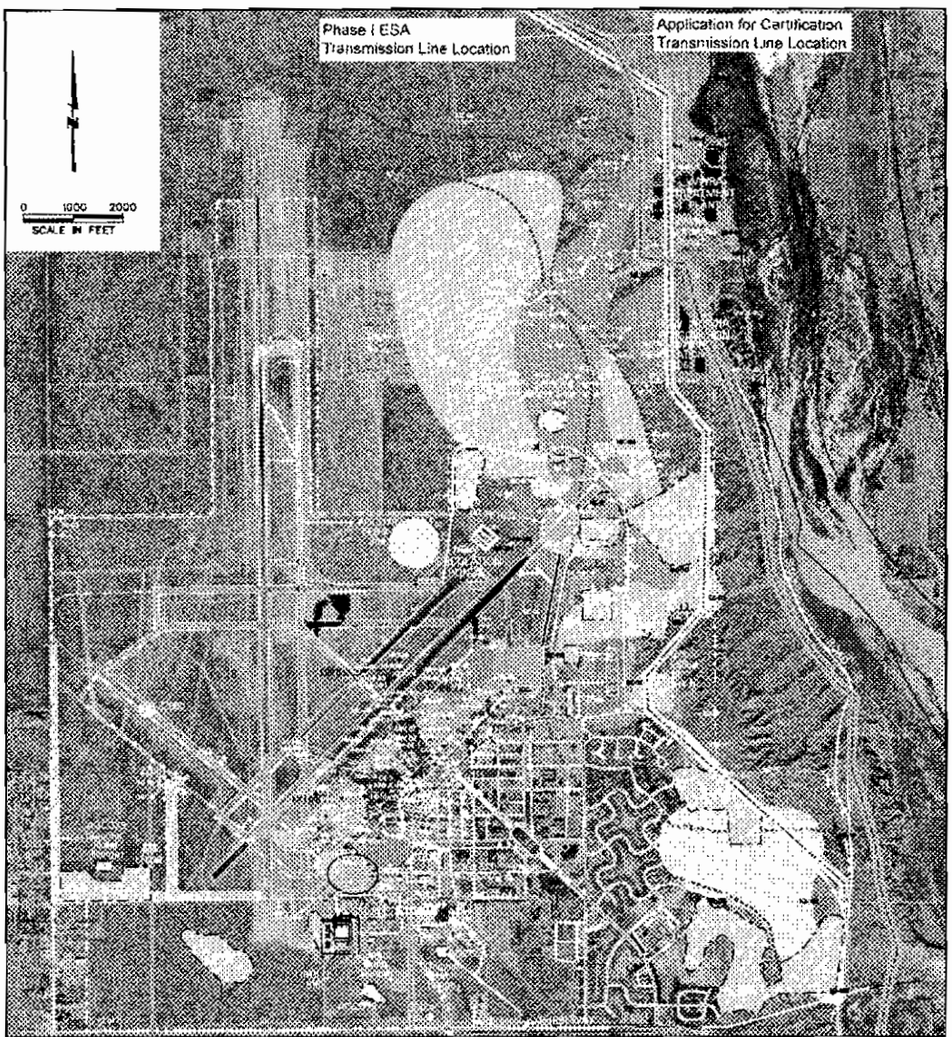
Figure 1



Legend

- Application for Certification Transmission Line Location
- Phase I ESA Transmission Line Location
- OU 1 Upper Aquifer TCE Plume (CG070), October 2006 Data (> 5ppb)
- OU 1 Lower Aquifer TCE Plume (CG070), October 2006 Data (>5 ppb)
- OU 3 TCE Plume (OT069b, OT069c, OT069d, OT069e), October 2006 Data (>5 ppb)
- OU 3 PCE Plume (OT069a, OT069f) October 2006 Data (> 5 ppb)
- Non-CERCLA (SS030) Free Product Plume, October 2006 Data
- Non-CERCLA (ST0578) Free Product Plume, October 2006 Data
- Non-CERCLA (AOC071) Dieldrin Plume October 2006 Data (>0.01 ppb)
- OU 3 Soil Sites
- OU 4 Soil Sites
- OU 5 Soil Sites
- Compliance Site (SS030) Benzene Plume, October 2005 Data (> 1 ppb) Base Boundary
- Permeable Lacustrine Zone
- SEDA Southwest Disposal Area (Comprised of Sites DP010, DP015, DP033, DP034, LF007, LF008, RW009, SS052, WP040)
- EOD Explosive Ordnance Disposal

Notes:
1. All locations are approximate.
2. Photobase obtained from MWH, George AFB, Operable Unit Base Map, undated

PROJECT: Victorville 2 Hybrid Power Project		
TITLE: Transmission Line Locations		
DRAWN BY RK	CHECKED BY MFH	DATE 06/21/2007

1994-006a

DECLARATION OF SERVICE

I, Bonnie Heeley, declare that on July 30, 2007, transmission via electronic mail was consistent with the requirements of California Code of Regulations, title 20, sections 1209, 1209.5, and 1210. All electronic copies were sent to all those identified on the Proof of Service list below.

I declare under penalty of perjury that the foregoing is true and correct.

Executed at South San Francisco, CA on July 30, 2007.

Bonnie Heeley

Via Email and U.S. Mail

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