CH2M HILL
2485 Natomas Park Drive
Suite 600
Sacramento, CA
95833-2937
Tel 916.920.0300
Fax 916.920.8463

CH2MHILL

August 17, 2001

Ms. Cheri Davis
California Energy Commission
Energy Facilities Siting and Environmental Protection Division
1516 Ninth Street, MS-15
Sacramento, CA 95814

Subject: East Altamont Energy Center Application for Certification
Data Request Response Set #2 (01-AFC-04)

Dear Ms. Davis:

Enclosed are 13 copies of the East Altamont Energy Center Application for Certification Data Request Response Set #2. Also enclosed are 7 compact diskettes containing the plume visibility modeling files requested in Data Request #120.

This data response package does not provide responses to Data Requests #28, #30, #31, #32, #59, #66, #84, #106, and #107. The response provided for each of these Data Requests identifies the Applicant's timeline for submittal.

If you have any questions, please call me at 916-920-0300.

Sincerely,

CH2M HILL

Jerry Salamy
Project Manager

Enclosure

EAST ALTAMONT ENERGY CENTER
DATA REQUESTS #2
(01-AFC-4)

Technical Area: Alternatives
Author: Susan Lee
EAEC Author: Jerry Salamy

BACKGROUND

Under CEQA, alternatives must be considered that have the potential to (a) meet most project objectives, and (b) reduce or eliminate impacts of the proposed project. While the Applicant's stated project objectives are fairly broad, the Applicant has limited alternative sites to a very small geographic area. Also, according to AFC Table 9.2-2, the potential impacts of the proposed EAEC site include presence of threatened or endangered species, cultural/archaeological sensitivity, and proximity to Mountain House School. As shown in Table 9.2-2, none of the 6 alternative sites considered in Section 9 appear to meet the CEQA requirement that it reduce or eliminate those impacts. Therefore, additional alternative sites must be identified and evaluated.

DATA REQUESTS

10. In order to evaluate potential alternative site configurations, please provide a more detailed and larger version of the site plan without the aerial photo base (Figure 2.2-1 is difficult to read). The format of Figure 5.1-2 is a good model for level of detail, but is still too small to make out the specifics. Please include a legend, if necessary, for any site plan details that are too small to label. The figure or figures should clearly identify, in color, the locations of the water and gas pipeline connections to the project and the location of the transmission line that would serve the plant.

    Response: Figure 8.12-1 of the AFC provides the project layout and includes a legend showing the major plant equipment. The water and natural gas lines will enter the project site along Holck Drive, with the water line running south of Holck Drive and the natural gas line on the north side. A temporary power drop from the existing 69 kV power poles running along the east side of Mountain House Road will provide construction power. Operational electrical power will come from the onsite switchyard.

11. It is impossible to distinguish the gas lines from water lines and reclaimed water lines on black and white version of Figure 9.1-1. Existing transmission lines are similarly difficult to identify. Please provide a separate figure or figures (size 11X17) illustrating how each of the 6 alternative sites would be served with natural gas, water, and transmission lines.

    Response: The intent of Figure 9.1-1 was to provide the relative locations of the alternative project sites identified for this project. EAEC LLC did not determine specific linear routes for the alternative sites. The identification of linear routes requires extensive field surveys by several technical disciplines and these surveys were not performed for the alternative sites since they were eliminated from further

consideration. Without actual surveys of the potential linear routes, placing lines on a topographic map will not provide an accurate reflection of the potential environmental impacts associated with the linear feature.

12. Given that "the purpose of a merchant generating facility … is to generate and sell electric power to deregulated markets," (AFC Section 9.1.1), the specific location of facility alternatives can be fairly broad (i.e., throughout northern and central California). The AFC (Section 9.2.2.1) restricts alternative sites to "northeastern Alameda County, or the western San Joaquin County area, or the southeastern Contra Costa County area." Explain why alternatives are limited to this small geographic area and why other alternative sites further from this area would not meet project objectives.

Response: The EAEC site was selected to take advantage of the unique opportunities to access several energy markets available at Western's Tracy Substation. As explained in Section 9.2 of the AFC, "Transmission access to multiple markets is a marketing imperative for a merchant power plan that bears financial risk. When EAEC LLC began searching for what became the EAEC site, it was searching for a site to serve the central valley energy market principally and to have easy access to other markets as well." (page 9-2) Because several transmission providers are interconnected at the Tracy substation, this location provides ideal access to multiple markets. Evaluating alternative sites was restricted to the geographic area identified above in order to meet EAEC LLC's additional goal of minimizing linear facility lengths and impacts.

Calpine Corporation's long-term strategy for the California energy market is to look for areas that present unique energy development opportunities. To this end, Calpine Corporation does not look at other potential energy development sites in the northern and central California as alternative to one another, but as potential additional project sites. Therefore, the alternative analysis contained in the EAEC AFC focused on the project development goals of Calpine Corporation for a site to serve the central valley with easy access to multiple markets.

EAST ALTAMONT ENERGY CENTER
DATA REQUESTS #2
(01-AFC-4)

Technical Area: Air Quality
Author: Tuan Ngo, P.E.
EAEC Author: Gary Rubenstein

BACKGROUND:

Detailed Specifications of the Turbines:
Section 8.1.5 of the AFC indicates that the project will utilize three General Electric 7251 (GE 7FB) gas turbine/heat recovery steam generator (HRSG) units, each equipped with a dry low NOx combustor and selective catalytic reduction (SCR) system. Table 8.1A-1 listed the operational parameters for the turbine/HRSG/duct burner units, which were used to calculate their emissions. The GE7FB turbine is a new model, which offers better performance and reliability over the current 7FA model turbines. The GE7FB model firing temperature is hotter and offers a higher compression ratio than the older model. Therefore, the GE7FB's NOx emissions, even with the employment of a low NOx combustor, are expected to be at 25 ppm. These emissions are much higher than with the older GE7FA turbines, which are usually, be at the 9-ppm level. It is not clear from the information provided in AFC Section 8.1.5 and Table 8.1A-1 that the higher NOx emissions have been considered.

DATA REQUEST

13. Please provide a manufacturer's list of emissions and operational parameters for the GE7FB turbine/duct burner units.

    Response: The fact that turbine NOx emissions will be guaranteed at a 25 ppm level, instead of the 9 ppm level, has been taken into account by EAEC LLC in the design of the facility. The fuel consumption and emission rates presented in the AFC Tables 8.1-16, 8.1-17, 8.1-19, 8.1-20, 8.1-21 and the supporting technical appendices are based on EAEC LLC's engineering and operating experience, in addition to vendor data. Consequently, there is not a direct relationship between vendor emissions data provided for this project and the emission rates proposed in the AFC. Nonetheless, the requested information is included as Tables AQ-13.1 (for the combustion turbine) and AQ-13.2 (for the duct burners).

EAST ALTAMONT ENERGY CENTER
DATA REQUESTS #2
(01-AFC-4)

Table AQ-13.1 – GE Gas Turbine Performance Data

Calpine - East Altamont													
ESTIMATED PERFORMANCE	PG7251(FB)												
Load Condition		BASE	70%	60%	BASE	70%	60%	BASE	BASE	70%	60%	BASE	BASE
Exhaust Pressure Loss	inches Water	16.7	9.7	6.3	14.8	9.4	6.1	15.3	12.3	8.3	7.3	14.1	12.
Ambient Temp.	Deg F.	45	45	45	61	61	61	61	98	98	98	98	9
Ambient Relative Humid.	%	50	50	50	51	51	51	51	24	24	24	24	2
Compressor Inlet Temp.	Deg F.	45	45	45	61	61	61	52.1	98	98	98	70.6	9
Compr. Inlet Relative Humid.	%	50	50	50	51	51	51	93	24	24	24	95	2
Evap. Cooler Status		Off	Off	Off	Off	Off	Off	Fogger	Off	Off	Off	Fogger	Of
Fuel Type		Methane	Methane	Methane	Methane	Methane	Methane	Methane	Methane	Methane	Methane	Methane	Methane
Fuel LHV	Btu/lb	21,515	21,515	21,515	21,515	21,515	21,515	21,515	21,515	21,515	21,515	21,515	21,51
Fuel Temperature	Deg F	365	365	365	365	365	365	365	365	365	365	365	36
Output	kW	187,500	131,300	112,500	180,900	126,600	108,500	185,000	155,000	108,500	93,000	174,300	163,80
Heat Rate (LHV)	Btu/kWh	9,135	10,240	10,830	9,225	10,300	10,890	9,180	9,575	10,830	11,520	9,325	9,36
Heat Cons. (LHV) X 10E	Btu/h	1,712.8	1,344.5	1,218.4	1,668.8	1,304.0	1,181.6	1,698.3	1,484.1	1,175.1	1,071.4	1,625.3	1,531.
Exhaust Flow X 10E	lb/h	3,679	2,655	2,647	3,562	2,605	2,600	3,619	3,214	2,647	2,472	3,450	3,26
Exhaust Temp.	Deg F.	1142	1200	1200	1167	1200	1200	1154	1200	1200	1200	1177	119
Exhaust Heat (LHV) X 10E	Btu/h	1013.6	848.7	790.5	959.6	825.4	768.4	1008.1	903.2	762.2	714.4	974	928.
Steam Flow	lb/h	0	0	0	0	0	0	0	0	0	0	0	62,30
EMISSIONS													
NOx	ppmvd @ 15% O2	25	25	25	25	25	25	25	25	25	25	25	2
NOx AS NO2	lb/h	174	135	122	169	131	118	172	151	117	106	166	12
CO	ppmvd	10	10	10	10	10	10	10	10	10	10	10	2
CO	lb/h	33	26	24	32	25	24	33	29	24	22	31	7
UHC	ppmvw	7	7	7	7	7	7	7	7	7	7	7	
UHC	lb/h	15	11	10	14	11	10	14	13	10	10	14	1
VOC	ppmvw	1.4	1.4	1.4	1.4	1.4	1.4	1.4	1.4	1.4	1.4	1.4	1.
VOC	lb/h	3	2.2	2	2.8	2.2	2	2.8	2.6	2	2	2.8	2.
SO2	ppmvw	1	1	1	1	1	1	1	1	1	1	1	
SO2	lb/h	5	4	4	5	4	4	5	4	4	3	5	
SO3	ppmvw	0	0	0	0	0	0	0	0	0	0	0	
SO3	lb/h	1	0	0	0	0	0	0	1	0	0	0	
Sulfur Mist	lb/h	1	0	0	1	0	0	1	0	0	0	1	
Particulates (PM10 front half)	lb/h	9	9	9	9	9	9	9	9	9	9	9	
PM10 (front and back halves)	lb/h	18	18	18	18	18	18	18	18	18	18	18	1
EXHAUST ANALYSIS % VOL.													
	MW												
Argon	39.948	0.9	0.89	0.88	0.9	0.88	0.88	0.89	0.88	0.9	0.9	0.87	0.8
Nitrogen	28.014	74.69	74.7	74.78	74.36	74.43	74.5	74.14	74.01	74.16	74.24	73.25	71.
Oxygen	31.998	12.3	12.31	12.53	12.16	12.35	12.56	12.11	12.21	12.66	12.87	11.88	11.5
Carbon Dioxide	44.009	3.9	3.89	3.79	3.92	3.84	3.74	3.92	3.85	3.65	3.55	3.92	3.8
Water	18.015	8.22	8.21	8.01	8.67	8.5	8.31	8.95	9.05	8.64	8.45	10.08	12.0
Exhaust Molecular Weight		28.42	28.41	28.42	28.37	28.38	28.39	28.34	28.32	28.35	28.36	28.21	27.9
SITE CONDITIONS													
Elevation	ft	40											
Site Pressure	psia	14.68											
Inlet Loss	in Water	4											
Exhaust Loss	in Water	15.0 @ ISO Conditions											
Application													
Combustion System		DLN Combustor											

Emission information based on GE recommended measurement methods. NOx emissions are corrected to 15% O2 without heat rate correction and are not corrected to ISO reference condition per 40CFR 60.335(c)(1). NOx levels shown will be controlled by algorithms within the SPEEDTRONIC control system.

Sulfur Emissions Based On a typical value of 0.0034 WT% Sulfur (1 gr/100SCF) Content in the Fuel.

IPS-	version code- 2 . 1 . 1 Opt: N 72510200
SANDERJO	9/21/2000 10:34 CalpineEastAltamont7FB.dat

Table AQ 13.2 – HRSG Vendor Duct Burner Data

Duct Burner Emissions		
	Without PAG	**With PAG**
NOx, lb/MMBtu as NO_2 (HHV)	0.080	0.080
CO, lb/MMBtu (HHV)	0.100	0.250
VOC, lb/MMBtu as CH_4 (HHV)	0.020	0.050
PM_{10}, lb/MMBtu (HHV)	0.015	0.015

14. Please provide vendor information related to the control efficiency of the SCR system proposed for the combined cycle scenarios. The information should include the type of catalyst, the bed depth, operating temperature range, scheduled maintenance and catalyst replacement, and discussion of methods to be used to maintain the turbine NOx emissions on a continuous basis. If this information is not available, a vendor or manufacturer's performance guarantee can be used as a substitute.

Response: The requested information is not available at the present time. The specifications for the SCR system will require that the SCR system be designed so as to ensure that the proposed NOx emission rate of 2.5 ppmc, 1-hour average basis, will be achieved under all turbine operating conditions above 60% load, and under all ambient conditions expected at the project site. The specifications will further indicate that this performance must be maintained for a guarantee period of at least three years, and while maintaining compliance with the proposed ammonia slip limit of 10 ppm.

15. Please provide the CO oxidation catalytic system manufacturer specifications or a vendor's performance guarantee.

Response: The requested information is not available at the present time. The specifications for the oxidation catalyst system will require that the oxidation catalyst be designed to ensure that the proposed CO emission rate of 6.0 ppmc, 3-hour average basis, will be achieved under all turbine operating conditions above 60% load, and under all ambient conditions expected at the project site. The specifications will further indicate that this performance must be maintained for a guarantee period of at least three years.

16. Please provide all assumptions and calculations used to develop the turbine/duct burners' emissions listed in Table 8.1A-1.

Response: The information in Table 8.1A-1 regarding ambient conditions, and gas turbine loads were specified by EAEC LLC in its request for information from vendors. The gas turbine heat input values were provided by GE for each case, and can be traced to the information shown in Table AQ 13-1 above. Duct burner heat input rates were determined by EAEC LLC's engineering staff. Exhaust gas turbine stack composition was provided by General Electric for each case. Stack gas flow

rates and emission rates were calculated by Sierra Research based on EAEC LLC's design specifications for the facility and the information above for each case.

BACKGROUND

Startup and Shutdown Emissions:
Table 8.1-20 lists the estimated startup emissions for the facility. Footnotes of the table indicate that these startup emissions were developed from source tests and vendor data, with reference to Tables 8.1A-7a and 7b. Tables 8.1A-7a and 7b list the source test results of the Crockett Cogeneration facility and the emissions data provided by Westinghouse, a different turbine manufacturer, for the Sutter and the San Francisco Energy Cogeneration power plants. The turbines that were used in the Crocket Cogeneration project have been discontinued by GE and are different from the GE7FB, and the startup emissions provided by Westinghouse cannot be substituted for the GE type turbines. Therefore, the facility startup emissions listed in Table 8.1-20 are not appropriate.

DATA REQUEST

17. Please provide vendor supplied startup and shut down emissions data and the duration of each event for the GE7FB turbines.

    Response: EAEC LLC disagrees with the staff's contention that the facility startup emission rates listed in Table 8.1-20 are not appropriate for EAEC. The same analysis has been submitted to the CEC, and accepted, for the Delta Energy Center, Metcalf Energy Center, Moss Landing Power Plant Modernization Project, Morro Bay Power Plant Modernization Project, Mountainview Power Project, and El Segundo Power Redevelopment Project. Neither EAEC LLC nor its consultants rely upon data provided by the turbine vendor for the determination of facility startup and shutdown emission rates because these data do not reflect site-specific, non-turbine related issues and are not guaranteed. The references for each of the estimates contained in Table 8.1-20 are provided in Tables 8.1A-7A and 8.1A-7B of the AFC.

18. Please provide all assumptions and calculations for the facility startup and shut down emissions using the new vendor data.

    Response: EAEC LLC is not proposing to revise the facility startup and shutdown emission rates for this project; consequently, revised calculations are not necessary.

19. Please provide a discussion of the facility start-up and shut down sequence. A manufacturer- provided chart, which shows the NOx and VOC emissions versus the time of the turbines during start-up, would suffice.

    Response: EAEC LLC does not have a facility startup and shutdown sequence chart that is specific to the East Altamont Energy Center.

EAST ALTAMONT ENERGY CENTER
DATA REQUESTS #2
(01-AFC-4)

BACKGROUND

Duct Burner:
AFC Section 8.1.5 indicates that each turbine/HRSG unit will be equipped with a 732 MMBTU/hr low NOx design duct burner. The manufacturer name, design specifications and emissions for the duct burners are not provided in the AFC.

DATA REQUEST

20. Please provide the duct burners' manufacturer name, the design specifications and emissions estimates.

    Response: The duct burner vendor has not yet been selected for the project. Consequently, the detailed design specifications are not yet available. The emission rates estimated for the duct burner by the HRSG vendor are shown in response to data request AQ-13 above.

BACKGROUND

Auxiliary Boiler:
AFC Section 8.1.5 indicates that the facility will include a 10,000 lbs/hr auxiliary boiler, which will be equipped with an SCR system. The AFC references Table 8.1A-2 for the boiler specifications. Table 8.1A-2 merely lists the estimated emissions of the auxiliary boiler; no vendor brochure or SCR performance guarantee has been provided.

DATA REQUEST

21. Please provide a vendor brochure, which lists the specifications of the boiler including stack dimensions and exhaust flow, the low NOx burner, and the boiler's expected air contaminant emissions.

    Response: The vendor for the auxiliary boiler has not yet been selected. Consequently, the requested vendor information cannot be provided. Expected maximum emission rates and performance data for the auxiliary boiler are included in the AFC in Tables 8.1-18, 8.1-19, 8.1-21, 8.1-22, 8.1A-2, 8.1A-6, 8.1A-8, and 8.1-9b.

22. Please provide a vendor performance guarantee, which shows the levels of NOx and ammonia, for the boiler's SCR system.

    Response: EAEC LLC does not possess a vendor performance guarantee for the SCR system for the auxiliary boiler at the present time. The specifications included in the AFC are based on EAEC LLC’s experience in ordering similar equipment for other project locations.

EAST ALTAMONT ENERGY CENTER
DATA REQUESTS #2
(01-AFC-4)

BACKGROUND

Cooling Tower:
AFC Section 8.1.5 indicates that the facility will include a 19-cell cooling tower, which will be equipped with a drift eliminator system capable of reducing the drift rate to 0.0005%. The AFC references Table 8.1A-3 for the cooling tower specifications. Table 8.1A-3 merely lists the estimated emissions of the cooling tower; No vendor brochure for the cooling tower or the drift eliminator has been provided.

DATA REQUEST

23. Please provide a vendor brochure for the cooling tower, which includes the tower stack dimensions and exhaust flow.

    Response: The vendor for the cooling tower has not yet been selected, and consequently project-specific vendor specifications are not available. The cooling tower dimensions were determined by EAEC LLC engineering staff based on discussions with several cooling tower vendors.

24. Please provide vendor literature describing the design of the drift eliminator and a drift rate guarantee for the cooling tower drift eliminator.

    Response: The vendor for the cooling tower has not yet been selected, and consequently project-specific vendor literature for the drift eliminator is not yet available. The drift rate for the cooling tower was determined based on EAEC LLC's experience in ordering similar equipment for other project sites.

BACKGROUND

Project SO2 Emissions Estimates:
Table 8.1-15 lists the typical characteristics and heating value of natural gas. Tables 8.1-16 to 18 provide estimates of sulfur dioxide (SO2) emissions assuming a sulfur content of 0.25 grain per 100 standard cubic feet (gr./100scf). PG&E has indicated in other power plant siting cases that their supplied natural gas sulfur content can go as high as 1 gr./100scf. Thus the project's SO2 emissions have been underestimated.

DATA REQUEST

25. Please revise emissions calculations using the highest PG&E guaranteed sulfur content unless Calpine can obtain a guarantee from PG&E that the delivered natural gas will not have sulfur content higher than 0.25 gr./100scf.

    Response: EAEC LLC is not proposing to increase the maximum allowable SO_2 emission rate beyond the level proposed in the AFC; consequently, no revised calculations are necessary. The proposed allowable SO_2 emission rate proposed by the project is consistent with the default emission specified under EPA's acid rain

project; the emission rate that would be calculated using staff's assumptions is not. Furthermore, EAEC LLC fully expects to comply with the proposed maximum SO_2 emission rate set forth in the AFC.

BACKGROUND

Sulfur Dioxide Emission Impacts:
Table 8.1-21 of the AFC indicates that the project's SO2 emissions are estimated to be 21.3 TPY. Because the project SO2 emissions are less than 100 TPY, the AFC concludes that offsets for SO2 are not required pursuant to the Bay Area Air Quality Management District (District) rules and regulations. Because the project area is non-attainment for PM10 and SO2 is a precursor to PM10, we believe that appropriate mitigation for the project's SO2 emissions may be necessary if the project's SO2 emissions contribute to a significant secondary PM10 impact. An analysis of the project's SO2 emissions contribution to the formation of secondary PM10 needs to be provided.

DATA REQUEST

26. Please provide an analysis showing the project's SO2 emissions contribution to the formation of secondary PM10 and whether that contribution constitutes a significant air quality impact.

Response: EAEC LLC is unaware of any credible techniques for the determination of whether the SO_2 emissions from the project would constitute a significant impact with respect to PM_{10}. This is true for two reasons. First, EAEC LLC believes that there are not adequate data and modeling techniques to estimate the rate of conversion of SO_2 to PM_{10} on a short-term basis. Second, EAEC LLC is unaware of any CEC criteria regarding the determination of whether the modeled air quality impacts would be significant, even if they could be determined. Certainly, EAEC LLC agrees that the SO_2 emissions from the project will ultimately, to an undefined extent, contribute to ambient PM_{10} levels, albeit at locations far removed from the project site.

27. If the project's SO2 emissions contribution to the formation of secondary PM10 is significant, please identify the necessary mitigation such as offsets. In addition, please provide a discussion of whether such mitigation measures are effective to reduce the project's contribution to secondary PM10 impacts to a level of insignificance.

Response: Please refer to the response to Data Request 26 above. Consistent with precedents set in a number of CEC cases, EAEC LLC believes that the SO_2 impacts associated with the project's operation are not significant, and that no mitigation for SO_2 emissions (beyond the use of clean-burning natural gas) should be required. See, for example, the CEC decisions in Blythe Energy (SO_2 emissions below District offset levels, and no mitigation for SO_2 impacts required); Contra Costa (SO_2 mitigation was not required in addition to the PM_{10} mitigation provided by the Applicant); Delta Energy Center (SO_2 mitigation was not required in addition to the PM_{10} mitigation provided by the Applicant); High Desert (SO_2 mitigation was not

required in addition to the PM_{10} mitigation provided by the Applicant). In general, the Commission has concluded that PM_{10} offsets provided to satisfy District regulatory requirements also serve to mitigate any minor contribution made by SO_2 emissions from gas-fired power projects to ambient PM_{10} levels. EAEC LLC believes that Staff should review the proposed PM_{10} mitigation for this project, and the need for additional mitigation to address SO_2 impacts, in the same context.

BACKGROUND

Insufficient Information for the Proposed Emission Reduction Certificates:
In the AFC and the confidential submittal, Calpine proposes to offset the proposed project's NOx and VOC emission increases with a number of emission reduction credit certificates. The information provided to staff includes the number and the amount of credits for each certificate. Staff cannot verify the effectiveness of the proposed offsets without information on the location of each credit certificate and the method employed to achieve these emission reduction credits.

DATA REQUEST

28. Please provide a brief description of each emission reduction certificate including the location and the method employed to achieve such emission reductions.

    Response: The requested information will be provided in a separate confidential filing.

29. Please provide a discussion of whether the emission reduction credits from the listed banking certificates are effective to reduce the facility emission impacts to a level of insignificance.

    Response: The request is unclear; in all previous siting case decisions that EAEC LLC has reviewed, the Commission has accepted the provision of emission reduction credit certificates as evidence of mitigation of the regional impacts associated with a project's emissions. EAEC LLC does not believe that the project will result in significant localized air quality impacts, and consequently does not believe that mitigation is required on a local level. Nonetheless, to the extent practicable, EAEC LLC will seek to use emission reduction credits from locations which will contribute, on a regional basis, to benefits in the project area.

BACKGROUND

PM10 Emission Reductions from Road Paving:
Calpine proposes to mitigate the project's PM10 emissions by paving portions of roads at various locations within a 65-mile radius from the proposed project. Calpine provided staff with estimations of emission reductions resulting from the paving of the identified roads. The information provided is not sufficient for staff to verify that such estimates are accurate. The Applicant may submit its response to Data Requests 30 through 32 under cover of confidentiality.

DATA REQUEST

30. Please provide a general description of each type or class of vehicles, and written records of each type of vehicles traveling on such roads.

    Response: The requested information will be provided as a separate, confidential filing which will be docketed by September 30, 2001.

31. Please provide a description and a discussion of the appropriateness of the methodology used to collect the dust samples on the chosen roads.

    Response: The requested information will be provided as a separate, confidential filing which will be docketed by September 30, 2001.

32. Please provide a discussion of why moisture content of the dust samples had not been determined at the time the samples were collected.

    Response: The requested information will be provided as a separate, confidential filing which will be docketed by September 30, 2001.

BACKGROUND

Effectiveness of Road Dust Reductions as Mitigation:
Staff has concerns that the proposed emission reduction credits from road paving may not be effective to mitigate the project's contribution to the existing PM10 violations in the area. First, the particulate matter emissions from the turbines, auxiliary boiler, emergency generator and diesel fire pump are in the form of fine particulate matter of less than 2.5 µm, and the emission reduction credits have been estimated to contain particulate matter of less than 10 µm. Second, the fugitive emission reduction credits from paving of roads at the various locations within a 65-mile radius from the project site are not likely to mitigate the project contribution to the local area. Third, the area has experienced violations of the PM10 standards during the winter months, when emission reductions from road paving are almost non-existent because the soil is wet. Thus the potential for significant contribution to the PM10 standards during the winter months may not be adequately mitigated. The Applicant may submit its response to Data Requests 33 through 35 under cover of confidentiality.

DATA REQUEST

33. Please provide a revised estimate of particulate matter emission reductions from paving of roads taking into account the portion of particulate that is less than 2.5 µm.

    Response: The Commission has accepted PM_{10} mitigation in the form of road paving for the High Desert, Blythe Energy, and Three Mountain Power Projects; EAEC LLC is uncertain of the basis for the staff's conclusion in this case that credit for road paving should only be provided for $PM_{2.5}$ reductions.

34. Please provide an analysis showing the effectiveness of the use of fugitive dust emission reductions from sources that are located within a 65-mile radius from the project site to mitigate the project particulate matter contribution to the atmosphere.

Response: EAEC LLC is uncertain as to what type of analysis Staff is seeking. If the CEC staff can provide examples of this analysis from the High Desert, Blythe Energy or Three Mountain Power projects, EAEC LLC will perform a similar analysis for the EAEC project.

35. Please provide an analysis showing that the wintertime particulate matter emissions from the facility, after the proposed mitigation, will be reduced to a level of less than significance.

Response: Please see the response to Data Request 34.

BACKGROUND

Best Available Control Technology (BACT):
AFC Section 8.1.6 states that the project will utilize BACT such as SCR and a CO oxidation catalyst system for the turbines, which will maintain the turbines' emissions of NOx and CO to 2.5 ppm (on an hourly basis) and 6 ppm, respectively. The USEPA, in a recent letter to the San Luis Obispo County Air Pollution Control District (attached) has commented that the BACT limit for gas turbines should be set at 2 ppm for NOx on an hourly basis while the NH3 slip maintained at 5 ppm. In addition, the EPA stated that BACT for CO should be set at 2 ppm on a 3-hour rolling average.

DATA REQUEST

36. Please provide a revised BACT analysis to respond to EPA's comments.

Response: EPA has not provided these comments regarding the EAEC project. Furthermore, the San Luis Obispo County APCD has not issued a final determination of compliance in the Morro Bay case. Consequently, EAEC LLC does not believe that it is appropriate to respond to comments made by EPA in another regulatory proceeding.

BACKGROUND

Cumulative Air Quality Impact Analysis:
A cumulative air quality impact analysis, which assesses the impacts of the project in conjunction with other nearby projects that have been permitted, but not yet in operation, will need to be provided by the Applicant.

DATA REQUEST

37. Please advise on the status of obtaining a list of projects that meet the criteria listed in Section 8.1H "Cumulative Impacts Analysis Protocol." If the aforementioned list has been obtained, please submit the list of the emission sources to be included in the

cumulative air quality impacts analysis. Upon staff's concurrence, please perform a cumulative impact analysis using the modeling method proposed in the AFC.

Response: EAEC LLC has requested from both the Bay Area AQMD and San Joaquin Valley Unified APCD a list of facilities that meet the criteria set forth in the cumulative impacts analysis protocol. Each agency has informed EAEC LLC that there are no facilities that meet the criteria; consequently, EAEC LLC believes that a cumulative air quality impacts analysis will not be required for this project. Copies of the letters from the BAAQMD and SJVUAPCD are included in Attachment AQ-37.

BACKGROUND

Excess Emissions During Initial Commissioning:
The initial commissioning of the project may cause emissions that exceed the limits that would be required during normal operation. The AFC (pages 8.1-36 and 8.1-39) discussed the potential emissions of the project during this period. The discussion, however, seems to indicate that the emissions from only one turbine were considered. In addition, an estimate of the duration of the initial commissioning period, any excess emissions the project would cause, and whether any mitigation is proposed are not provided.

DATA REQUEST

38. Please provide a description of the commissioning sequence, the length of each activity or phase identified in the commissioning sequence, and the estimated emissions of each activity.

    Response: The commissioning sequence for this project is expected to be similar to that of the Delta Energy Center that the Commission has already approved.

39. If the provided modeling analysis for the project during commissioning has changed in response to the data request above, please provide a revised modeling analysis for the commissioning period.

    Response: There has been no change to the emissions estimated to occur during commissioning activities, and no revisions to the previously provided modeling analysis are required.

40. Please provide a discussion of any proposed mitigation. If no mitigation is provided, please explain why.

    Response: No unique, significant impacts associated with commissioning activities have been identified; consequently, EAEC LLC does not believe that mitigation, beyond that required for project operation, is required.

EAST ALTAMONT ENERGY CENTER
DATA REQUESTS #2
(01-AFC-4)

BACKGROUND

Steam Power Augmentation:
The AFC indicates that power augmentation during the summer months may be used to boost the production of electricity. It is not clear that the estimated emissions and the modeling results provided in the AFC reflect the scenarios where power augmentation is utilized.

DATA REQUEST

41. Please state whether or not steam is used in the power augmentation, and if the emissions estimates and modeling results reflect the expected emissions during power augmentation.

    Response: Yes, the emissions estimates and modeling results reflect emissions during power steam augmentation operation.

42. If the emissions estimates and modeling results do not reflect the facility emissions during the power augmentation period, please provide corrections for these results.

    Response: Please see the response to Data Request 41.

BACKGROUND

Ozone Limiting Option Modeling:
Page 8.1-36 of the AFC indicates that the project's NO2 emission impacts will be estimated using ISC3_OLM modeling, which estimates the project's hour-to-hour NO2 impacts using the hourly ozone data. This method assumes that the turbines' oxides of nitrogen (NOx) are mostly NO and only 10 percent of the total NOx emissions will be in the form of NO2. Staff agrees with the Applicant on the modeling principle. However, staff believes that the ISC3_OLM modeling option would underestimate the project's NO2 emission impacts because of the assumption that the turbines' NO2 is only 10 percent of the total NOx. Staff believes that the turbines' NO2/NOx ratio is in the range of 30 to 50 percent.

DATA REQUEST

43. Please provide a revised NO2 emission impacts analysis using the Ozone Limiting Method and the assumption that the NO2/NOx ratio is in the 30 to 50 percent range.

    Response: The requested analysis is not consistent with BAAQMD and EPA modeling procedures; consequently, EAEC LLC does not believe it to be appropriate to perform the analysis in the manner requested by CEC staff. Nonetheless, EAEC LLC will discuss this issue further with Staff in an attempt to reach an agreement on this point.

EAST ALTAMONT ENERGY CENTER
DATA REQUESTS #2
(01-AFC-4)

BACKGROUND

New Violation of the State's 1-hr NO2 and Annual PM10 Standards:
Table 8.1E-5 of the AFC identifies that construction of the facility will result in a 1-hr NO2 impact of 505 µg/m3 and an annual PM10 impact of 35 µg/m3. Since the area is in attainment for such standards, the construction of the project will cause a new violation of the state's 1-hr NO2 and annual PM10 standards. It is not clear what steps Calpine will take to mitigate such impacts.

DATA REQUEST

44. Please provide mitigation steps that Calpine will take to ensure that the construction of the project will not cause a new violation of the state's 1-hr NO2 and annual PM10 standard.

Response: As noted in Appendix 8.1.E, the estimates of project impacts during construction are extremely conservative, and are not significantly different from impacts associated with other construction activities. In fact, no new violations of the state 1-hour average NO_2 standard or annual average PM_{10} standard are expected. EAEC LLC expects to comply with the standard mitigation requirements that the Commission imposes on all power plant construction projects, and anticipates that these standard mitigation requirements will reduce these impacts to below the level of significance. EAEC LLC notes that the values referred to by Staff above are the combined impacts of the project plus existing worst case background levels. Worst case construction impacts are 76% of the state one-hour average NO_2 standard, and 43% of the state annual average PM_{10} standard.

BACKGROUND

The Project's NO2 Impact Exceeds Significance Level for PSD Review:
The District Regulation 2, Rule 2-2-414 "PSD Air Quality Analysis" requires that a new major project must demonstrate that the project emissions will not cause or contribute to a violation of an air quality standard or exceedance of any applicable PSD increment. The rule also defines a facility as considered to cause or contribute to a violation of an air quality standard when the increase in emissions would cause a significant air quality impact. The District's Rule 2-2-233 defines a significant air quality impact as when an ambient concentration, resulting from the facility emissions, exceeds a pre-defined value for PM10, SO2, NO2 or CO listed in that rule. For the 1-hr NO2 standard, the significant threshold is listed as 19 µg/m3 in Rule 2-2-233. The project's normal operation will result in a 1-hr NO2 impact of 110 µg/m3, which is higher than the significance threshold listed in Rule 2-2-233. Therefore, an analysis must be performed to demonstrate that the project will comply with the requirements of the District Rule 2-2-414.

DATA REQUEST

45. Please provide an analysis to demonstrate that the project will comply with the requirements of District Rule 2-2-414.

Response: The requested analysis was included in the AFC. Rule 2-2-414.1 requires the preparation of a modeling analysis. The modeling analysis was included in the AFC in Section 8.1, at pages 8.1-28 through 8.1-42. Rule 2-2-414.2 requires, for those pollutants for which the District's significance levels are exceeded, a demonstration, through a modeling analysis, that a project would not cause or contribute to a violation of an air quality standard or an exceedance of any applicable PSD increment. Table 8.1-32 indicates that the District's significance levels are exceeded for 1-hour average NO_2 impacts. There is not a 1-hour average PSD increment for NO_2 (as shown in Table 8.1-31), and the annual average NO_2 impacts are well below the applicable PSD increment (as shown in Table 8.1-29). Furthermore, NO_2 impacts are not predicted to cause a violation of the national ambient air quality standards for NO_2; consequently, the project complies with the requirements of Rule 2-2-414.

EAST ALTAMONT ENERGY CENTER
DATA REQUESTS #2
(01-AFC-4)

Technical Area: Biological Resources
Author: Andrea Erichsen
EAEC Author: EJ Koford

BACKGROUND

Federally endangered and state threatened and endangered species are known to exist in the vicinity of the proposed East Altamont Energy Center (EAEC). There is also potentially suitable habitat for these species on and adjacent to the project site. The Applicant will need to consult with a variety of agencies and obtain several permits relating to the potential loss of habitat or "take" of threatened or endangered species, as listed in Table 8.2-4 of the AFC.

Energy Commission staff is concerned about the timing of these consultations and permits relative to staff's evaluation of the project. Table 8.2-4 lists application dates for some of the key permits as April 2002; a late application date for these permits will not allow staff to ensure that the project will comply with the requirements of these other agencies. In addition, a late application date will not allow agencies to comply with their requirement (per Section 25519 of the Public Resources Code) to complete relevant permits within 180 days of the Energy Commission's determination of data adequacy. Energy Commission staff needs to make sure that these permits are proceeding on a schedule that is consistent with the AFC schedule, and the following requests must be addressed in detail to resolve staff's concerns.

DATA REQUEST

46. Provide a discussion of what steps have been taken to initiate the U.S. Fish and Wildlife Service (USFWS) and California Department of Fish and Game (CDFG) permits for this project and any other details pertinent to these permits, including:

    a. a record of conversations with the USFWS regarding the section 7 or section 10 consultations;

    Response: EAEC LLC's consultant sent initial consultation letters to the agencies on December 11, 2001 to identify issues of concern. They also consulted by telephone and met with the USFWS regarding the potential impacts to San Joaquin Kit Fox and California red-legged frog. CH2M Hill consulted by telephone and letter with Janis Gan and Robert Floerke for CDFG. CDFG recommended that surveys be performed for special status species and that there be no loss of wetlands or riparian habitat (See Appendix 8.2C of AFC). Ms. Gan also expressed concern that large trees planted for landscaping and aesthetic reasons would not be consistent with habitat for San Joaquin Kit Fox (SJKF) and burrowing owls, and indicated they would discuss this matter with CEC staff to determine what recommendation to give to EAEC LLC. EAEC LLC proposed implementing measures to avoid a take of any state-listed species. In a subsequent telephone conversation, CDFG

recommended EAEC LLC identify potentially suitable habitat for tiger salamander and implement additional surveys for big tarplant.

EAEC LLC identified that the project would have potential indirect impacts to SJKF and proposed to implement avoidance and impact minimization measures consistent with a Section 7 authorization. EAEC LLC further proposed implementing protocol-level surveys in the project area. USFWS staff indicated that the area had been thoroughly surveyed relatively recently and that additional surveys would not changed the USFWS determination of species presence. The USFWS recommended that EAEC LLC propose to provide compensation for lost kit fox foraging habitat. EAEC LLC is currently evaluating various options for compensation, in consultation with Sheila Larsen of the USFWS.

b. identification of the third party leading the section 7 or section 10 consultation; and

Response: Western Area Power Administration is the third party leading the Section 7 consultation.

c. a record of conversations with the CDFG regarding the MOU, streambed alteration permits, take permits, and consistency analyses.

Response: In consultations to date, CDFG has not commented specifically on the MOU or take permits, but has noted that they will participate in a consistency analysis for the project (personal communication with Janis Gan, July 31, 2001). Repeated attempts to contact Mr. Powell of the CDFG regarding the streambed alteration permits have not been successful. However, streambed alteration agreements are issued after the project's CEQA review is completed (after the issuance of the FSA). The agreements generally take less than 90 days and are implemented immediately prior to construction, after final design is completed.

47. Provide a discussion of requirements for a section 404 permit through the U.S. Army Corps of Engineers (USACE).

Response: The proposed natural gas and water supply pipeline routes have been developed along routes specifically intended to minimize potential impacts to sensitive biological resources including wetlands. For the majority of their length, the proposed natural gas and water supply pipeline alignments follow existing roadways and agricultural field margins.

The following discussions are based upon observations made during reconnaissance-level surveys conducted along the proposed pipeline alignments in November 2000 and February 2001. Potential wetland areas were noted during these reconnaissance-level surveys but none of these wetland areas were observed directly on the pipeline alignments. The proposed pipelines do, however, cross man-made drainage features (canals and drainage ditches) as noted below.

U.S. Army Corps of Engineers Jurisdiction

The U.S. Army Corps of Engineers has jurisdictional authority to regulate discharge of dredging material and fill into "waters of the United States (including wetlands)" under Section 404 of the Clean Water Act. The Code of Federal Regulations (33 CFR Section 328.3) defines waters of the United States as all navigable waters, including: 1) all tidal waters; 2) all interstate waters and wetlands; 3) all other waters such as lakes, rivers, streams (perennial or intermittent), mudflats, sandflats, wetlands, sloughs, prairie potholes, wet meadows, playa lakes, or natural ponds, the use, degradation or destruction of which could affect interstate commerce; 4) all impoundments of water mentioned above; 5) all tributaries to waters mentioned above; 6) territorial seas; and 7) all wetlands adjacent to waters mentioned above.

Wetlands are those areas that are inundated or saturated by surface or groundwater at a frequency and duration [*wetland hydrology*] sufficient to support, and that under normal circumstances do support, a prevalence of wetland vegetation [*hydrophytic vegetation*] typically adapted for life in saturated soil conditions [*hydric soils*]. Wetlands generally include swamps, marshes, bogs, and similar areas (*40 CFR 230.3 and 33 CFR 328)*. Any actions that involve the placement of fill material into jurisdictional waters and wetlands, including such activities as sidecasting material during ditch excavation or temporary fills to provide equipment access during construction must comply with Section 404 of the Clean Water Act.

The 1987 Wetland Delineation Manual [WDM] requires an examination for the presence of indicators of three diagnostic characteristics. These characteristics, or wetland parameters, are hydrophytic vegetation, wetland hydrology, and hydric soils. Except in limited instances, 1987 WDM requires that evidence of a minimum of one positive indicator from each of the three mandatory wetland parameters be present for an area to be called a wetland under Section 404 jurisdiction.

While it is recognized that the U.S. Army Corps of Engineers is solely responsible for determining jurisdictional wetlands, the canals and agricultural drainage ditches observed along the pipeline alignments do not satisfy the criteria for wetland vegetation, hydrology and soils. In particular, the canals are maintained to control vegetation so that wetland vegetation communities do not develop. Because the canal and ditch sidewalls are either excavated into upland areas or are constructed with imported fill, the soils do not possess hydric characteristics. For these reasons, it is believed that impacts to jurisdictional wetlands will not occur as a result of the pipeline construction activities at the canal and ditch crossings.

Water Supply Pipeline

The proposed water supply pipeline alignment leaves the northwestern corner of the EAEC site and goes approximately 1,500 feet to the north along Mountain House Road before turning due west along agricultural field margins to Bruns Avenue. This east-west water pipeline segment is approximately 8,000 feet in length and the

pipeline will be located within a dirt and gravel farm road. In this segment, the pipeline will cross under the Delta-Mendota Canal, the BBID canal (Canal 45), and three agricultural drainage ditches. From Bruns Avenue the proposed pipeline alignment turns to the north and then parallels the California Aqueduct (northeasterly direction) to where it intercepts the BBID canal once again. This is the point where water will be supplied for the EAEC project.

The BBID Canal has limited segments that are concrete lined but is primarily an earthen canal that flows roughly parallel to the topographic contours of the surrounding area. The BBID canal sidewalls are maintained to keep them generally free of vegetation. At the point where the proposed water pipeline will pass beneath the intake channel using horizontal directional drilling (HDD), the canal is an earthen channel. Nevertheless, the crossing will not affect jurisdictional wetlands.

Similarly, the three agricultural drainage ditches that will be traversed along the east-west pipeline alignment have very limited vegetation along the sidewalls. The agricultural ditches run in straight lines at the locations where the proposed water supply pipeline will cross them. The straight alignment of the ditches indicates that they are not historic or natural waterways. In addition, they do not appear to possess wetland vegetation, hydric soils, or stream morphology in the location of the proposed water pipeline crossings. However, the western-most of the agricultural ditches for example, does appear to drain a natural wetland area south of the proposed alignment, but, the channel has been straightened and flows due north between fields at the point where the pipeline would cross. EAEC LLC anticipates that potential jurisdictional wetlands will be avoided due to the placement of the water pipeline within the farm road. In addition, best management practices will be employed during construction of the pipelines to prevent sedimentation and erosion into the canal and ditches.

If it is determined that the pipeline cannot be placed within the farm road and potential wetlands cannot be avoided, EAEC LLC will do a wetland delineation and if necessary, apply for a wetland permit for fill in jurisdictional wetlands (see subsection on Section 404 Permitting and Schedule, below).

Natural Gas Supply Pipeline

The natural gas supply pipeline leaves the southwestern corner of the site and follows Mountain House Road to Kelso Road where it turns to the west and proceeds under or parallel to Kelso road to the PG&E compressor station and main pipeline approximately 1.4 miles west. For the same reasons as previously discussed for the water supply pipeline, the BBID canal is not a jurisdictional wetland. An open-channel crossing at this location should not require a Section 404 permit. Best management practices would be employed to prevent sedimentation and erosion within the canals during construction.

Section 404 Permitting and Schedule

If EAEC LLC determines that the water pipeline cannot avoid potential jurisdictional wetlands where the water pipeline crosses the agricultural drainage ditches, a field investigation will be conducted to collect the data required for the U.S. Army Corps of Engineers to make a determination of whether or not they would assume jurisdiction. If it is determined that primary indicators are present for the three wetland parameters (vegetation, hydrology, and soils), then a wetland delineation will be conducted and a delineation report prepared for review by the U.S. Army Corps of Engineers. The wetland delineation report would be used as part of a Pre-Construction Notification (PCN) required for securing a Section 404 permit, as discussed below. If it is determined, that the primary indicators for the three wetland parameters are not present, the data will be presented in a technical memorandum and submitted for review by the U.S. Army Corps of Engineers.

If it is determined that the crossings of the agricultural ditches will affect more than $1/10^{th}$ of an acre of jurisdictional wetlands, then a PCN will be prepared for review by the U.S. Army Corps of Engineers. It is anticipated that the total area of wetland impacts from the construction activities will not exceed ½ acre so a Nationwide Permit (NWP) 12 for Utility Line activities would be appropriate for the proposed construction activities. While no specific timeframe for permit approval is given for Nationwide Permits, decisions on Individual Permits generally occur within 2 to 3 months after submittal of a complete application. It is anticipated that the Nationwide Permit, which is associated with less complex and lower impact projects, should take less time. Should jurisdictional wetlands be impacted by the project, an estimated schedule for obtaining the appropriate permits is provided in the Table BR-48.

48. Provide a schedule for each permit required through the USFWS, CDFG, and USACE

Response: Table BR-48 provides an estimated schedule for permits from USFWS, CDFG and USACE.

TABLE BR-48. ESTIMATED SCHEDULE FOR BIOLOGICAL PERMITS

Activity	Estimated Completion Date
WETLANDS	
Site-specific field investigation. Complete wetland delineation or collect data required to make wetland jurisdictional determination	October 1, 2001
Prepare Pre-Construction Notification and Application	October 1, 2001
Receive Section 404 permit	December , 2002
Receive Section 401 Water Quality Certification or waiver	February, 2002
SPECIAL STATUS SPECIES	

TABLE BR-48. ESTIMATED SCHEDULE FOR BIOLOGICAL PERMITS

Activity	Estimated Completion Date
Receive Section 7 Consultation	February, 2002
Receive CDFG MOU and Consistency Determination (Section 2081)	March, 2002
Streambed Alteration Agreements (SAA) (Section 1600)	Application to be submitted after issuance of the FSA. SAA issued prior to construction.

49. Provide a discussion, schedule, and evidence of status of the Alameda county approval of Construction Plans (see Table 8.2-4)

Response: The construction plans will be submitted to Alameda County during the first calendar quarter of 2002.

50. Please discuss when you anticipate obtaining the permits (as opposed to applying for them) and how this expected timeframe will synchronize with the Energy Commission's certification process. Provide a discussion and status report (include as much information as possible, such as letters from agencies, or permits, or permit applications) for the above mentioned permit requirements. Please also discuss how the dates for "application submitted" were determined, and whether or not these dates could be pushed forward.

Response: EAEC LLC anticipates obtaining permits prior to construction. Streambed Alteration Agreements (SAA) are secured after the CEQA analysis (the CEC's Final Staff Assessment) has been conducted and after final design, which is often only 90 days before construction. Consultations associated with the Section 7 permit are ongoing, and the Biological Assessment will be submitted to the Western Area Power Administration in September, 2001. EAEC LLC anticipates that the Section 7 consultation will be complete prior to construction in spring of 2002. The CDFG MOU, consistency or 2081 permit would be concurrent with the Section 7 permit. Wetland permits (Section 404) can generally be issued 90 days from application. Wetland delineations in the field would be implemented as soon as the precise location of waterway crossings is known. Dates for "application submitted" were estimated based on the Applicant's standard design schedule.

BACKGROUND

The EAEC site occupies and affects habitats suitable for several endangered, threatened, and sensitive species listed in Table 8.2-1A and 8.2-1B. In particular, San Joaquin kit fox is a federally endangered species, which requires extensive survey protocols set forth by the USFWS. The AFC states that the Applicant will conduct "protocol level surveys in the

summer 2001, at locations identified by the USFWS as being occupied by the kit fox and potentially affected by the project."

DATA REQUEST

51. Please provide the kit fox survey data collected to date for the EAEC project site and vicinity (including linears).

Response: EAEC LLC met with the USFWS and requested a determination of whether protocol survey would be required in their letter of December 11, 2001 (Appendix 8.2C of AFC). Without a specific determination, EAEC LLC prepared the AFC anticipating that such surveys might be required. EAEC LLC met with USFWS on May 23, 2001 to discuss this issue. EAEC LLC posited that protocol-level surveys would not change the outcome of any analysis for impacts (e.g., the surveys could not feasibly prove absence) and that therefore they should not be required. The USFWS concurred and suggested EAEC LLC develop a mitigation proposal combining acquisition and management (or funding and delegation of management) of suitable land to support SJKF in the project vicinity. The USFWS also concurred that avoidance and minimization of impacts to waterways would likely be sufficient to avoid impacts to aquatic species such as red-legged frog and western pond turtle.

The CEC requested that EAEC LLC perform a spot survey in February of 2001, with the intention of determining whether any frogs or other aquatic species of concern were present in waterways in the project vicinity. The CEC noted that these would not constitute protocol surveys because the season is generally too cold for frog activity. EAEC LLC complied with this request and no frogs or other special status species were observed.

52. If no data have been collected:

a. Explain why and provide documentation justifying the lack of data;

Response: See the response for Data Request #51.

b. Provide evidence of consultation with USFWS (letter etc.); and

Response: Attachment BR-52 presents a copy of a letter from the USFWS on December 27, 2000, as well as the minutes of a meeting between USFWS and EAEC LLC on May 23, 2001.

c. If data need to be collected in the future, provide a schedule for future data collection as well as the following:

i) clear and thorough description of methods (i.e. attach USFWS protocol)

Response: On USFWS advice, no protocol surveys for San Joaquin Kit Fox, or red legged frog have been conducted.

ii) maps of the survey routes and observations. Include on the map all burrows of ground squirrels and other animals whose burrows may be used by the San Joaquin kit fox; and

Response: See the response for Data Request #51

iii) resume of the biologist qualified to conduct the surveys for the San Joaquin kit fox in the northern end of its range.

Response: See the response for Data Request #51

53. Provide detailed analysis of on-site and off-site mitigation options, incorporating recent discussions with USFWS. Include letter or correspondence if possible. Include analysis of area and cost for land parcels of interest in the EAEC area and the option(s) EAEC intends to pursue.

Response: The response to this data request is being submitted under an application for confidentiality.

54. Provide the same level of survey information (data request numbers 51-53) for the following species: California red-legged frog, California tiger salamander.

Response: Field surveys, known record and consultations with USFWS established that suitable habitat for these species is primarily 3 miles or more west of the project site. Habitat in the project site and along linears is marginal or unsuitable, and the presence of either of these species in the area that is relatively intensively developed for farming would be highly unusual. Under suitable habitat conditions, these species can move large distances. However, for these species to move over land from known localities (where they are regionally abundant) to the project site would require crossing several roads, the Delta-Mendota Canal and potentially the California aqueduct. EAEC LLC has acknowledged that these aquatic species could be present in aquatic habitats and will avoid impacts to those habitats, accordingly. However, the potential that these species would be able to disperse this distance across several environmental barriers into generally unsuitable habitat is considered too remote to warrant protocol surveys.

BACKGROUND

The mitigation proposed in Section 8.2.3.2 discusses impacts of the EAEC on sensitive species such as Swainson's hawk (state threatened), burrowing owl (California species of special concern) and the white-tailed kite (fully protected). The EAEC will result in permanent loss of foraging habitat (and burrowing habitat for the burrowing owl). Construction of the EAEC may result in loss of hunting, nesting, and possibly communal roosting habitats.

DATA REQUEST

55. Please provide recently collected data on nesting and roosting sites for these three species.

Response: The closest known record for a Swainson's hawk nest is several miles south of the project near Grant Line Road. This site was observed during field surveys and it appears the trees that may have supported this nest are not longer present. Although other potentially suitable trees are present in the vicinity. Trees potentially suitable for supporting Swainson hawk nests exist around the Tracy Pumping Station, less than 0.5 mile south west of the project site, but no nests are known or have been observed there during field surveys. White tailed kites potentially could use trees around the pumping station, along Kelso Road, or in the landscaped areas around any of dozens of farm houses within 10 miles of the project site. There are no trees on the project site and no trees would be removed as a result of project construction or operation. Swainson's hawks or white-tailed kite nests have not been observed within 1 mile of the project site or linears. EAEC LLC disagrees with CEC staff that development of the project site would result in permanent loss of burrowing owl nesting habitat. The area that would be converted has been intensively farmed in row crops and alfalfa for a number of years. During field surveys, no owls were observed on the project site or adjacent to it. Squirrel burrows were scarce in this area. By contrast, there are recorded owl burrows within the Tracy Pumping Plant compound less than 0.5 mile southwest of the project site, and owls were observed using burrows in open pasture south of Kelso Road. The berm of the Delta Mendota canal has dozens of squirrel burrows and provides abundant habitat. This is not the case for the project site which is generally flat, lacks berms, burrows and squirrels consistent with suitable nesting habitat for owls.

EAEC LLC agrees that these species are likely to forage on the project site, and that the project would potentially convert up to 55 acres of foraging habitat to an unsuitable habitat for Swainson's hawks, white-tailed kites and burrowing owls.

56. Please provide a detailed methodology for the proposed surveys.

Response: Burrowing owls and Swainsons' hawks generally begin nesting as early as mid-February. White-tailed kites are generally a bit later. The survey method would consist of a minimum of 2 transects of the construction corridor. All suitable nest trees within 0.5 mile of a site construction area or 0.25 mile of the linears construction corridor would be observed for nests, nesting behaviour, or residual stick nests suitable for Swainsons' hawks. All observations of white tailed kite would note whether nesting material or potential prey is being carried, and whether courting behaviour (calling, leg-dragging) are noted. All burrows within 250 feet of the construction areas would be observed by binocular for presence of burrowing owls. Construction areas would be observed for a minimum of 4 hours on two occasions separated by 2 weeks during the potential nesting season. If nests are located, EAEC LLC will inform the CEC and propose a plan to avoid impacts to the species during construction. Observation methods would consist of meandering transect, either from automobile or on foot to observe the behavior and location of special status species.

57. Please provide updated maps of the entire project site, including linears, clearly indicating sightings, nest locations, and roost locations, and including all burrowing owl burrows. The maps should be at a scale of at least 1"=2,000'.

Response: The figures in Section 8.2 of the AFC show essentially the current record of known localities for these species. As noted above, burrowing owls have been observed along the Delta Mendota section of the gas pipeline, and Swainson's hawks have been observed perched in trees of the Tracy Pumping Plant. These two locations could be added to the figures in Section 8.2 if deemed necessary for the understanding of CEC staff. White-tailed kites are so common as not to be noted except where a nest is observed (none have been). EAEC LLC has been advised that the presence or absence of a nest in the current year is no guarantee that a nest will not be present in the project area during the year of construction, and that only a pre-construction survey in the year of construction will be suitable to determine presence-absence. Therefore EAEC LLC intends to implement thorough surveys for these species only in the spring prior to intended construction, as survey results from this year would no more than indicate a possibility of a nest next year.

58. Please discuss mitigation alternatives for loss of Swainson's hawk, burrowing owl, and the white-tailed kite habitat. Provide a thorough discussion of off-site mitigation options for loss of foraging habitats. Include contact list of organizations consulted and cost analysis for land parcels of interest to the Applicant in the EAEC area.

Response: EAEC LLC believes that the site is used by several species for foraging, and that providing compensation habitat for San Joaquin kit fox will provide the same habitat benefits for species that forage and nest in similar habitats. The needs of these species are congruent, rather than conflicting and management for one will necessarily benefit the other. Therefore, EAEC LLC proposes to provide compensation habitat for kit fox that will be suitable for these other species.

BACKGROUND

A Biological Resources Mitigation Implementation and Monitoring Plan (BRMIMP) is required under the AFC process. The BRMIMP contains the full spectrum of approved mitigation and monitoring measures to ensure that the construction and operation of the power plant do not significantly harm biological resources. The final BRMIMP must be approved by the Energy Commission, the U.S. Fish and Wildlife Service and the California Department of Fish and Game prior to commencement of all ground-breaking activities. An outline of the BRMIMP was provided in Appendix 8.2E as a first step in developing the BRMIMP.

DATA REQUEST

59. Please provide a draft BRMIMP which contains all sections presented in the outline. If a section's information is not available at this time, provide the schedule for completing that section.

Response: A draft BRMIMP will be submitted during the week of August 20, 2001.

EAST ALTAMONT ENERGY CENTER
DATA REQUESTS #2
(01-AFC-4)

BACKGROUND

The wastewater evaporation ponds mentioned in AFC section 8.14.2.3 and Data Adequacy Response Set 3, pages 8-9 are not evaluated adequately for their potential to impact waterfowl and amphibians, and other wildlife. The information provided in the Report of Waste Discharge (docketed June 14, 2001), sections 2.4, 2.5, and 2.6 (page 2-2 to 2-3), does not provide adequate scientific review and specific details on Miscellaneous design" measures for protecting wildlife.

DATA REQUEST

60. Please provide a detailed analysis of ways in which wildlife will be protected from the evaporation ponds (e.g., design of sides of the ponds, fencing, netting, or monofilament line).

    a. Cite and describe the scientific evidence that such methods work.

       Response: See Data Response #95.

    b. Include discussion of maintenance operations and scientific methods proposed to monitor the efficacy of the protective measures.

       Response: See Data Response #95.

    c. Include a list of all protective measures to be employed, with diagrams specific to how the evaporation ponds will be designed to protect wildlife (diagrams in the Report of Waste Discharge are more oriented towards engineering of waste treatment aspects). Describe the proposed biological monitoring plan design and schedule, and a procedure for how potential problems with wildlife (i.e. dead birds, etc.) will be handled.

       Response: See Data Response #95.

BACKGROUND

The AFC's section on Visual Resources proposes to use landscape screening around the EAEC. The proposal in Section 8.11.2.3 includes use of fast-growing evergreen trees and shrubs planted in informal groups around the fence perimeter of the EAEC. However, the current proposal may have adverse impacts to Federal and state listed species (California red legged frog and San Joaquin fit fox) because the trees may provide nesting and perching habitats for large avian predators who may then prey upon federal and state listed species in the area. The U.S. Fish and Wildlife Service as well as the California Department of Fish and Game have expressed their serious concern with this issue and CEC staff shares their concern.

EAST ALTAMONT ENERGY CENTER
DATA REQUESTS #2
(01-AFC-4)

DATA REQUEST

61. Please provide alternative landscaping plans, which would not use large trees, but may use multi-tiered berms and assemblages of native shrubs, forbs, and grasses. Other alternatives that address this concern may be presented for consideration. Include drawings, amount of land needed and potential impacts to other project aspects (such as visual resources).

Response: Please see the objection to Data Request #61, submitted on July 30, 2001.

BACKGROUND

The Biological Resources section of the AFC, pages 8.2-25 to 8.2-26, discusses Cooling Tower Drift. However, there is no analysis as to whether the drift may adversely impact vernal pool communities in the area of the EAEC over the lifetime of the project.

DATA REQUEST

62. Please provide a literature review and analysis of the potential adverse impacts of the cooling tower drift constituents on vernal pool communities, over the life time of the project.

Response: Vernal pools generally do not exist in the project vicinity. Surrounding the project and to the east and south for a distance of 50 miles are broad expanses of agricultural lands planted to alfalfa, corn, oat hay and row crops. Vernal pools in the region are most common northwest of the site in Contra Costa County. The nearest habitat appears to be on a terrace formation, located approximately 2.5 miles northwest, in the general vicinity of the Byron airport. As can be seen on Figures 8.1-7a, b, and c, the dominant wind patterns are from the west, which would send most cooling tower drift constituents due east. The locations where this drift might have affect are heavily developed for agriculture. Therefore, EAEC LLC believes any effect of the cooling tower drift constituents on vernal pools will be immeasurably small.

EAST ALTAMONT ENERGY CENTER
DATA REQUESTS #2
(01-AFC-4)

Technical Area: Cultural Resources
Author: Roger Mason and Dorothy Torres
EAEC Author: Jim Bard

NOTE: Please submit any information that may reveal archaeological site location under confidential cover.

BACKGROUND

It cannot be determined from the AFC and Data Adequacy Responses whether local historical societies and local jurisdictions (cities and counties) were contacted to determine if any historical resources in or near the project area are listed in local historical inventories or registers. Such local inventories are often not reflected in information obtained from a records search at the appropriate Archaeological Information Center.

DATA REQUEST

63. Please provide a list of historical resources listed on local inventories or registers within one mile of the power plant site, access roads, laydown areas and all linear routes that are part of the project.

    Response: EAEC LLC has contacted the Livermore Heritage Guild (Mrs. Barbara Bunshah, Curator, 925-449-9927), the Tracy Historical Museum (Mrs. Onalee Koster, 209-832-7278), and the City of Stockton Cultural Preservation Society (Ms. Dianne Smith, 209-937-8340) to determine if these organizations maintain lists of historic resources in the project area, including linears.

    The City of Stockton Cultural Preservation Society representative indicated that they do not have any historic resources records in the project area.

    The City of Tracy Historical Museum provided two maps (a Thomas Bros. Map and a 1879 topographic map) of the project area showing the locations of farm houses and other developed features near Tracy. One of the maps shows the location of a school in the project area (Range 4 East, Section 15) which was relocated to the City of Tracy some years ago. Otherwise no historic features are identified in the project area.

    Relevant historic resource records from the Livermore Heritage Guild will be submitted under a confidential cover by August 31, 2001.

64. Please contact local historical societies and archaeological societies. Please provide copies of any responses from such societies. If historical or archaeological societies were contacted informally, please provide a discussion of the information they provided.

    Response: See Data Response #63.

EAST ALTAMONT ENERGY CENTER
DATA REQUESTS #2
(01-AFC-4)

BACKGROUND

Although the AFC states that Alignment 3a for the Domestic Water Supply Lines was previously surveyed for a different project, the portion of this alignment along Bruns Road is not indicated as having been previously surveyed on the records search map (Attachment CR-1).

DATA REQUEST

65. Please provide a cultural resources survey report for the Bruns Road portion of Domestic Water Supply Line 3a. If no report for a previous project is available, please conduct the survey and submit the survey report a soon as possible.

Response: An archaeological inventory was completed by Robert M. Harmon, M.A., on February 9, 2001 of the proposed alternative water alignment 3a for the proposed East Altamont Energy Center. The proposed corridor and other alignments occupy lands within the SW ¼, NW ¼ and SE ¼ of Section 25, the SE ¼ of Section 26, the NE ¼ of Section 35, the NW ¼ and NE ¼ of Section 36, Township 1S, Range 3E and unsectioned lands within Township 1S, Range 4E.

Mr. Harmon coordinated his effort with Mr. Gary Griffith, Superintendent for the Byron Bethany Irrigation District (8005 Bruns Road, Pump Control Center Maintenance Yard) who pointed the proposed pipeline route, which was not staked. The survey extended from the proposed pump station at the intersection of the "45" Canal and Bruns Road in Contra Costa County, southward along the east edge of Bruns Road to the maintenance yard, then turns eastward along a dirt and gravel farm road. The survey covered the area in and adjacent to this road, across the maintenance yard property and private agricultural land to the Delta Mendota Canal (Alameda County). The water line will be bored under the canal and continue eastward, where the survey corridor terminates at Mountain House Road in Alameda County.

The survey methodology involved walking a series of transects at approximately 75-foot intervals so that the 300-foot wide survey corridor (i.e., 150 feet each side of centerline) was covered in four transects. Although the centerline was not staked, the route was surveyed effectively for archaeological resources based on Mr. Griffith's description of the Irrigation District's easement along the sides of the roads as described above. Ground surface visibility was 5 percent or less through the graveled maintenance yard and parts of the grass and/or brush covered ground north of the maintenance yard and in the Delta Mendota Canal vicinity. In the cultivated agricultural fields, portions of which were vineyard, exposed ground surface reached 60 or 70 percent. However, the survey was accomplished during heavy rain; the ground was extremely wet and muddy, making conditions for surface inspection less than ideal.

Additional Field Inventory

In addition to the route shown to Mr. Harmon by Gary Griffith, Harmon also inventoried the corridor as mapped on Fig. 2.1-1, EAEC Site and Linear Facilities Location Map. The route from the Maintenance Yard along Bruns Road all the way to the Byron Bethany Road was surveyed, as well as the "jog" from the maintenance yard due north to the California Aqueduct and back to Bruns Road. Mr. Harmon also inventoried the "jog" running north from the farm road just west of the Delta Mendota Canal toward the Byron Bethany Road. This alignment contains a small home and ranch complex near the Byron Bethany Road which was apparently in an earlier archaeological survey. Areas included in previous surveys were not re-examined.

The Harmon inventories did not identify any archaeological resources within the project corridors. The Byron Bethany Irrigation District Maintenance Yard, including an office and outbuildings, is potentially within the "impact zone" of the project. Also potentially within the corridor is a small, "ranch-style" rental house (7999 Bruns Road, Rte. 1, Box 39C) owned by the Irrigation District that is situated within the Maintenance Yard property (see photographs). No further work appears necessary.

BACKGROUND

In order to confirm that all cultural resources studies necessary for the CEQA process have been completed, staff needs to have cultural resources technical reports on file.

DATA REQUEST

66. Please provide copies of the cultural resources survey report or reports (technical reports) that document the field surveys conducted by the Applicant for this project. These surveys include those summarized in the AFC, Data Adequacy Response Set 1, and responses to Data Requests 2 and 3. These reports should be prepared following the portions of the SHPO's guidelines for "Archaeological Resource Management Reports" that pertain to survey reports. The report should contain a copy of relevant portions of USGS quads at 1:24,000 scale showing the project site and all linear routes and showing what areas were surveyed. Please provide completed DPR 523 forms in an appendix to the report for cultural resources identified as a result of the survey. The report should also have an appendix that contains a copy of the letter and bibliography from the Archaeological Information Center received as part of the records search. Another appendix should provide resumes for cultural resources specialists that contributed to the report.

Response: EAEC LLC will produce a "stand-alone" technical report that documents the field surveys conducted for this project. This technical report will be submitted under a separate confidential cover.

EAST ALTAMONT ENERGY CENTER
DATA REQUESTS #2
(01-AFC-4)

BACKGROUND

Data Adequacy Response Set 1 included a discussion of the built environment surrounding the EAEC project site. The discussion did not include the ages of the structures and features identified in the built environment. In addition, the response did not include the location of any of the older features that the response indicates will not be impacted by the project. Staff needs more specific information to complete an analysis.

DATA REQUEST

67. Please have an architectural historian or a specialist in industrial or architectural history conduct a survey of the potential project area.

    Please provide descriptions of buildings, features and structures around the project area that could be affected (directly or indirectly) by the proposed project. The survey may be limited to an area one property deep, unless there is an obvious potential historic resource, not within the specified one property limit that may be impacted.

    Please provide a characterization of the areas in the vicinity of the project and linears (how old, industrial, residential etc.).

    Record buildings, structures features etc. that may be greater that 45 years old on a Department of Parks and Recreation (DPR) Form 523 and provide a copy of that form. The recording may be limited to an area one property deep, unless there is an obvious feature recognized. For any properties that appear to be potentially eligible for either the California Register of Historic Resources (CRHR) or the National Register of Historic Places (NRHP), complete and record the evaluation portion of the form and provide a copy.

    Please include, but do not limit the discussion to the following: The Delta Mendota Canal, the canal used as the route for Domestic Water Supply Line 3b, the Wicklund Canal, the California Aqueduct and the Tracy Substation.

    Please provide a map (7.5 quad) of the proposed project and linears. Include the locations (identified either during the survey or historical research) of any properties, buildings, or features that are 45 years or older.

    Response: Please see EAEC LLC's objection to this data request filed on July 30, 2001.

BACKGROUND

Staff needs to ensure that the project complies with all federal and state LORS. Table 8.14-8 indicates that a section 404 permit will be obtained in the event wetlands are disturbed

EAST ALTAMONT ENERGY CENTER
DATA REQUESTS #2
(01-AFC-4)

DATA REQUEST

68. Please provide a schedule that identifies the time frames necessary to obtain any federal or state permits.

Response: No cultural resource-related state or federal permits are needed. Permitting schedules for the other environmental/technical areas are presented in the appropriate sections of the AFC.

EAST ALTAMONT ENERGY CENTER
DATA REQUESTS #2
(01-AFC-4)

Technical Area: Hazardous Materials Management
Author: Alvin Greenberg
EAEC Authors: Jim McLucas/Jerry Salamy

BACKGROUND

To assess the potential for impacts on the public associated with an accidental release of hazardous materials, staff needs the Applicant to conduct site-specific modeling of down-wind concentrations should such a release occur. Staff also requires a description of the route to be used for transportation of such materials to the site

DATA REQUEST

69. Please provide accidental release modeling for anhydrous ammonia as described in Section 8.12.3 of the AFC. Include an analysis of the distance to potential exposure of 75 PPM.

    Response: Attachment HM-69 presents the offsite consequence analysis for the EAEC project. The results show that the distance to an expected ammonia concentration of 75 ppm is 1,476 feet from the site of the ammonia storage tank.

70. Please provide a detailed description (including preliminary design drawings) of the secondary containment structure identified in Section 8.12.6.2.

    Response: The drawings of chemical containment areas will not be available until the final design phase. The following is a detailed description of the criteria and features that will be incorporated into the design of the chemical containment areas:

    Hazardous materials, in general, will be stored in above ground storage tanks, provided with secondary containment meeting the requirements of Article 80 of the Uniform Fire Code. The containment areas will consist of reinforced concrete structures with curbs or walls of sufficient height to contain 100% of the volume of the single largest tank located within the containment area. Outdoor installations will include additional volume sufficient to contain the rainwater from a 25-year, 24-hour storm. Indoor installations, where protected by sprinkler systems, will include additional volume sufficient to contain 20 minutes of the design sprinkler flow. Only compatible chemicals will he housed in common containment areas. In the event that the chemicals stored are corrosive to concrete, suitable coating systems will be used to protect the concrete. The floors of chemical containment areas will be sloped to a low point sump where the contents can be removed either by a permanent or potable sump pump or by gravity via a drain pipe and normally closed valve. Typically, the contents to be removed from chemical containment areas will consist of rainwater or washdown water. These streams will either be pumped or drained by gravity to the plant process drain system. Drains from areas that contain equipment or tanks containing oil will have their drains first routed to the plant process drain oil/water separator. Plant process drains will eventually be collected in the main plant sump, located downstream of the plant process drain oil/water separator and pumped to the

cooling tower basin where the water will be reclaimed for use as cooling tower makeup.

71. Please describe all vapor mitigation measures that would be implemented to reduce potential impacts of an accidental release.

Response: The reinforced concrete containment area provided for the ammonia storage tanks will include a metal deck canopy. In the event of a release, approximately 18 percent of the liquid ammonia will immediately flash to the gaseous phase. The remaining liquid ammonia will be contained in the concrete containment basin until such time that it picks up sufficient heat to "boil off". Ammonia gas, being lighter than air, will tend to rise. The overhead canopy is intended to serve several functions. First, the canopy will shade the tanks and containment area from the sun, thus keeping them cooler. The result of this is a reduction in the rate at which the liquid ammonia "boils off". Secondly, the canopy will divert the rising ammonia gas horizontally. At the perimeter of the canopy, a permanently installed fogging system will be used to "knock down" the ammonia gas with water, significantly reducing the amount of gas leaving the area. Since ammonia is 100 percent water soluble, the gas will react with the water to produce aqueous ammonia. The edge of the canopy will extend beyond the storage tank containment area so that water from the fogging system does not fall within the storage tank containment area. A paved apron will be constructed outside the tank containment area to capture water from the fogging system, directing it to a sump where it will be pumped to the cooling tower basin.

72. Please provide a detailed description of the route(s) to be used for transportation of hazardous materials to the site once the delivery vehicle leaves an interstate or other major highway.

Response: Below are the California Highway Patrol approved routes proposed by the likely ammonia vendor.

Route 1 - Interstate 5 to Highway 205 west, exit on Grant Line Road west to the Byron Bethany Road, north on the Byron Highway to Mountain House Road turning south to the project site.

Route 2 - Interstate 5 to 205 west, take Mountain House Parkway north to Byron Bethany Roadwest, exiting Byron Bethany Road to Mountain House Road turning south to the project site.

73. Please identify any traffic safety points such as railroad crossings or sharp curves along the routes requested in data request number 72, as well as all land uses along the route.

Response: There are no known traffic safety points along the delivery routes presented in Data Response #72. There is one rail crossing (a Southern Pacific track) on Grant Line Road that appears to be abandoned or seldom used.

Based on a review of Figure 2.1-1 of the AFC, this topographic map shows that the land uses along the transportation routes identified in Data Response #72 are primarily rural agricultural uses with scattered residential housing.

EAST ALTAMONT ENERGY CENTER
DATA REQUESTS #2
(01-AFC-4)

Technical Area: Land Use
Author: Negar Vahidi and Mark R. Hamblin
EAEC Authors: Cliff Clement, Susan Strachan, Kathryn Carrasco

BACKGROUND

On page 1-1 of the AFC, under section 1.1 Project Overview it states that "Calpine currently has a purchase option on a 174 acre parcel of agricultural land. The parcel is located in Township 1 South, Range 4 East, Mount Diablo base and meridan (MDB&M). The plant site would occupy up to 55 acres near the center of the property with the remainder available for lease as agricultural land."

The legal status of the 174 acre parcel for this project is unknown based on the information provided in the AFC. Legal land division parcels are established in accordance to the procedures and the requirements set forth in the State Subdivision Map Act (Government Code section 66410 – 66499.58).

The information provided in the AFC describes an Assessor's parcel. Assessor's parcels are not legal land division parcels. Assessor's parcels are generated by a County Assessor's Office as a means of placing a value on property or portion thereof for the purpose of property taxation in accordance to the California Revenue and Taxation Code. The County Assessor does not divide or create parcels of land in conducting this process. The assignment of an Assessor's Parcel Number to a property also provides a convenient and quick location reference for the County Assessor to identify a property on the property assessment roll within a County.

Section 17.52.090 of the Alameda County General Ordinance Code - Zoning regulations states "Every use in an A (agriculture) district shall be on a building site having an area not less than one hundred (100) acres."

DATA REQUEST

74. Please explain whether the Applicant has a recorded legal parcel of land on which to build.

    Explain the land division procedure used to create the 174-acre parcel.

    Provide a copy of the recorded final map, lot line adjustment map, or Certificate of Compliance for the subject property(ies).

    Response: Attached is a copy of the recorded Memorandum of Option with Thelma Holck et al, evidencing East Altamont Energy Center, LLC's interest in the 174 acre parcel. Also attached is a copy of the deed dated November 9, 1943 from Henry Lindemann to Everett Holck and Thelma Holck, as joint tenants, evidencing their ownership of the property.

The 174-acre parcel was created by the Grant Deed dated November 9, 1943, which predates the Subdivision Map Act of California as found in California Government Code Sections 66410-66413.5. This parcel was grandfathered in under the code.

Since the 174-acre parcel was created before the Subdivision Map Act, the only map/plat available is the Assessors Parcel Map, a copy of which is attached. In addition, Alameda County is in the process of preparing a Certificate of Compliance to demonstrate that the project is a legal parcel. A copy of the Certificate of Compliance will be forwarded to the CEC when it is completed.

The power generation facility is to be contained on a 55-acre portion of the 174-acre property. Discuss whether the proposed power plant is to be constructed on a single legal parcel of land.

Response: EAEC LLC is not required to subdivide the 55-acres of the power plant site. The project will be constructed within the 174-acre single legal parcel of land with the remainder being left in agricultural use.

Please explain if the Applicant is going to be required to file a parcel map with the County of Alameda to create the parcel(s).

Response: EAEC LLC is not required to file a parcel map since the property will not be subdivided.

BACKGROUND

Section 17.52.090 of the Alameda County General Ordinance Code - Zoning regulations states "The building height limitations set forth in this title apply generally to structures, also, but shall not apply to chimneys, church spires, flag poles, or mechanical appurtenances necessary and incidental to the permitted use of a building."

The proposed project includes three 175 foot exhausts stacks for the HSRG units. The exhaust stack for the auxiliary boiler is 100 feet and the 230kV double-circuit transmission lines are 140 feet in height.

DATA REQUEST

75. If the project's proposed structures are taller than the Alameda County height limit for the agricultural zone, explain whether the Applicant will seek a variance.

Response: As stated in Attachment LU-75, a letter from the Alameda County Community Development Agency, a height variance is not required for the project.

BACKGROUND

The East Altamont Energy Center (EAEC) is proposed to be developed on land that is defined as "Prime Farmland" as shown on AFC Figure 8.9-2. The Applicant proposes to

develop 55 acres of a 174 acre property, of which 10 acres would be dedicated to two evaporation ponds, five acres would be used as a wastewater recycle pond and approximately two acres would be used for a stormwater detention pond. The Applicant proposes to lease the remaining 119-acres of undeveloped land within the parcel for agricultural use.

Policies 75 and 76 of the East County Area Plan of the Alameda County General Plan (ECAP) promote conservation of prime soils and the preservation of intensive agricultural use.

The proposed site is located outside of an Urban Growth Boundary and is designated "Large Parcel Agricultural" by the Alameda County General Plan. The site is located within an Alameda County agricultural (A) zone district. Section 17.060.010 of the Alameda County General Ordinance Code states:

> "[Zone] A districts are established to promote implementation of general plan land use proposal for agricultural and other nonurban uses, to conserve and protect existing agricultural uses, and provide space for and encourage such uses in places where more intensive development is not desirable or necessary for the general welfare."

DATA REQUEST

76. Please provide a letter from the County of Alameda Planning Department stating whether or not the proposed land use is consistent with ECAP Policies 75 and 76, and Zone Section 17.060.010, and if any mitigation is required by the Applicant.

Response: As stated in Attachment LU-75, (a letter from the Alameda County Community Development Agency) with mitigation, the EAEC will be consistent with ECAP Policies 75 and 76, and Zone Section 17.060.101. The mitigation can include the preservation and enhancement of the existing farmland on the remainder of the parcel and providing funding to Alameda County for the acquisition and preservation of additional agricultural land in the County.

EAST ALTAMONT ENERGY CENTER
DATA REQUESTS #2
(01-AFC-4)

Technical Area: Noise
Author: Jim Buntin
EAEC Author: Farshad Farhang, Jerry Salamy

BACKGROUND

The Energy Commission typically assesses a 5 dB noise level increase threshold of potential significance by comparison of the steady state noise level due to the power plant to the average (or typical) L_{90} values obtained during nighttime hours, as noted by the Applicant. The Applicant has summarized the average hourly L_{90} values collected in the long-term noise measurement periods in the text of the AFC. However, the hourly noise level data were not provided.

DATA REQUEST

77. Please provide the hourly L_{eq}, L_{50}, and L_{90} values for noise measurement sites 1 and 2 in tabular format. Note any time periods where it is believed that extraneous noise sources affected the noise level data.

Response: Tables NO-1 and NO-2 present the measured hourly noise level on an hourly L_{eq}, L_{10}, and L_{90} basis from noise monitoring sites 1 and 2. As stated in Section 8.5 of the AFC, noise levels increased in the morning hours starting at approximately 6:00 a.m. at Site 1 and 3:00 a.m. at Site 2 due to increases in traffic noise. It should be noted that background noise measurements at Site 2 steadily rose from 30.5 dBA L_{90} at 2:00 a.m. to 53.5 dBA L_{90} at 6:00 a.m., and peaked to 54 dBA L_{90} by 7:00 a.m.

Table NO-1. Measured Hourly Noise Levels (dBA)
Site 1: Nearest Homes Southeast of Site – Franco Property (1/22-1/23/2001)

Start Time	Leq	L10	L90
2:00 PM	46.5	46.0	34.0
3:00 PM	45.6	48.0	34.0
4:00 PM	45.5	47.5	35.5
5:00 PM	50.8	51.5	39.5
6:00 PM	49.5	51.5	39.5
7:00 PM	46.9	47.5	37.0
8:00 PM	41.8	43.0	33.0
9:00 PM	46.5	41.0	33.5
10:00 PM	50.2	41.0	32.0
11:00 PM	37.9	40.5	32.5
12:00 AM	51.8	39.0	32.0
1:00 AM	47.7	36.5	30.5
2:00 AM	34.3	36.5	29.0

Table NO-1. Measured Hourly Noise Levels (dBA)
Site 1: Nearest Homes Southeast of Site – Franco Property (1/22-1/23/2001)

Start Time	Leq	L10	L90
3:00 AM	43.9	38.0	30.0
4:00 AM	48.4	38.5	31.0
5:00 AM	54.0	43.0	33.5
6:00 AM	52.8	47.5	39.5
7:00 AM	56.4	45.5	37.5
8:00 AM	57.2	44.5	32.5
9:00 AM	55.4	39.0	32.5
10:00 AM	57.7	45.5	33.5
11:00 AM	58.9	44.5	33.5
12:00 PM	58.5	44.5	33.5

Table NO-2. Measured Hourly Noise Levels (dBA)
Site 2: Nearest Homes Northeast of Site (1/22-1/23/2001)

Start Time	Leq	L10	L90
3:00 PM	44.8	49.0	35.5
4:00 PM	46.4	48.5	39.0
5:00 PM	53.3	52.0	43.5
6:00 PM	47.9	51.0	40.5
7:00 PM	49.9	53.0	41.0
8:00 PM	48.0	51.5	38.5
9:00 PM	48.6	52.0	36.0
10:00 PM	46.6	50.5	33.0
11:00 PM	44.7	49.0	33.0
12:00 AM	41.7	46.5	29.5
1:00 AM	42.9	48.0	27.0
2:00 AM	47.1	51.5	30.5
3:00 AM	47.6	51.5	35.5
4:00 AM	47.6	51.0	40.0
5:00 AM	51.2	54.5	44.5
6:00 AM	56.9	59.0	53.5
7:00 AM	59.0	61.5	54.0

Table NO-2. Measured Hourly Noise Levels (dBA)
Site 2: Nearest Homes Northeast of Site (1/22-1/23/2001)

Start Time	Leq	L10	L90
8:00 AM	50.6	53.5	46.5
9:00 AM	48.3	50.5	44.0
10:00 AM	48.2	50.5	44.0
11:00 AM	51.2	54.5	44.0
12:00 PM	51.9	55.5	46.0

BACKGROUND

The Applicant has stated that "an increase of more than 5 dBA in a very quiet environment may not necessarily result in an adverse effect." The analysis presumes that compliance with the 45 dBA criterion of the LORS, and the offer to provide additional sound insulation for affected residences, will be sufficient to avoid a significant noise impact. The Applicant's data indicates compliance with the 45 dBA criterion would result in an increase of 14 dBA at measurement site 1. This is likely to be excessive in view of the reported background noise levels in the range of 35 dBA.

DATA REQUEST

78. Please provide an acoustical analysis to address compliance with a noise standard of 40 dBA L_{90} at the nearest noise sensitive receivers. Include a listing of any additional required noise control measures. Provide a cost estimate for the additional noise mitigation measures required as compared to the cost of those currently proposed to achieve the LORS standard of 45 dBA. Include the benefits of any reductions in noise mitigation costs at affected residences.

Response: EAEC LLC is unaware of any law, ordinance, regulation, or standard (LORS) that requires the noise impacts to be controlled to 40 dBA on an L_{90} basis. As shown in the AFC Table 8.5-6, the EAEC is well under Alameda County's CNEL standard of 60 dBA. The most restrictive LORS identified is the Alameda County Ordinance at 45 dBA, and the project complies with this standard. Based on Table 8.5-6 of the AFC (page 8.5-12), there are 2 sensitive receptors with cumulative increases above 10 dBA L_{90}, and 6 sensitive receptors with cumulative impacts above 5 dBA L_{90} but below 10 dBA L_{90}. The CEC has traditionally considered a 10 dBA increase in cumulative noise to be a significant impact, with a cumulative increase in noise below 5 dBA considered to be an insignificant impact. However, based on the rural and quiet nature of the project area, applying the traditional CEC significance criteria to the EAEC may not be a reasonable approach, as noted on page 7 of the CEC's Issue Identification Report (docketed on July 20, 2001).

EAEC LLC does not believe that a noise mitigation package capable of reducing the project's cumulative noise impacts to below 40 dBA L_{90} is achievable and is eager to work with the CEC to develop meaningful significance criteria for rural, quiet areas like those surrounding EAEC.

BACKGROUND

The initial start-up of a combined-cycle power plant typically includes steam pipe cleaning by means of "steam blows." No discussion of the noise effects of this specific practice was provided in the AFC.

DATA REQUEST

79. Please provide a discussion of the potential noise effects associated with steam blows for the proposed project at the nearest sensitive receptors. Include estimates of steam blow noise levels, their effects, and any proposed mitigation measures.

Response: During construction of the plant, unsilenced steam blows could produce noise levels on the order of 95 dBA at the nearest home. Such levels would obviously be significant. Consequently, a temporary blowout silencer, such as a Fluid Kinetics Model TBS 16-AC, or similar, will be used. Such a silencer has an overall noise reduction of 40 to 45 dBA and would reduce the estimated unsilenced level at the nearest home from 95 dBA to about 50-55 dBA, putting it in the same category as most other construction equipment. Low-pressure steam blow techniques are also being evaluated. Since it is common practice to only carry out these blows during the day, silenced blows should not cause any disturbance.

BACKGROUND

Pile driving is sometimes used for power plant construction. Noise and vibration from pile driving can be significant at adjacent sensitive receptors. The listing of construction noise sources contains no reference to such equipment use.

DATA REQUEST

80. If pile driving is planned, please provide a discussion of the potential noise and vibration effects associated with pile driving for the proposed project at the nearest sensitive receptors. Include estimates of pile driving noise and vibration levels, their effects, and any proposed mitigation measures. If pile driving is not proposed, please so state.

Response: Pile driving noise depends on the method used and, in the case of conventional impact driving, the force of each blow. However, for this project, pile driving may not be needed. If pile driving becomes necessary, average pile driving

impacts of 20,000 ft-lb or more would likely result in noise levels of approximately 70 dBA at the exterior of the nearest residence. This level is somewhat higher than the current exposure at the nearest sensitive locations. However, an indoor disturbance would not be anticipated. Common mitigation measures for minimizing exposure to noise from pile driving activities include potential use of vibratory or hydraulic hammers, and erection of temporary shrouds or curtains. Pile driving imparts a relatively limited energy to the surrounding soil and this activity would occur at distances of one-half mile or more from the closest structures. Therefore, it is not expected that there would be any significant ground vibration effect during construction of the proposed project.

EAST ALTAMONT ENERGY CENTER
DATA REQUESTS #2
(01-AFC-4)

Technical Area: Water and Soil Resources
Authors: Lorraine White, John Scroggs, Jim Henneforth & John Kessler
EAEC Authors: Dave Jones, Dave Richardson, Gary Nuss

BACKGROUND

Construction and operation of the East Altamont Energy Center (EAEC) may induce water and wind erosion at the power plant site. Stormwater runoff may also contribute to erosion and sedimentation as well as transport of pollutants off-site. Currently, stormwater drains via a series of ditches into the Delta-Mendota Canal. Once constructed, the site stormwater will drain into a holding pond, before being released into the Delta-Mendota Canal. A Stormwater Pollution Prevention Plan will be necessary, which addresses how drainage into the holding pond will be monitored for contaminants to determine adequate quality of stormwater before being released. In addition, an Erosion Control Plan is required that addresses construction activities at the power plant facility, and any associated linear or other facilities, such as transmission lines, pipelines, lay-down areas, and staging/storage areas. Lastly, relatively shallow depths to groundwater may be encountered, and as identified in the Phase I ESA, soil and/or groundwater contamination may exist and may be encountered during construction.

DATA REQUEST

81. Please provide a draft Erosion Control Plan that identifies all measures that will be implemented at various locations of the project during construction and operation of the proposed EAEC Project. The draft Erosion Control Plan should identify all permanent and temporary measures in written form and depicted on a construction drawing(s) of appropriate scale. The purpose of the plan is to minimize the area disturbed, to protect disturbed and sensitive areas, to retain sediment on-site and to minimize off-site effects of stormwater runoff. The elements of the plan shall include specific best management measures to be employed to control stormwater runoff during construction and operation at identified locations. In addition, any measures necessary to address Nationwide Permits, as required, should be identified. The plan should also identify maintenance and monitoring efforts for all erosion control measures.

    Response: A conceptual Erosion and Sedimentation Control Plan (ESCP) is included as part of the Storm Water Pollution Prevention Plan (SWPPP) covering construction phase activities addressed in Data Request Response #83 below.

82. Include in the Erosion Control Plan a discussion and description of how this plan will address encountering non-contaminated groundwater during excavations, as well as any contaminated soil or groundwater that may be excavated or encountered during construction. Specifically address how stormwater that has come into contact with any contaminated materials will be collected, treated, and discharged.

Response: Non-contaminated groundwater encountered during excavations will be routed to sedimentation control facilities in accordance with the SWPPP covering construction phase activities to control site erosion.

Regarding encountering contaminated soil and groundwater, a Phase I Site Assessment was conducted at the EAEC site. The results of the assessment indicated that it is unlikely that contaminated soils or groundwater would be encountered during construction. If soil or groundwater is encountered that is suspected of being contaminated, it will be segregated and stored on-site and tested to confirm the nature and extent of suspected contamination. If proven to be contaminated, it will either be treated on-site to remove the contamination or transported off-site to an approved reuse/disposal facility.

Contaminated materials that are stored on-site will be covered and contained to prevent stormwater from coming into contact with them.

83. Please provide a draft Storm Water Pollution Prevention Plan (SWPPP) consistent with the requirements for a General Storm Water Construction Activity Permit for the EAEC property that includes site modifications necessary to accommodate the power plant. Include in this draft plan a spill prevention and countermeasures plan.

Response: A draft Storm Water Pollution Prevention Plan (SWPPP) consistent with the requirements for a General Storm Water Construction Activity Permit is included as Attachment WR-83. The final plan, including a Rough Grading and Construction Drainage drawings and details, will be prepared by the construction contractor who is awarded the construction contract for the project. It will be reviewed and approved as part of the General Storm Water Permitting process. In general, the site has a natural grade that slopes to the northeast. The north and eastern sides of the EAEC site are bordered by drainage ditches. It is anticipated that silt traps and other erosion and sedimentation control best management practices will be implemented along the north and eastern edges of the construction site to prevent stormwater pollution of the drainage during construction.

BACKGROUND

According to the AFC, the proposed project will require an average annual water supply demand of approximately 4,600 acre-feet, with daily demands varying from 4.0 million gallons a day (MGD) (2,772 gpm) on average, to 9.1 MGD (6,322 gpm) maximum. Peak annual demands could be as high as 7,000 acre-feet. Although recycled water is being considered from a prospective source, the Mountain House Community Service District (MHCSD), that has yet to be developed, the project is primarily relying on the use of fresh water and a mechanical draft evaporative wet tower for cooling purposes. Such use of fresh water for cooling purposes is discouraged in accordance with the California Water Code and Alameda East County Area Land/Water Use Policies.

Alternatives to wet cooling and the proposed water supply must be more fully evaluated. As examples to alternative sources of recycled water supply, the City of Tracy's Wastewater

Treatment Plant, located within approximately 10 miles of EAEC, has a current capacity of 9.0 MGD and is planning expansion to 16 MGD. Likewise, the Discovery Bay Community Services District's Wastewater Treatment Plant, located within approximately 6 miles, has a current capacity of 1.4 MGD and is planning for expansion to 2.1 MGD. The AFC provides only a limited discussion of alternatives (AFC pages 2-9 through 2-12, 7-1 through 7-15, 8.14-4 through 8.14-8, and 9-9 through 9-10).

DATA REQUEST

84. Please provide an evaluation of the use of dry and wet/dry cooling alternatives. The analysis should include the impacts on water use and waste discharge, economic impacts (capital, and operating costs), plant efficiency and output, and environmental impacts (particularly land use, noise, visibility, emissions).

Response: EAEC LLC is awaiting information from vendors and an outside consultant in preparing our response to Data Request #84. Unfortunately this information has not yet arrived. Given the importance of Data Request #84 to both Staff and Applicant, we believe it would be prudent that Staff be provided as complete a response as possible. EAEC LLC is diligently working on a response to this Data Request and anticipates submitting our response on or before September 14, 2001.

85. The Applicant has indicated that the Wet Cooling Towers will operate at 3 - 8 cycles of concentration. Other facilities that have employed zero discharge systems are capable of greater cycles of concentration, thus maximizing the efficiency of water use on site. Please provide an analysis and discussion of the possibilities of cycling the concentrations in the cooling towers up to 10, 15 and 20 times. Include in the analysis the use of a side stream softening system. Explain any constraints that may limit the number of cycles of concentration. The analysis should include the impacts on water use and waste discharge, economic impacts (capital and operating costs), plant efficiency and output.

Response: The difference between the number of cycles of concentration that EAEC LLC has indicated in the AFC and what may have been indicated for other zero liquid discharge projects, most likely is found in the definition used for "cycles of concentration". In a conventional cooling tower arrangement, the "cooling tower" cycles of concentration are equal to the allowable level of a particular constituent or parameter in the circulating water (e.g., silica, calcium, chloride, sulfate, TDS) divided by the level of this same constituent or parameter in the makeup water. Where multiple sources of makeup water are proposed, as is the case for the EAEC, the quality of the makeup water must first be determined by combining the various flow streams to determine the quality of the blended water. The lowest number of cycles, calculated for all constituents or parameters of interest, establishes the limiting cycles of concentration. From the cycles of concentration, evaporation, and drift, the cooling tower blowdown can be calculated using the equation:

$$\text{Blowdown} = \{\text{Evaporation} - [(\text{Cycles} - 1) * \text{Drift}]\} / (\text{Cycles} - 1)$$

Similarly, knowing the evaporation, blowdown, and drift, the cycles of concentration may be calculated by rearranging the above equation:

Cycles = (Evaporation + Drift + Blowdown)/(Blowdown + Drift), or

Cycles = Makeup/(Blowdown + Drift)

Section 2.2.9.1 and Figures 2.2.6a through 2.2.6f in the AFC indicate cooling tower cycles of concentration ranging from 3 to 8 cycles, based on the above equation. In this case, the blowdown quantity is that flow leaving the circulating water system and entering the zero liquid discharge treatment system. When zero liquid discharge systems are involved, it is not uncommon for water treatment specialists to calculate cooling tower cycles based on representing the blowdown flow as being that flow which leaves the overall zero liquid discharge treatment system. While this method of calculation is not representative of the chemistry of the circulating water, it is useful in showing the level to which water is recycled through use of the zero liquid discharge system. In the case of EAEC, if the calculation is performed using the reject stream from the high TDS reverse osmosis system as the blowdown flow, the cycles of concentration range from about 8 to 31, depending on plant load and source water quality. Even higher cycles of concentration are indicated if the concentrated brine flow is used as the blowdown flow.

With respect to evaluation of side stream softening, this evaluation is unnecessary as EAEC LLC's proposed zero liquid discharge system already includes side stream softening. The function of a softening process is to remove hardness, or calcium and magnesium, from the water. As shown in Figures 2.2.6a through 2.2.6f of the AFC, the cooling tower blowdown first passes through a reactor/clarifier, which is a solids contact clarifier designed to remove silica and magnesium. Downstream of the reactor/clarifier, the high TDS reverse osmosis system will remove additional magnesium and also calcium. Thus, side-stream softening processes are already incorporated into EAEC.

The primary constituents limiting the cycles of concentration for the EAEC are silica and calcium. As can be seen in Figures 2.2.6a through 2.2.6f of the AFC, the poorer the quality of the source water, the lower the cycles of concentration. As the cycles of concentration decrease, the zero liquid discharge capacity must increase, resulting in larger equipment, higher chemical consumption, and a higher concentrated brine steam discharging to the evaporation ponds.

86. Please conduct a comparative feasibility analysis on the use of alternative sources of water supply for cooling purposes, such as Reclaimed Water from the Cities of Tracy and Livermore, and Discovery Bay Community Services District. Include in this analysis data for the alternatives in comparison to the proposed use of fresh water from BBID, and prospective use of recycled water originating from MHCSD. The

analysis should consist of a discussion of the following: a) water currently available and projected to be available over the next 20 – 30 years; b) impacts on water use and waste discharge; c) economic impacts (capital, and operating costs including water purchase price); d) changes in plant and linear facility infrastructure; e) plant efficiency and output; and f) environmental impacts (particularly land use, biological and cultural resources, agriculture and soils, geologic hazards, and traffic and transportation). Data and results should also be summarized and presented in tabular form.

Response: EAEC LLC is committed to using recycled water when it becomes available to the project. EAEC LLC recognizes the benefit to local water supplies and the environment of using recycled water for cooling purposes, and plans to fulfill the State Water Resources Control Board's Policy 75-58 for reusing water to the extent practicable. The Byron Bethany Irrigation District (BBID) is the sole purveyor of water in the area of EAEC and will be supplying all of the project's water needs. EAEC LLC plans to use all recycled water that can be supplied by BBID. BBID is currently completing a feasibility study regarding the availability and use of recycled water, including estimates of the quality and quantity of recycled water that can be made available by local sources. (See Attachment WR-86 for a copy of this study.) BBID has concluded based on this study that it may be possible to develop recycled water supplies from the Mountain House Community Services District (MHCSD) wastewater treatment plant, and that currently MHCSD is the most feasible option for supplying recycled water to customers within the BBID service area, including EAEC (Source*: Draft Recycled Water Feasibility Study, BBID, July 2001*). As presented in this Study, MHCSD and its developer estimate that at full buildout, recycled water availability will be 5.4 mgd, average dry weather flow (approximately 5,000 to 7,000 acre-feet/year). Phase 1 is now under construction, and will represent a flow in the range of 0.5 mgd (500 to 800 acre-feet/year). With buildout scheduled by 2020, the developer estimates development and flow generation in a roughly linear basis from now to 2020. Therefore, in its AFC document, EAEC LLC has endeavored to evaluate the environmental impacts of implementation of a system to transport and use MHCSD recycled water supplied by BBID. Taking into account the use of recycled water to meet MHCSD needs first (e.g., watering green belts and golf courses), and then comparing monthly availability with projected demand from the EAEC, a schedule for estimated annual utilization of recycled water from MHCSD to BBID for use at the EAEC (under typical year operations) was developed, as presented in Table WR-86-1.

Table WR-86-1. Estimated Minimum Annual Water Supply of MHCSD for the East Altamont Energy Center under typical year operations through the BBID Recycled Water Planning Horizon (Acre-feet/year)

Water Source by Year	2000	2005	2010	2015	2020
Projected Recycled Water	0	1,483	2,965	4,448	5,930

Table WR-86-1. Estimated Minimum Annual Water Supply of MHCSD for the East Altamont Energy Center under typical year operations through the BBID Recycled Water Planning Horizon (Acre-feet/year)

Available from MHCSD					
Average Recycled Water Available to BBID, net of Local MHCSD Needs	0	500 to 800	1,810	2,495	2,884
Minimum Recycled Water Projected to be Utilized by EAEC(worst case)	0	500	1,465	2,197	2,861

Note: The years denoted in the table (2000, 2005, 2010, 2015, and 2020) match the years presented in the BBID Study. Despite the fact that the expected timing of EAEC startup is projected for 2004 (year 1), year 20 (Buildout) in the AFC is matched with 2020 (Buildout) in the BBID study, because both characterize expected buildout conditions.

The differences between the values in the "Average Recycled Water Available" row and the "Projected" row account for the water expected to be demanded and used by Mountain House. The differences between the values in the "Minimum Use" row and the "Average Recycled Water Available" row account for the fact that in some months, there is more recycled water available than can be used by EAEC (winter months), and in some water years, less water will be available. The sum of the monthly "Minimum Use" values define the "Annual Minimum Use" for EAEC in Table WR-86-1.

For typical year operations, at an estimated annual water use of 4,600 acre-feet/year, the 2,861 acre-feet/year minimum use would constitute approximately 62 percent of total annual use. In years when more than the minimum annual supply was available to BBID and EAEC, this recycled water use estimate could grow in actual and percentage terms. In years when the power plant demanded more water overall, some of that demand could be met with recycled water as well, because the recycled water available in November through March exceeds EAEC LLC's typical average needs in those months. Thus, the annual use volume and the percentage use would be greater in those years. If the EAEC were to go into operation in 2003, significant volumes of water are expected to be available within 2 years, comprising roughly 11 percent of the EAEC water supply.

BBID has not identified the cities of Livermore and Tracy or the Discovery Bay Community Services District as feasible sources of recycled water for its customers. EAEC has some awareness of the supply, institutional, and cost issues associated with obtaining recycled water from these other sources, and has addressed these issues below. It appears, based on this information, that BBID's conclusion that MHCSD is the only feasible supply of recycled water is reasonable.

Availability of supply as well as costs will prohibit the import of recycled water from the City of Livermore for use at EAEC. The City of Livermore currently operates a wastewater treatment plant providing advanced treatment (Title 22, unrestricted

reuse) and has the capability to remove salts for the water slated for groundwater injection or percolation recharge. According to the City's Department of Public Services, it is the policy of the City that all recycled water supplies produced by the City will be used within city limits, and current and future users within the City have been identified. This includes planned use in the North Livermore area. There is, therefore, no available supply for EAEC from the City of Livermore (personal communication, Mike Miller, Director of Public Services and Dave Richardson, CH2M HILL). If there were supplies available, costs of building a pipeline to transport the water from Livermore to the EAEC project site would be prohibitive. Livermore is located approximately 15 miles from EAEC. At $325 /linear foot (lf), the capital cost of a pipeline to transport recycled water over those 15 miles would be approximately $26 million. The unit cost of $325/lf is based on a 24-inch diameter pipeline, including pump stations and appurtenances, and assuming similar conditions as recycled water pipelines estimated within the BBID service area (MHCSD to EAEC). Any more difficult conditions between Livermore and BBID would drive the cost up considerably. Further, to export recycled water from Livermore to EAEC would require pumping over the Altamont Pass, an elevation of approximately 1,000 feet. Pumping from the Livermore Valley over this pass would imply considerable costs and energy consumption, and would make the prospect even less economically feasible.

The City of Tracy does not currently produce any tertiary treated recycled water. The City produces 8.5 million gallons per day (mgd) of secondary treated effluent. The City has just completed facility planning, in anticipation of its new NPDES discharge permit, for a tertiary treatment facility that would be capable of producing water quality meeting Title 22, unrestricted reuse criteria. Hence, capital cost estimates for the upgrade are available. The plan is awaiting environmental review, so the City has not yet committed to the upgrade. Even if Title 22 quality water were produced, the City currently does not have the ability to sell water in the BBID service territory. In order for EAEC to use water from the City of Tracy, it would be necessary for BBID to contract with the City of Tracy to develop the potential recycled water supply and deliver it to the energy center. However, this source was evaluated by BBID as a potential recycled water supply, and determined that due to institutional considerations, cost, and water quality factors, BBID's use of water from Tracy is infeasible at this time (Source: *Draft Recycled Water Feasibility Study, BBID, July 2001*). The BBID conclusion that this is an infeasible water source compared to other alternatives seems reasonable. Indeed, the potential costs involved in using recycled water from the City of Tracy appear to be prohibitive. The estimated capital cost of upgrading the City's wastewater treatment plant to produce to tertiary treated effluent meeting Title 22 requirements is a minimum of $11.3 million, including engineering and construction contingency, assuming the project was done as part of the overall plant upgrade and expansion. If done on its own, the cost would potentially reach $15 million, or $3 million/mgd. The cost for building a pipeline to convey the recycled water 10 miles from the City's wastewater treatment plant to EAEC would be approximately $17.2 million. In addition, the poor quality of Tracy's recycled

water would impose considerable costs on the development of EAEC itself. The high salt content of Tracy's recycled water (900-1100 mg/l of total dissolved solids vs. 550-620 mg/l at MHCSD) would necessitate a proportionately larger zero liquid discharge system, including the reactor/clarifier, filter, high TDS reverse osmosis system, brine concentrator, and evaporation ponds, thus increasing costs for equipment, mitigation, chemicals, energy, and sludge disposal. Based upon these estimated costs, this potential water supply appears to be infeasible compared to the reasonable alternatives BBID has available to develop supplemental water supplies (MHCSD).

Potential for obtaining recycled water supplies from the Discovery Bay Community Services District also would be inhibited by the same institutional difficulties and cost barriers discussed above for the City of Tracy. Only part of Discovery Bay is located in BBID's service area, and BBID has no supplier relationships with Discovery Bay. Establishing a contractual relationship to supply recycled water to EAEC would require additional institutional and business arrangements. Further, the capital cost to build a pipeline, pump station and appurtenances the 7 miles (minimum) from Discovery Bay to EAEC is estimated to cost approximately $12 million. This assumes a relatively similar pipeline construction corridor and no right-of-way costs. The treatment plant would also need to be upgraded to tertiary treatment to meet Title 22 requirements for use as cooling tower makeup, for a capital cost of at least $5 million, using standard cost curve criteria, such as $2 million/mgd. Depending upon the level of treatment currently provided at Discovery Bay, this cost could be lower or higher. The investment in conveyance infrastructure alone would not be justified in comparison to the amount of recycled water supply it would make available. Operating costs to treat the water to Title 22 standards and to pump the water to EAEC would further increase the total costs of this water supply. Total potential recycled water supply available from Discovery Bay is currently 1,300 AF/yr, with a projected 2,500 AF/yr to be available in the future (Source: *East County Water Supply Study, CH2M HILL, 1998*). The EAEC project will require approximately 4,600 AF/yr, so the supply Discovery Bay could potentially provide would be expected to be less than 50 percent of the ultimate supply for the energy center, and potentially much less, depending upon the recycled water needs of the Discovery Bay community.

In addition, before supplying recycled water to EAEC or BBID, the cities of Livermore and Tracy and the Discovery Bay Community Services District would have to fully evaluate the potential for supplying users closer to their treatment facilities to the level of detail already done by MHCSD and BBID for the Mountain House supply. It is likely that it would prove more efficient and cost effective for these entities to distribute their recycled water closer to its source rather than conveying it to EAEC; the costs paid by EAEC would certainly reflect those economic parameters. The City of Livermore has already come to this conclusion, as evidenced by its decision to use all recycled water supplies within the city limits.

EAEC is not in a position to negotiate for supplies outside of BBID because EAEC is located in BBID service territory and other water suppliers cannot retail water to customers in the BBID service area. Furthermore, without knowing the details of contractual agreements and business arrangements that would be created during implementation if BBID were to supply recycled water from one of these sources, we have less ability to accurately predict as to the complete cost picture or impact on operations associated with use of any of these potential supplies. BBID has stated that it is their objective to develop all economically feasible recycled water sources, so EAEC expects to use the recycled water supply developed by BBID.

As stated in the AFC, EAEC plans to use recycled water from MHCSD wastewater treatment plant, to be purveyed by BBID, when it becomes available. By the year 2024, an estimated 62 percent of the project's water requirements will be supplied by recycled water from the MHCSD wastewater treatment plant. MHCSD will be located within BBID's service area, so there are no institutional barriers to establishing a contractual relationship for recycled water distribution. MHCSD would produce in the range of 430 to 605 AF/month of recycled water at buildout. Taking into account the projected Mountain House community uses of that water, MHCSD could supply up to 3.8 mgd (350 AF/month as a design basis; 306 AF/month actual supply) of recycled water to the EAEC project. Maximum monthly use of 306 AF/month occurs in the winter months when excess supply is available from MHCSD (for example, 605 AF/month in January, Source: *Draft Recycled Water Feasibility Study, BBID, July 2001)*. In summer months when power plant demands are greater, less excess is available from MHCSD, net of its own expected uses. The pipeline from MHCSD would be approximately 4.6 miles, for an estimated capital cost of $8 million for pipeline and pump station. Pumping costs due to the short distance and minimal elevation change are relatively low. Recycled water from MHCSD is expected to be of reasonably high quality, with lower salt concentrations than that of Tracy, due to a higher quality raw water supply in the MHCSD service area, which is provided by BBID.

In summary, currently, there is no supplier of recycled water available in the area. However, EAEC has endeavored to assess the potential future availability of recycled water in order to ensure that the design of the energy center could accommodate the changes in water characteristics that would occur as this MHCSD water source is developed. Moreover, we have presented a worst case scenario in all regards with respect to future water sources that BBID might supply to the EAEC in our assessments of the environmental impacts. Until a recycled water source becomes available, EAEC will use raw water from BBID, which will be considerably more economical than the alternatives evaluated here. Environmental impacts of using BBID raw water have been evaluated in the AFC.

Table WR-86-2 below summarizes the above analysis of recycled water alternatives.

TABLE WR-86-2 - SUMMARY OF EVALUATION OF POTENTIAL RECYCLED WATER SUPPLIES

Potential Water Supply	Economic Impacts	Potential Supply	Institutional Barriers	Changes in plant infrastructure/ efficiency	Environmental Impacts
Livermore	$26 M for pipeline, plus considerable pumping costs	None available--all supplies are already allocated within City's service area	BBID does not have contracting arrangements with City	N/A	Considerable disturbance due to longer pipeline, limited pipeline corridors, excessive energy use
Tracy	$11.3 M for Title 22 upgrade, plus $17.2 M for pipeline, plus additional costs due to effects of poor water quality	Currently 8.5 mgd of secondary effluent with potential to upgrade to tertiary (ammonia removal and filtration)	BBID does not have contracting arrangements with City	Poor water quality (900-1100 mg/l of total dissolved solids) will necessitate larger zero liquid discharge system, including brine concentrator and additional chemicals	Disturbance due to longer pipeline; poor quality water yields; potentially greater discharge impacts
Discovery Bay	$5 M for Title 22 upgrade, plus $12 M for pipeline and pump station	Currently 1.4 mgd of secondary effluent with potential to upgrade. Ultimately, 2,500 acre-feet/year potentially available.	BBID does not have contracting arrangements with Community Services District	N/A	Disturbance due to pipeline construction (longer and more unknowns relative to base case—MHCSD)
MHCSD	$8 M for pipeline and pump station	5.4 mgd at buildout; 3.8 mgd (2,900 acre-feet/year) likely available to EAEC	No institutional barriers as MHCSD is fully in BBID territory	None (Base case)	Evaluated in AFC

87. Please provide excerpts from any reference documents demonstrating recognition and priority of BBID's Pre-1914 Water Rights up to 60,000 acre-feet/year by the SWRCB, and/or by the SWP and CVP in administering Cal-Fed and the CVPIA.

Response: Attachment WR-87 contains documentation demonstrating BBID's water rights. In addition, Page II-8 of the final Central Valley Project Improvement Act (CVPIA) Preliminary Environmental Impact Statement (PEIS) Table II-1 states the following with respect to water delivery alternatives: "Total water rights would be delivered in all water year types without shortages even if water rights had not been fully utilized under pre-CVPIA conditions. The CVP is operated in accordance with all water rights requirements as defined and implemented by the SWRCB, including Area of Origin and Delta Protection Act provisions." Furthermore, the State Water Resources Control Board Bulletin 160-93 included a land use analysis that validates that 2 million acre-feet per year assumed in the CVPIA water allocation model for Delta Division facilities will accommodate future anticipated water demands. BBID is considered as part of the Delta Division and its 60,000 acre-feet per year of water rights is included within the 2 million acre-feet per year water allocation model assumption.

BACKGROUND

The AFC states that by the year 2024, an estimated 50 percent of the project's water requirements will be supplied by recycled water from the MHCSD wastewater treatment plant. As stated before, peak water demand at the EAEC facility is estimated to be 7,000 AFY of which approximately 3,000 AFY is projected to come from recycled water. Assuming a typical wastewater flow of 70 to 100 gallons per person per day, the Mountain House CSD plant would need to serve some 30,000 to 40,000 residents and the wastewater plant would need to be constructed with a capacity of 3 to 4 MGD. It is our understanding that the MHCSD plant will be constructed north of Bethany Road with an initial capacity of 0.45 MGD. The second phase of this plant would increase capacity to 1.5 MGD. There are no residents presently served, nor homes constructed in the MHCSD. At this point, staff consider the supply of recycled water to be speculative, and need additional information to clarify the potential availability of this resource. The ultimate capacity and ability of the wastewater treatment facility to serve the plant is dependent on future undefined development.

DATA REQUEST

88. Please provide master plan projections from the San Joaquin County Planning Department to verify that the new community of Mountain House is projected to develop with a population of $\pm$ 40,000 persons by the year 2024.

Response: According to Bill Factor from the San Joaquin County Planning Department, the new community of Mountain House will be fully built-out in 20 to 30 years. At build-out, more than 16,000 housing units will become available. From the 16,000 housing units, 15,500 are normal units and 800 are additional second unit dwellings. According to

Mountain's House Master Plan, these housings will have a total capacity to accommodate about 41,762 people.

89. Please compare projected water use and wastewater discharge volumes for the anticipated Mountain House development with similar new towns that have been developed, or are projected for development, for the East Alameda, South Contra Costa, or Western San Joaquin County region. Please provide all appropriate references. Also include in this comparison information on the anticipated growth versus actual growth and or development of these new towns over time to actual build out.

Response: EAEC LLC objected to this data request in its July 30, 2001 filing due to the speculative nature of the data request.

BACKGROUND

A zero-liquid wastewater discharge system is proposed with concentrated brine from the cooling tower treatment system to be discharged to two 5-acre evaporation ponds. An intermediary 5-acre wastewater recycle pond is also proposed. The two ponds would receive daily loading of approximately 5 to 53 gpm depending on plant load and service water quality. According to the AFC, the ponds have been designed for a 100-year return period.

DATA REQUEST

90. Average annual rainfall data has been provided. Please provide monthly rainfall total for a 100-year return period typical of the project area.

Response: Attachment WR-90 shows the monthly rainfall at the Tracy Pumping Plant (located near the EAEC site). These data are taken from the California Department of Water Resources who operate the pumping plant. At the end of the table, data are presented showing rainfall by month for differing return periods including the 100-year storm event.

It is important to note that EAEC will not longer utilize evaporation ponds (see Data Response #95). The project will still have a stormwater pond and recycled water pond.

91. Please provide evaporation rates typical of wet year conditions. Please clarify whether the evaporation rates provided are "pan rates" or "pond rates," and why 90% of the mean evaporation rate was suggested as appropriate for wet year conditions.

Response: See Data Response #95.

92. Please provide a pond balance under 100-year return conditions, wet year evaporation rates and an evaporation pond discharge rate of 20 gpm (Figure 2-2-6b, Plant water balance average day, 100% recycled water).

Response: See Data Response #95.

93. Please provide a written verification from the CVRWQCB that the EAEC report of waste discharge (ROWD) for the project wastewater discharge system (evaporation ponds) has been deemed complete.

Response: The Central Valley Regional Water Quality Control Board (CVRWQCB) issued a letter (dated June 19, 2001) stating that the submitted Report of Waste Discharge Application is complete. The letter also requests EAEC LLC to submit a time schedule for the installation of the ground water monitoring wells. Attachment WR-93 presents the CVRWQCB and EAEC LLC's response to the request for a time schedule.

Please note however, that the project is not longer using evaporation ponds (see Data Response #95).

BACKGROUND

The proposed wastewater system includes one brine concentrator with discharge to two, 5-acre evaporation ponds. When the brine concentrator is out of service, the reject stream from the high TDS reverse osmosis process would be discharged directly to the evaporation ponds. Under average day conditions, this would increase plant loading to the evaporation ponds from the proposed 5 to 20 gpm, up to 132 to 265 gpm. In addition, other projects have proposed a zero liquid discharge system by including a brine crystallizer, eliminating the need for evaporation ponds.

DATA REQUEST

94. Evaluate the feasibility of providing redundancy for the brine concentrator versus demonstrating the capacity of the evaporation ponds to manage the increased loading in the event of loss of the brine concentrator for an extended period.

Response: As a point of clarification, in the event that the brine concentrator is out of service, it was not EAEC LLC's intent to discharge the brine concentrator feed directly to the evaporation ponds. As described in the Report of Waste Discharge, the wastewater recycle pond would instead be used for this purpose. This way, when the brine concentrator is again operable, the water previously discharged to the wastewater recycle pond could be recycled back to the inlet to the brine concentrator for processing. Had this water instead been discharged directly to the evaporation ponds, it would have mixed with the contents of the pond and could not have been recycled back to the brine concentrator, thus consuming valuable pond volume. Nonetheless, because of the wide variation in brine concentrator feed resulting from the varying supply water quality and plant load, and to provide a greater amount of reliability, EAEC LLC concurs that it would be more desirable to have two 50% capacity brine concentrators, instead of one 100% capacity brine concentrator. The revised zero liquid discharge system, described in EAEC LLC's response to Data Request #95, will include two 50% capacity brine concentrators.

95. Evaluate the feasibility of implementing a brine crystallizer system that would result in no liquid wastewater discharge from the project (onsite or offsite) as an alternative to the evaporation and the wastewater recycle ponds proposed at the EAEC. The analysis should include the impacts on water use and waste discharge, economic impacts (capital and operating costs), plant efficiency and output, solid waste disposal and environmental impacts.

Response: EAEC LLC originally selected evaporation ponds for the disposal of concentrated brine disposal because they were believed to be the lowest cost and most reliable alternative. EAEC LLC now proposes to use brine crystallizers (or dryers) instead of evaporation ponds for the following reasons:

- Since filing the AFC and completing the preliminary design of the evaporation ponds, EAEC LLC has determined that the cost of the evaporation ponds for the EAEC will be almost twice the previous estimate ($450,000 to $500,000 per acre versus $250,000 per acre).
- With evaporation ponds, there are significant capital and closure costs but very low operating and maintenance costs. With brine crystallizers (or dryers), there are significant capital, operating, and maintenance costs, but very low closure costs. The majority of the costs associated with the evaporation ponds are incurred regardless of how much brine is processed, whereas the majority of the costs associated with the brine crystallizer (or dryer) system will be dependent upon the amount of brine that is processed. As shown in the water balances presented in Figures 2.2.6a through 2.2.6f of the AFC, the amount of concentrated brine to be disposed of is very dependent on plant load, and to a greater extent, on the quality of the source water. Because of the variability in plant load and source water quality, the costs of operating the brine crystallizer (or dryer) system will better reflect the amount of concentrated brine that is processed, whereas the evaporation ponds need to be sized for the expected worst case conditions and there is little cost savings in the event that less concentrated brine is processed.
- Calpine now has several plants in operation using brine crystallizers, thus the level of comfort regarding their reliability has increased.
- EAEC LLC proposes to use two 50% capacity brine crystallizers (or dryers), therefore increasing reliability and providing redundancy under base load conditions.
- Western Area Power Administration (Western) has expressed a desire to have more space available for the switchyard. By deleting the evaporation ponds, more space can be made available to accommodate Western.

In order to incorporate brine crystallizers (or dryers) into the zero liquid discharge treatment system, EAEC LLC proposes the following modifications to the upstream processes:

- The softening process will be relocated downstream of the sidestream filters. Instead of using a reactor/clarifier utilizing sodium hydroxide, soda ash, and magnesium hydroxide to precipitate calcium carbonate and to reduce silica and magnesium, ion exchange softening will be used. Two softening trains are proposed, the first operating on the sodium cycle, regenerated with sodium chloride brine, and the second operating on the hydrogen cycle, regenerated with sulfuric acid.

- Since silica will not be removed in the ion exchange softening process, sodium hydroxide will be injected upstream of the high TDS reverse osmosis (RO) system to prevent silica from depositing on the RO membranes.
- As described in the response to Data Request 94, two 50% brine concentrators will be used instead of a single 100% brine concentrator.

The above modifications are proposed in order to eliminate the need for separate systems for dewatering sludge and salt cake. With the zero liquid discharge system presented in the AFC, the sludge from the reactor/clarifier was to be thickened, dewatered, and trucked offsite, whereas the concentrated brine was discharged to the evaporation ponds, with the salt caked removed upon plant closure. With brine crystallizers (or dryers), the salt cake is dewatered and trucked off on a regular basis. By using the zero liquid discharge system indicated above, all of the solids end up being discharged from a single location, the outlet of the brine crystallizers (or dryers).

Water balances reflecting the revised zero liquid discharge system will be submitted on or before August 31, 2001.

BACKGROUND

Sanitary wastewater from sinks, toilets, shower and other sanitary facilities are proposed to be discharged to an onsite septic tank and leach field. According to the Manual of Septic Tank Practice (U.S. Department of Health, Education & Welfare), the soil in the leach field disposal area must be suitable for the absorption of septic tank effluent without interference from groundwater. The maximum seasonal level of the ground water table should be at least 4 feet below the bottom of the leach field trench. Ground water levels in the vicinity of the EAEC site are reported to be within 0 and 10 feet of the existing ground level. The on-site leach field disposal system must be approved by the Alameda County Environmental Health Department.

DATA REQUEST

96. Provide information on the design of the leach field disposal system under the potentially high groundwater conditions.

Response: Because of the high groundwater in the vicinity of the EAEC site, it will be necessary to construct an above ground mound-type leach system for disposal of sanitary wastes. The system currently proposed system would collect sanitary wastewater in a septic tank located west of the Administration Building. From the septic tank, wastewater would be pumped to the mound system, located in the area north of the cooling tower. The mound system would be designed to the requirements of EPA's Design Manual for Onsite Wastewater Treatment and Disposal Systems (EPA No. 625/1-80-012), where it is referred to as the "NoDak" disposal system and applicable state and county standards.

97. Provide status of the leach field disposal permit application with Alameda County Environmental Health.

Response: EAEC has not yet applied for a disposal permit with Alameda County Environmental Health. Alameda County's ordinance currently does not allow for the proposed mound system. The ordinance is in the process of being revised. It is EAEC LLC's understanding that the proposed mound system is one of the systems being considered in the revised ordinance. In the event that the new ordinance is not adopted prior to the time that the EAEC needs to have the leach system permitted, EAEC LLC intends to seek a variance. Applicant's contact at the Alameda County Environmental Health Services is Ron Torres (510/567-6736).

BACKGROUND

According to the AFC, miscellaneous general plant drains will collect area washdown, sample drains, equipment leakage, and drainage from facility equipment areas. Water from these areas will be collected in a system of floor drains, hub drains, sumps and piping and routed to the wastewater collection system. Drains that potentially could contain oil or grease will first be routed through an oil/water separator. Water from the plant wastewater collection system will be recycled to the cooling tower basin.

DATA REQUEST

98. To evaluate how washdown water is to be contained and recycled, please provide an onsite water / wastewater / stormwater piping plan at a scale of 1" = 100' or larger. Label drain pipes and identify pipe sizes and pumping facilities as necessary.

Response: The preliminary layout of the stormwater collection system is shown in Figure 8.14-4 of the AFC. Detailed design of the plant process drainage system, a system separate from the stormwater system, is a final design task and thus drawings of this system are not yet available. In general, there are two different types of washwater that will be produced at the EAEC: 1) combustion turbine washwater, and 2) general equipment washwater.

As described in Section 2.2.9.1 of the AFC, combustion turbine washwater will be collected in a dedicated washwater tank. If cleaning chemicals were used in the wash process, the contents of the washwater tank will he pumped out and for disposal at an approved wastewater treatment facility. If no cleaning chemicals were used in the wash process, the washwater will be discharged downstream of the process drain system oil/water separator and recycled to the cooling tower basin.

The majority of plant equipment and areas that will be subjected to washdowns will either be located indoors, as in the case of the water treatment equipment, or else will be located within hazardous material containment areas as described in the response to Data Request 70. In either case, the discharges of wastewater from these areas will be collected by the plant process drain system and recycled to the cooling tower basin. Water potentially containing oil, will first be routed through the process drain oil/water separator (Item 53 in Figure 8.12-1 of the AFC). Sump pumps (Item 55) will be located throughout the plant to pump process drains either to the inlet of the oil/water separator or to the main plant sump (Item 54), located just downstream of the oil/water separator.

EAST ALTAMONT ENERGY CENTER
DATA REQUESTS #2
(01-AFC-4)

BACKGROUND

Chemicals are proposed for cooling tower conditioning consisting of sulfuric acid for alkalinity reduction and for control of scale, a polyacrylite solution for scale, and sodium hypochlorite to prevent bio-fouling. In addition, chemical conditioning is proposed for the HRSG and auxiliary boiler makeup water consisting of an oxygen scavenger, a neutralizing amine, and a phosphate solution. Chemicals are also proposed for the cooling tower blowdown treatment system (sodium hydroxide, magnesium oxide, etc.) In general, bulk storage of chemicals is proposed with two full capacity metering pumps delivering chemicals in proportion to flow. Table 8.12-2 summarizes the use and storage location of hazardous materials, while Table 8.12-3 summarizes the maximum quantity of hazardous materials stored onsite.

DATA REQUEST

99. Please describe the capacity (in days of average plant operation) that each chemical container is designed to provide.

Response: Table WR-99 lists the chemicals that would be used on a day-to-day basis along with the number of days of storage at the average plant output (i.e., no duct firing or power augmentation). Chemicals that are not consumed on a day-to-day basis have not been included in the table. This includes such chemicals as those used for initial or periodic cleaning of plant equipment, chemicals contained within equipment (e.g., lubrication oil), and chemicals that are only used periodically (e.g., anti-foam, soda ash, non-oxidizing biocide). Where more than one chemical could be used for a given purpose but only a single tank will be provided for storage of such chemical, the chemicals have been grouped into the same row.

TABLE WR-99 Quantity of Chemicals Stored Onsite and Daily Usage Rates

Chemical	Maximum Quantity Stored Onsite	Units	Use/Day	Days of Storage	Storage Method
Aluminum Sulfate or Sodium Aluminate or Polyaluminum Chloride or Ferric Chloride or Ferric Sulfate	3,000	Gals	14.4	208	Covered
Anhydrous Ammonia	20,400	Gals	1,054	19	Outside
Calcium Chloride	4,000	Lbs	1,000	4	Covered
Calcium Oxide or Calcium Hydroxide[1]	100,000	Lbs	3,500	29	Covered
Coagulant Aid Polymer (e.g., NALCO NALCOLYTE 8799)	800	Gals	2.4	333	Covered
Disodium Phosphate	500	Lbs	5	100	Covered
Filter Aid Polymer (e.g., NALCO NALCLEAR 7763)	800	Gals	1.5	533	Covered
Hydrogen	1,320	Lbs	12	110	Outside

TABLE WR-99 Quantity of Chemicals Stored Onsite and Daily Usage Rates

Chemical	Maximum Quantity Stored Onsite	Units	Use/Day	Days of Storage	Storage Method
Magnesium Oxide or Magnesium Hydroxide	800	Gals	24	33	Covered
Neutralizing Amines (e.g., NALCO 356)	800	Gals	6	133	Covered
Oxygen Scavenger (e.g., NALCO ELIMIN-OX)	800	Gals	1.5	533	Covered
Phosphonate (e.g., NALCO 7385)	800	Gals	5.6	143	Covered
Scale Inhibitor (Polyacrylate)	3,000	Gals	40	75	Covered
Sodium Bisulfite or Sodium Sulfite	800	Gals	2.5	320	Covered
Sodium Hexameta Phosphate[2]	500	Lbs	10	50	Covered
Sodium Hydroxide	8,000	Gals	262	31	Covered
Sodium Hypochlorite	8,000	Gals	110	73	Covered
Stabilized Bromine (e.g., NALCO STABREX ST-70) or Stabilized Bromide[3]	2,000	Gals	35	57	Covered
Sulfuric Acid	16,000	Gals	220	73	Outside
Trisodium Phosphate	500	Lbs	5	100	Covered

Notes:

1. Calcium oxide or calcium hydroxide (lime) is an alternate chemical to sodium hydroxide for the softening process. Both lime and sodium hydroxide will not be used at the same time.

2. Sodium hexameta phosphate is an alternate to disodium phosphate and trisodium phosphate and will not be used at the same time.

3. Stabilized bromine or bromide are alternate cooling tower biocides and would not be used simultaneously with sodium hypochlorite.

100. Please distinguish for each chemical container as to whether it is located inside a covered area or outside, and the volume of secondary containment proposed as may be appropriate either individually by container, or for a group of containers within a storage site.

Response: The location of the chemical storage areas is presented on Figure 8.12-1 of the AFC, and Table WR-99 (above) identifies whether the chemicals are stored in a covered area or outside. Secondary containment structures will be designed in accordance with Article 80 of the Uniform Fire Code and all applicable local, state, and federal requirements. For addition information see the response for Data Request #70.

101. Demonstrate how chemical storage areas are to be drained back to the cooling tower basin with prevention of drainage to the stormwater system.

Response: As indicated in the response to Data Request #70, hazardous materials, in general, will be stored in above ground storage tanks, provided with secondary containment meeting the requirements of Article 80 of the Uniform Fire Code. The containment areas will consist of reinforced concrete structures with curbs or walls of sufficient height to contain the required volume. The floors of chemical containment areas will be sloped to a low point sump where the contents can be removed either by a permanent or potable sump pump or by gravity via a drain pipe and normally closed valve. Typically, the contents to be removed from chemical containment areas will consist of rainwater or washdown water. These streams will either be pumped or drained by gravity to the plant process drain system. Drains from areas that contain equipment or tanks containing oil will have their drains first routed to the plant process drain oil/water separator. Plant process drains will eventually be collected in one or more sumps and pumped to the cooling tower basin where the water will be reclaimed for use as cooling tower makeup. As described in the response to Data Request #98, stormwater other than that which falls within the hazardous material containment areas will be collected in an entirely separate drainage system.

102. In general, water and wastewater system chemicals are to be added in proportion to flow. Please explain whether chemical dosage control systems are proposed that will sample and maintain chemical concentrations within high and low tolerances (set points). Also specify if the proposal includes alarms that will cause systems or plant operations to shut down in the event chemical concentrations are out of allowable range.

Response: Table WR-102 lists the chemicals that would be used on a day-to-day basis along with the purpose, control scheme (auto or manual), control method, monitoring methods, and automatic controls to prevent over or underfeeding of chemicals. High and low alarms will be provided for all cases where online analyzers are indicated for the monitoring methods.

TABLE WR-102 Daily Chemical Usage, Purpose, Distribution and Monitoring Methodology

Chemical	Purpose	Control Scheme	Control Method	Monitoring Method	Automatic Functions
Aluminum Sulfate or Sodium Aluminate or Polyaluminum Chloride or Ferric Chloride or Ferric Sulfate	Coagulant for plant makeup water	Auto	Flow proportioned	Wet chemistry	Pump shutoff on no flow
Anhydrous Ammonia	Control of oxides of nitrogen (NOx) emissions through selective catalytic reduction	Auto	Ratio control in proportion to NOx concentration and exhaust flow	Online analyzer	
Calcium Chloride		Auto	Flow proportioned	Wet chemistry	Pump shutoff on no flow
Calcium Oxide or Calcium Hydroxide	Makeup Mineral Removal	Auto	Flow proportioned	Wet chemistry	Pump shutoff on no flow
Coagulant Aid Polymer (e.g., NALCO NALCOLYTE 8799)	Makeup Coagulant	Auto	Flow proportioned	Wet chemistry	Pump shutoff on no flow
Disodium Phosphate	HRSG Treatment	Manual	Calculated shot-feed	Wet chemistry	Day tank pump shutoff if no flow
Filter Aid Polymer (e.g., NALCO NALCLEAR 7763)	Filter Flocculant	Auto	Flow proportioned	Wet chemistry	Pump shutoff on no flow
Hydrogen	Combustion Turbine Cooling	Auto	Pressure control		
Magnesium Oxide or Magnesium Hydroxide	Makeup Mineral Removal	Auto	Flow proportioned	Wet chemistry	Pump shutoff on no flow
Neutralizing Amines (e.g., NALCO 356)	HRSG Treatment	Auto	Flow proportioned	Online analyzer	High pH, and no flow shutoffs
Oxygen Scavenger (e.g., NALCO ELIMIN-OX)	HRSG Treatment	Auto	Flow proportioned	Online analyzer	Pump shutoff on no flow
Phosphonate (e.g., NALCO 7385)	RO Treatment	Auto	Flow proportioned	Wet chemistry	Pump shutoff on no flow
Scale Inhibitor (Polyacrylate)	Cooling Water Treatment	Auto	Flow proportioned	Wet chemistry	Pump shutoff on no flow

TABLE WR-102 Daily Chemical Usage, Purpose, Distribution and Monitoring Methodology

Chemical	Purpose	Control Scheme	Control Method	Monitoring Method	Automatic Functions
Sodium Bisulfite or Sodium Sulfite	RO Treatment	Auto	Flow proportioned	Wet chemistry	Pump shutoff on no flow
Sodium Hexameta Phosphate	HRSG Treatment	Manual	Calculated shot-feed	Wet chemistry	Day tank pump shutoff if no flow
Sodium Hydroxide	Makeup Mineral Removal/Demin Regen	Auto	Flow proportioned	Wet chemistry	Pump shutoff on no flow
Sodium Hypochlorite	Cooling Water Treatment	Manual	Manual feedrate adjustment	Wet chemistry	Not applicable
Stabilized Bromine (e.g., NALCO STABREX ST-70) or Sodium Bromide[3]	Cooling Water Treatment	Manual	Manual feedrate adjustment	Wet chemistry	Not applicable
Sulfuric Acid	Cooling Water Treatment	Auto	On/off control based on pH	Online pH analyzer	Low pH, timer, and no flow shutoffs
Trisodium Phosphate	HRSG Treatment	Manual	Calculated shot-feed	Wet chemistry	Day tank pump shutoff if no flow

EAST ALTAMONT ENERGY CENTER
DATA REQUESTS #2
(01-AFC-4)

Technical Area: Traffic and Transportation
Author: David Flores
EAEC Author: Jeanne Acutanza

BACKGROUND

The pipeline construction activities for the natural gas fuel line and the water supply lines will result in work being done in roadway rights-of-way. The proposed routes are on narrow rural roads with poor lane marking, small or no shoulders and in some cases poor driving visibility. On Mountain House Road, an elementary school is located just south of the project site, along with a number of residences and other businesses that also require traffic access.

DATA REQUEST

103. Please discuss the traffic impact that pipeline construction may have on the elementary school, local residents, business and on street parking.

Please discuss the mitigation measures planned to minimize the impact.

Response: The natural gas pipeline construction will require trenching and partial closure of Mountain House Road north of the elementary school at Kelso Road. Partial closure will likely require keeping only one-lane of traffic open for both directions of travel using a flag person for both Mountain House and Kelso Roads during construction of the segment of the natural gas line that crosses Mountain House Road. When the roads are not under construction, the trench will be covered with steel plates and both lanes open to travel. Businesses, the elementary school and other residents will be able to access their properties during pipeline construction.

The preferred water pipeline routes will not impact either Byron Bethany Road traffic, as these lines will be constructed on the shoulders. However, construction along Byron Bethany Road will require standard traffic management measures (discussed below) designed to minimize traffic impacts and construction safety hazards. The routing of these pipelines is not expected to impact any residences or businesses.

To minimize impacts during construction, a traffic control plan will be developed with input from the agencies and in accordance with Caltrans standards. The management plan will include public notification processes and hours of operation.

104. Please indicate the types of traffic control programs that will be used to ensure safe roadway conditions, (such as lane marking, construction notices, roadway signage, detours, flagperson, etc.).

Response: Traffic control during construction will include development of construction phasing/staging plans to indicate detours, signing and striping, flagging operations, and hours of operation. It will also include details of notification. The traffic control plan must be developed with the local agencies to ensure overall coordination and minimization of impacts of construction; therefore, details will be developed at that time.

105. Please indicate what policies will be in place to ensure workers will park in designated areas.

Please indicate if transportation will be available from a central parking area to and from the work site for the linears.

Response: Workers will be instructed where to park prior to start of construction. The phone number of the Construction Manager will be made available to take complaints from residents or agencies of on-street parking or parking in undesignated areas by workers. The contractor(s) will be notified and warned and if undesignated parking continues, the cars will be towed at the owner's expense.

Construction workers will be carpooled to the site from the designated parking areas for construction on the linears, requiring that the workers arrive at the prescribed times in the traffic control plan.

EAST ALTAMONT ENERGY CENTER
DATA REQUESTS #2A
(01-AFC-4)

Technical Area: Visual Resources
Author: Michael Clayton
EAEC Author: Thomas Priestley

BACKGROUND

Vapor plumes are discussed in section 8.11.2.3 Project Appearance—Proposed Project and section 8.11.2.4 Assessment of Visual Effects. Although plume heights have not been identified in the AFC (Visual Resources Data Requests 6 and 7 of the First Set of Data Requests have asked for this information), project plumes will clearly be visible from a greater area than indicated on the viewshed map provided as Figure 8.11.1. Energy Commission staff will model the project's visible plumes and identify the plume height to be used for viewshed determination. Staff will then ask the Applicant to respond to the following two data requests:

DATA REQUEST

106. Using the plume height provided by Energy Commission staff, please either revise Figure 8.11-1 to include the viewshed boundary for the representative plume, or provide a new figure that identifies the viewshed boundary of the representative plume. Show on the map the location of any other vapor or non-vapor exhaust plumes that would be visible within the proposed project's plume viewshed.

Response: This data request will be addressed once EAEC LLC receives the results of the CEC staff's plume modeling.

107. Please describe and identify the location of any other vapor or non-vapor exhaust plumes that would also be visible within the proposed project's plume viewshed.

Response: This data request will be addressed once EAEC LLC receives the results of the CEC staff's plume modeling.

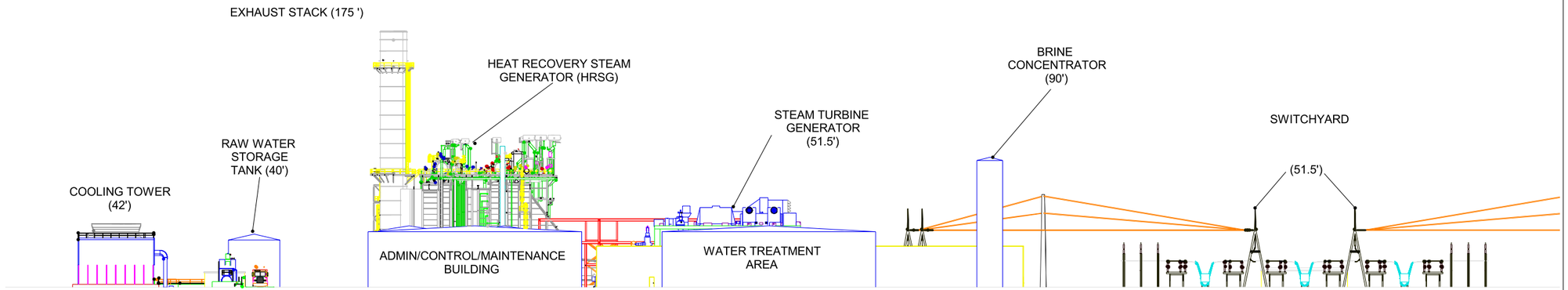
BACKGROUND

As referenced in Visual Resources section 8.11.2.3 Project Appearance—Proposed Project, Figure 2.2.2 is identified as providing typical elevation views. Although Table 8.11-2 is referenced for facility dimensions, Figure 2.2.2 does not identify facility components or provide facility dimensions.

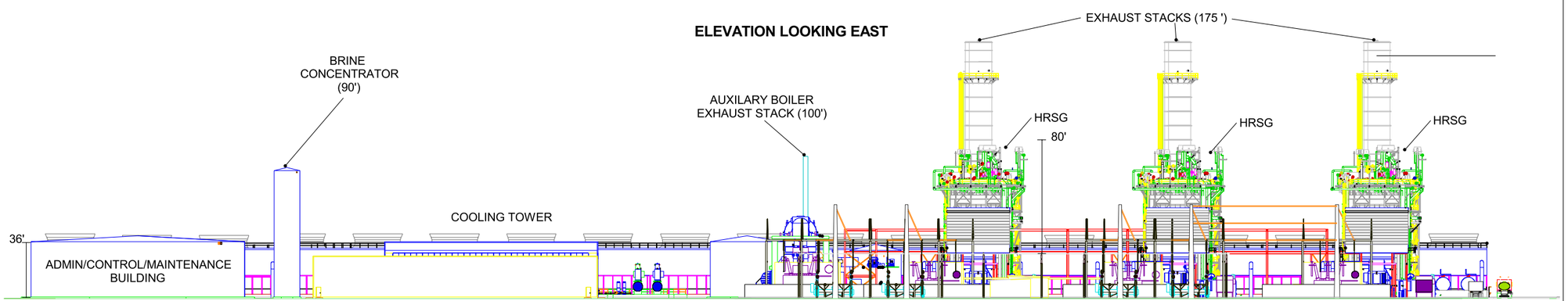
DATA REQUEST

108. In order to facilitate the reader's understanding of project scale and structural relationships, please revise Figure 2.2.2 to include names and heights of key project components.

Response: Figure 2.2-2R presents an elevation drawing of the project and includes names and heights of key project components.



ELEVATION LOOKING EAST



ELEVATION LOOKING NORTH

50 0 50 Feet

SCALE IS APPROXIMATE

FIGURE 2.2-2R
PLANT ELEVATION

APPLICATION FOR CERTIFICATION
FOR EAST ALTAMONT ENERGY CENTER

CH2MHILL

EAST ALTAMONT ENERGY CENTER
DATA REQUESTS #2A
(01-AFC-4)

BACKGROUND

The discussion of pipelines on page 8.11-17 of the AFC identifies the need for a gas metering station at the interconnection with the PG&E gas pipeline. In response to a Visual Resources Data Adequacy Deficiency, the Applicant has stated that the metering station would be located on a "…150-foot by 150-foot area surrounded by an eight-foot high chain link fence" (p. 31 of Data Adequacy Responses Set 1). It is understood that gas pipeline alternatives 2A (preferred) and 2C would result in the placement of the metering station in the existing PG&E Gas Compressor Station which is visible in Visual Character Photo 2 of Figure 8.11-2a. However, Alternatives 2D and 2E would require the metering station to be located "…along the portions of the PG&E pipeline adjacent to the Delta-Mendota Canal, which are somewhat removed from potential viewers and where the berm along the canal would provide backdropping for the station's features" (AFC p. 8.11-17).

DATA REQUEST

109. Please provide high quality color images of the gas metering station locations associated with gas pipeline alternatives 2D and 2E as viewed from the nearest point of public access.

Response: It is EAEC LLC's understanding that this data request has been withdrawn.

110. Please provide a CD containing electronic versions of the images requested in Data Request No. 109 above.

Response: It is EAEC LLC's understanding that this data request has been withdrawn.

BACKGROUND

Project night lighting is discussed in section 8.11.2.3 Project Appearance—Proposed Project (p. 8.11-15) and section 8.11.2.4 Assessment of Visual Effects (p. 8.11-22) no mention is made as to the need for Federal Aviation Administration (FAA) stack warning lights. Further, there is no discussion as to the need for night lighting during the 24-month construction period.

DATA REQUEST

111. Please identify whether or not facility stack lighting would be required and if so, by which agency or requirement, and in what manner.

Response: EAEC LLC will not be installing lighting on the exhaust stack. The Federal Aviation Administration review determined that no exhaust stack lighting/marking was required. Attachment VR-111 presents the FAA's determination.

112. Please describe the extent to which night lighting would be required during project construction and how construction lighting would be limited to the immediate area where construction activities would occur.

Response: EAEC LLC will require night lighting during construction. The lighting will be erected to meet county, state, and federal worker safety regulations. To the extent

possible, lighting will be erected pointing towards the center of the construction site and is shielded. Task-specific construction lighting will be used to the extent practical while complying with worker safety regulations.

BACKGROUND

The Applicant has provided simulations of the proposed landscaping at 20 years in response to Visual Resources Data Request 2c of the First Set of Data Requests.

DATA REQUEST

113. Please specify whether the proposed landscaping is expected to reach maturity at approximately 20 years.

Response: The trees specified in the planting plan are long-lived species that tend to grow very rapidly in their early stages. Although the trees will continue to grow after 20 years, their growth will be at a slower rate than in the years during the first two decades after planting. Because power plants like the EEAC have an expected life span of approximately 30 years, the 20-year time horizon constitutes a reasonable point in time for gauging the appearance of the project during its last decade of likely service.

EAST ALTAMONT ENERGY CENTER
DATA REQUESTS #2A
(01-AFC-4)

Technical Area: Visual Resources – Plume Analysis
Author: William Walters
EAEC Author: Gary Rubenstein

BACKGROUND

The Applicant modeled the visible cooling tower plumes using a modified version of the air pollutant model ISCST3, with additional computation modules called CLAUSIUS, DISTANCE, and COUNT. Staff will model the cooling tower plumes using the SACTI and CSVP models. In order to complete this modeling assessment and comparison with the Applicant's modeling analysis staff needs additional cooling tower design information and the Applicant's hourly modeling analysis results data.

DATA REQUEST

114. For SACTI modeling, please provide the cooling tower dimensions and exhaust parameters:

- Tower length
- Tower width
- Tower exhaust height
- Design inlet air flow rate (kg/s)
- Heat rejection rate (MW/hr)

Response: The following information is taken from the AFC:

Cooling tower length: 313.0 meters (Table 8.1B-1)
Cooling tower width: 16.4 meters[1]
Cooling tower exhaust height: 17.37 meters (Table 8.1B-5)

The design inlet air flow rate is 2,274,149 lbs/min (dry), or 17,192 kg/s
The design heat rejection rate is 2,755 MMbtu/hr or 807 MW/hr.

115. For staff to conduct CSVP modeling of the cooling tower exhaust, please at a minimum provide cooling tower operating data to fill the following table. The values must correspond to maximum operating conditions at the specified ambient conditions.

Ambient Condition	Exhaust Velocity (m/s)	Exhaust Flow Rate (lbs/hr/cell)	Exhaust Temperature (°F)
40°F, 80% RH			
40°F, 60% RH			
40°F, 40% RH			

[1] The value of 10.0 meters in Table 8.1B-1 is a typographic error; the correct value was used in the dispersion modeling analysis.

60°F, 80% RH			
60°F, 60% RH			
60°F, 40% RH			
80°F, 80% RH			
80°F, 60% RH			
80°F, 40% RH			

Please note that staff intends to model the cooling tower using hourly estimated exhaust conditions based on the hourly ambient conditions of the meteorological file used to perform the modeling. The cooling tower exhaust will be assumed to be saturated at the exhaust temperature provided through interpolation. Therefore, additional combinations of temperature and relative humidity, if provided by the Applicant, will be used to more accurately represent the cooling tower exhaust conditions.

Response: The requested ambient conditions do not correspond to plant design conditions; consequently, the requested information is not available. Table VIS-115-1 presents the requested information for plant design ambient conditions.

Table VIS-115-1

Condition	Exhaust Velocity (m/s)	Exhaust Flow Rate (lbs/hr/cell)	Exhaust Temperature (°F)
Cold ambient (45°F, 50% RH)	10.0	7,265,807	61
Average ambient (61°F, 51% RH)	10.0	7,296,452	70
Hot ambient (98°F, 24% RH)	10.0	7,399,057	89

116. Please provide the preliminary liquid-to-gas (L/G) ratio design basis for the cooling tower.

Response: The preliminary liquid-to-gas design ratio is 1.03 for the hot and annual average ambient conditions and 0.57 for the cold ambient design condition.

117. The Applicant modeled the cooling tower exhaust at approximately an 80% saturation level. Please indicate if the cooling tower has any plume mitigation features that would significantly reduce the assumed 100% moisture content of a conventional cooling tower exhaust.

Response: The cooling tower moisture content used in the modeling analysis was calculated for the annual average ambient condition, based on the flow rate, inlet air temperature, inlet air ambient humidity, drift rate, and evaporative losses expected at those conditions, using values contained in the AFC (and as provided above). The

cooling tower does not have any plume mitigation features. However, in response to this data request, EAEC LLC's engineers have concluded that the previous moisture content value was in error; the correct value is approximately 100% saturation.

118. If no plume mitigation is proposed for the cooling tower, please provide the calculations and associated vendor data used to determine the modeled saturation level and provide calculations that show that this saturation level is appropriate for the range of ambient conditions that can be expected at the project site.

Response: See response to Data Request #117.

BACKGROUND

The Applicant modeled the visible Heat Recovery Steam Generator (HRSG) exhaust plumes using a modified version of the air pollutant model ISCST3, with additional computation modules called CLAUSIUS, DISTANCE, and COUNT. Staff will model the HRSG exhaust plumes using the CSVP model. In order to complete the comparison with the Applicant's modeling analysis results, staff needs additional Applicant modeling analysis results data.

DATA REQUEST

119. The HRSG exhaust characteristics provided by the Applicant in Table VIS-7.4 of the Data Request and Response Set #1 did not specify the ambient conditions assumed and do not appear to include steam injection power augmentation. In order for staff to more accurately model the visible plume potential for the HRSG exhausts please provide the exhaust data to complete the following tables.

Ambient Condition	Moisture Content (% by weight)	Exhaust Flow Rate (lbs/hr)	Exhaust Temperature (°F)
Full load with Duct Firing and Power Augmentation			
40°F, 80% RH			
40°F, 60% RH			
40°F, 40% RH			
60°F, 80% RH			
60°F, 60% RH			
60°F, 40% RH			
80°F, 80% RH			
80°F, 60% RH			
80°F, 40% RH			
Full load with Power Augmentation no Duct Firing			
40°F, 80% RH			

Ambient Condition	Moisture Content (% by weight)	Exhaust Flow Rate (lbs/hr)	Exhaust Temperature (°F)
40°F, 60% RH			
40°F, 40% RH			
60°F, 80% RH			
60°F, 60% RH			
60°F, 40% RH			
80°F, 80% RH			
80°F, 60% RH			
80°F, 40% RH			
Full load no Duct Firing and no Power Augmentation			
40°F, 80% RH			
40°F, 60% RH			
40°F, 40% RH			
60°F, 80% RH			
60°F, 60% RH			
60°F, 40% RH			
80°F, 80% RH			
80°F, 60% RH			
80°F, 40% RH			

Please note that staff intends to model the HRSG exhausts using hourly estimated exhaust conditions based on the hourly ambient conditions of the meteorological file used to perform the modeling. Therefore, additional combinations of temperature and relative humidity, if provided by the Applicant, will be used to more accurately represent the cooling tower exhaust conditions.

Response: The information requested above does not reflect the project's design conditions; consequently, it is not available. The table below presents the requested data for the project design conditions, for each GT/HRSG train.

Table VIS-119-1

Condition	Moisture Content (% wt)	Exhaust Flow Rate (lbs/hr)	Exhaust Temperature (°F)
Full Load with duct firing and power augmentation			
Hot ambient (98°F, 24% RH)	9.33%	3,478,379	142
Full Load with duct firing, without power augmentation			
Average ambient (61°F, 51% RH)	7.27%	3,597,052	135
Full Load without duct firing, without power augmentation			
Cold ambient (45°F, 50% RH)	5.37%	3,641,095	188
Average ambient (61°F, 51% RH)	5.42%	3,509,159	135
Hot ambient (98°F, 24% RH)	5.60%	3,172,645	142

120. Please provide the ISCST3 HRSG plume modeling input, output and meteorological files electronically; with the hourly plume dimension results provided in spreadsheet form.

Response: The requested files are being provided in electronic form under separate cover.

EAST ALTAMONT ENERGY CENTER
DATA REQUESTS #2A
(01-AFC-4)

Technical Area: Transmission System Engineering
Author: Ajoy Guha, P.E.
EAEC Author: Dan Wood

BACKGROUND:

Staff needs a complete Interconnection Study Report to analyze the system reliability impacts due to interconnection of the project, and to identify the interconnection facilities including downstream facilities necessary to support interconnection of the project. Project interconnection must comply with North American Electric Reliability Council (NERC) Planning Standards and Western Systems Coordinating Council (WSCC) Reliability Criteria. The proposed interconnection facilities are described in Sections 5.2.2, 5.2.2.1 and 5.2.2.2. The load flow studies for 2005 heavy summer cases and short circuit studies are discussed in the system impact study report of Attachment TSE-1 with list of contingencies and study results in Appendices II and III respectively. The transient stability studies are discussed in the system impact study report, Appendices A & B. The report summary and study plan mention a 2005 spring analysis, however, no information about the study results for 2005 spring case was provided. The staff observes that the information, data and study results in the system impact study report, Attachment TSE-1, and Appendices II & III, are very sparse and incomplete, and do not sufficiently address the mitigation measures. The transient stability study should include more critical contingency cases. In view of the extensive study data, the staff needs a comprehensively concise study result in a summary and table format to assess the impacts under normal and line outage conditions within the Western Area Power Administration (Western) Transmission system and in the surrounding bulk power network. The Energy Commission staff, therefore, needs more complete information in order to assess the transmission impacts in the 2005 heavy summer case and the study results for the 2005 spring case.

DATA REQUEST

Please provide the following data from the Transmission Owner's (TO) System Impact Study for the project:

121. Load Flow Study:

a. The TO's Planning and Reliability Criteria including normal and emergency overload and voltage limit criteria, fault current limit and system stability.

Response: GRIP11 was provided to the CEC on August 10, 2001 in response to the data request. In addition, Western Area Power Administration representatives provided the CEC with Western's interconnection requirements on August 13, 2001.

b. All the approved future transmission projects added in the base cases. Please also mention all the proposed queue generation operational in the study area before the on-line date of the EAEC project. Please provide an electronic copy (*.sav and *.drw) of the base cases (2005 heavy summer and 2005 spring cases) and all the relevant EPCL (and/or AUTOCON) contingency files for the GE PSLF program.

Response: EAEC LLC emailed the "*.sav" and "*.in" (B and C contingencies) files on August 10, 2001. In addition, the "*.drw" files were emailed on August 13, 2001. Copies will be provided to intervenors or other parties on request.

c.

i) To demonstrate conformance or non-conformance with the Utility Reliability and Planning Criteria, for 2005 heavy summer and 2005 spring cases:

(1) Please state if under normal (N-0) condition, there will be any overloads (exceeding normal thermal capacity) or any voltage violations (exceeding normal limits) in the transmission facilities within the Western and surrounding Cal-ISO, SMUD, MID and TID power network with and without the new EAEC project, and with the EAEC Project and any proposed downstream transmission projects. Provide load flow diagrams (showing MVA and percentage loading) for all base cases.

Response: The N-0 conditions were included in the System Impact Study which was included in the EAEC AFC. In response to CEC comments on the study, Western is reorganizing the tables containing the N-0 conditions and will resubmit them to the CEC when they are complete.

The load flow diagrams were sent via email on August 10, 2001. Copies will be provided to intervenors or other parties on request.

(2) Please summarize in a table the single contingency (N-1) cases for which there will be overloads (mention any overloads above 100% of applicable emergency rating) or voltage violations (mention any voltage violations beyond applicable limits) in the transmission facilities within the Western and the surrounding Cal-ISO, SMUD, MID and TID power network with and without the new EAEC project. Please state in the same table the respective mitigation measures and especially mention revised loading for cases where any new or modified downstream facilities will be proposed.

Response: The N-1 conditions were included in the System Impact Study which was included in the EAEC AFC. In response to CEC comments on the study, Western is reorganizing the tables containing the N-1 conditions and will resubmit them to the CEC when they are complete.

In addition, Western is in the process of verifying that the outages identified by the CEC on the list of August 13, 2001 were performed in the SIS.

ii) Provide load flow diagrams (showing MVA and percentage loading) for all criteria violation cases with and without the EAEC project, and with the EAEC project and any proposed downstream transmission projects.

Response: The diagrams were provided to the CEC on August 13, 2001. Copies will be provided to intervenors or other parties on request.

d.

i) To demonstrate conformance or non-conformance with the NERC Planning Standards and WSCC Reliability Criteria, for 2005 heavy summer and 2005 spring cases, please summarize in a table for double contingency (N-2) cases for which there will be overloads (mention any overloads above 100% of applicable emergency rating) or voltage violations (exceeding applicable limits) in the transmission facilities within the Western and the surrounding Cal-ISO, SMUD, MID and TID power network with and without the new EAEC project. Please state in the same table the respective mitigation measures and especially mention revised loading for cases where any new or modified downstream facilities will be proposed.

Response: The N-2 cases were included in the System Impact Study.

ii) Please also include in the load flow study the following contingency cases:

(1) Outage of Tracy 230 kV west bus section and the connected 230 kV lines & 500 kV/230 kV transformer.

Response: This information was sent to the CEC via email on August 10, 2001. Copies will be provided to intervenors or other parties on request.

(2) Outage of Tracy 230 kV east bus section and the connected 230 kV lines & 500 kV/230 kV transformer.

Response: This information was sent to the CEC via email on August 10, 2001. Copies will be provided to intervenors or other parties on request.

iii) Provide load flow diagrams (showing MVA and percentage loading) for all criteria violation cases with and without the new EAEC project, and with the EAEC project and any proposed downstream transmission projects.

Response: EAEC provided the "*.drw" files and the CEC staff will utilize this file to create its own load flow diagrams, since Western has not produced these particular drawings. Copies will be provided to intervenors or other parties on request.

122. Transient Stability Study:

a. To demonstrate conformance or non-conformance with the NERC Planning Standards and WSCC Reliability Criteria, please analyze and provide data as follows:

i) Run dynamic simulations with 2005 spring case and provide stability plots for the N-1 and N-2 contingency cases as studied for 2005 heavy summer case.

ii) Please include the following additional dynamic simulations to run with 2005 heavy summer and 2005 spring cases and provide stability plots:

(1) A 3-phase fault with 6-cycle clearing at the Tracy 230 kV bus, followed by tripping of Tracy- Hurley 230 kV line No.1.

(2) A 3-phase fault with 6-cycle clearing at the Tracy 230 kV bus, followed by tripping of Tracy 500/230 kV transformer No.1.

(3) A 3-phase fault with 4-cycle clearing at the Tracy 500 kV bus, followed by tripping of Tracy- Olinda 500 kV line.

(4) A 3-phase fault with 6-cycle clearing at the Tracy 230 kV bus, followed by tripping of Tracy- Hurley 230 kV line Nos. 1 & 2.

(5) A 3-phase fault with 6-cycle clearing at the Tracy 230 kV bus, followed by tripping of Tracy 500/230 kV transformer Nos. 1 & 2.

(6) A 3-phase fault with 4-cycle clearing at the Tracy 500 kV bus, followed by tripping of Tracy- Olinda and Tracy –Los Banos 500 kV lines.

(7) A 3-phase fault with 6-cycle clearing at the Tracy 230 kV bus, followed by outage of Tracy 230 kV bus west bus section and the connected 230 kV lines & 500 kV/230 kV transformer.

(8) A 3-phase fault with 6-cycle clearing at the Tracy 230 kV bus, followed by outage of Tracy 230 kV bus east bus section and the connected 230 kV lines & 500 kV/230 kV transformer.

Response: This information is being provided by Western.

b. Please provide electronic copies (*.dyd & *.swt) of dynamic data and switching files for 2005 heavy summer and 2005 spring cases.

Response: These files are being provided by Western.

123. Short Circuit Study:
In order to comply with the NERC and WSCC planning standards for facility connection requirements, please summarize in a table a list of existing breakers and their short circuit ratings, and available fault currents with and without the new EAEC project at Tracy 500 kV & 230 kV, Tesla 500kV & 230 kV, Westley 230 kV, Hurley 230 kV and LLNL 230 kV substations. Please identify respective mitigation measures in the table. For the proposed EAEC 230 kV switchyard, provide the breaker normal and short circuit ratings and the available fault currents with the addition of the EAEC project.

Response: CEC staff was informed of a table in the System Impact Study which contains this information. However, the ratings of the circuit breakers were not listed in the table. Western has agreed to provide the ratings.

124. Project Transmission Facilities:
The system impact study report, pages 1 & 5 including Figure 1 shows that the existing

EAST ALTAMONT ENERGY CENTER
DATA REQUESTS #2A
(01-AFC-4)

Tracy-Westley 230 kV double circuit single line should be modified to accommodate the EAEC project and be converted to two lines between EAEC 230 kV switchyard and Tracy, and also between EAEC 230 kV switchyard and Westley. But in Section 5.1, page 5-2 and in 5.2.2.1, page 5-5, it reads that the EAEC 230 kV switchyard-Westley portion of the line will remain as a double circuit single line. Please clarify the discrepancy and indicate the proposed transmission line configuration between Westley and the EAEC 230 kV switchyard to accommodate the EAEC project.

Response: The AFC was submitted prior to mitigation being established by Western, and therefore the AFC did not reflect the double-circuit line from the EAEC 230 kV switchyard to Westley. EAEC is preparing a new drawing to reflect the double-circuit configuration between the EAEC 230 kV switchyard and Westley.

EAST ALTAMONT ENERGY CENTER
DATA REQUESTS #2
(01-AFC-4)

Attachment AQ-37

BAY AREA
AIR QUALITY
MANAGEMENT
DISTRICT

July 23, 2001

Sierra Research
1801 J Street
Sacramento, California 95814

Attention: **Ms. Nancy Matthews**

Subject: **East Altamont Energy Center Request for Source Emission Inventory**

Dear Ms. Matthews:

Enclosed is a printout of criteria emissions for five existing facilities located within a six mile radius of the proposed power generation facility (UTM km 625.4E, 4185.0E). The data search found no facilities that have an Authority to Construct, but have not commenced operation within the six mile radius.

The individual source data units are as follows: Emissions in pounds per day, Stack height in feet, Stack cross section area in square feet, Gas temperature in degree Fahrenheit, Gas flow in actual cubic feet per minute, and UTM in kilometers. The –8888 character should be interpreted as "no data available".

If you have any questions on this matter please call me at **(415) 749-4683.**

Very truly yours,

Gene Willner
Air Quality Engineer II

San Joaquin Valley
Air Pollution Control District

June 22, 2001

Ms. Nancy Matthews
Sierra Research
1801 J Street
Sacramento, CA 95814

SUBJECT: Public Record Release Request

Dear Ms. Matthews:

The District received your Public Record Release Request on June 4, 2001, requesting information for Authority to Construct (ATC) permits and/or Permits to Operate issued to facilities located within a six mile radius of the proposed East Altamont Energy Center, LLC, facility located on Mountain House Road, Tracy, California. You requested information for those facilities that submitted an ATC application for a project or projects that resulted in an increase in emissions of 5 tons per year, or greater, for any of the criteria pollutants with the increases occurring after January 1, 1998. Based on a search of the District's permit database there are no facilities that were issued Authority to Construct permits after January 1, 1998 that also had an increase in emissions of 5 tons per year, or greater.

If you should have any questions concerning the materials sent, please contact Mr. Fred Cruz of Permit Services at (209) 557-6456.

Sincerely,

Seyed Sadredin
Director of Permit Services

Jim Swaney
Permit Services Manager

Enclosures

/fjc

David L. Crow
Executive Director/Air Pollution Control Officer

Northern Region Office
4230 Kiernan Avenue, Suite 130
Modesto, CA 95356-9322
(209) 557-6400 • FAX (209) 557-6475

Central Region Office
1990 East Gettysburg Avenue
Fresno, CA 93726-0244
(559) 230-6000 • FAX (559) 230-6061

Southern Region Office
2700 M Street, Suite 275
Bakersfield, CA 93301-2373
(661) 326-6900 • FAX (661) 326-6985

www.valleyair.org

EAST ALTAMONT ENERGY CENTER
DATA REQUESTS #2A
(01-AFC-4)

Attachment BR-52

United States Department of the Interior

FISH AND WILDLIFE SERVICE
Sacramento Fish and Wildlife Office
2800 Cottage Way, Room W-2605
Sacramento, California 95825-1846

IN REPLY REFER TO:
1-1-01-SP-595

December 27, 2000

E.J. Koford, Senior Biologist
CH2M Hill
2485 Natomas Park Drive
Suite 600
Sacramento, California 95833-2937

Subject: Species List for Calpine East Altamont Energy Center Project, Alameda County, California

Dear Mr. Koford:

We are sending the enclosed list in response to your December 11, 2000, request for information about endangered and threatened species (Enclosure A). The list covers the following U.S. Geological Survey 7½ minute quad or quads: Tracy Quad.

Please read *Important Information About Your Species List* (enclosed). It explains how we made the list and describes your responsibilities under the Endangered Species Act. Please contact Harry Mossman, Biological Technician, at (916) 414-6674, if you have any questions about the attached list or your responsibilities under the Endangered Species Act. For the fastest response to species list requests, address them to the attention of Mr. Mossman at this address. You may fax requests to him at 414-6712 or 6713.

Sincerely,

FOR Karen J. Miller
Chief, Endangered Species Division

Enclosures

Important Information About Your Species List

How We Make Species Lists

We store information about endangered and threatened species lists by U.S. Geological Survey 7½ minute *quads*. The United States is divided into these quads, which are about the size of San Francisco. If you requested your list by quad name or number, that is what we used. Otherwise, we used the information you sent us to determine which quad or quads to use.

Animals

The animals on your species list are ones that occur within, *or may be affected by projects within*, the quads covered by the list. Fish and other aquatic species appear on your list if they are in the same watershed as your quad or if water use in your quad might affect them.

Plants

Any plants on your list are ones *that have actually been observed* in the quad or quads covered by the list. We have also included either a county species list or a list of species in nearby quads. We recommend that you check your project area for these plants. Plants may exist in an area without ever having been detected there.

Surveying

Some of the species on your list may not be affected by your project. A trained biologist or botanist, familiar with the habitat requirements of the species on your list, should determine whether they or habitats suitable for them may be affected by your project. We recommend that your surveys include any proposed and candidate species on your list. For plant surveys, we recommend using the enclosed *Guidelines for Conducting and Reporting Botanical Inventories for Federally Listed, Proposed and Candidate Species*. The results of your surveys should be published in any environmental documents prepared for your project.

State-Listed Species

If a species has been listed as threatened or endangered by the State of California, but not by us nor by the National Marine Fisheries Service, it will appear on your list as a Species of Concern. *However you should contact the California Department of Fish and Game for official information about these species.* Call (916) 322-2493 or write Marketing Manager, California Department of Fish and Game, Natural Diversity Data Base, 1416 Ninth Street, Sacramento, California 95814.

Your Responsibilities Under the Endangered Species Act

All plants and animals identified as *listed* on Enclosure A are fully protected under the Endangered Species Act of 1973, as amended. Section 9 of the Act and its implementing regulations prohibit the *take* of a federally listed wildlife species. Take is defined by the Act as "to harass, harm, pursue, hunt,

shoot, wound, kill, trap, capture, or collect" any such animal. Take may include significant habitat modification or degradation where it actually kills or injures wildlife by significantly impairing essential behavioral patterns, including breeding, feeding, or shelter (50 CFR §17.3).

Take incidental to an otherwise lawful activity may be authorized by one of two procedures:

If a Federal agency is involved with the permitting, funding, or carrying out of a project that may result in take, then that agency must engage in a *formal consultation* with the Service. Such consultation would result in a *biological opinion* addressing the anticipated effect of the project on listed and proposed species. The opinion may authorize a limited level of incidental take.

If no Federal agency is involved with the project, and federally listed species may be taken as part of the project, then you, the applicant, should apply for an *incidental take permit*. The Service may issue such a permit if you submit a satisfactory conservation plan for the species that would be affected by your project. Should your survey determine that federally listed or proposed species occur in the area and are likely to be affected by the project, we recommend that you work with this office and the California Department of Fish and Game to develop a plan that mitigates for the project's direct and indirect impacts to listed species and compensates for project-related loss of habitat. You should include the mitigation plan in any environmental documents you file.

Critical Habitat

When a species is listed as endangered or threatened, areas of habitat considered essential to its conservation may be designated as *critical habitat*. These areas may require special management considerations or protection. They provide needed space for growth and normal behavior; food, water, air, light, other nutritional or physiological requirements; cover or shelter; and sites for breeding, reproduction, rearing of offspring, germination or seed dispersal.

Although critical habitat may be designated on private or State lands, activities on these lands are not restricted unless there is Federal involvement in the activities or direct harm to listed wildlife.

If any species has proposed or designated critical habitat within a quad, there will be a separate line for this on the species list. Maps and boundary descriptions of the critical habitat may be found in the *Federal Register*. The information is also reprinted in the *Code of Federal Regulations* (50 **CFR** 17.95).

Candidate Species

We recommend that you address impacts to *candidate* species. We put plants and animals on our candidate list when we have enough scientific information to eventually propose them for listing as threatened or endangered. By considering these species early in your planning process you may be able to avoid the problems that could develop if one of these candidates was listed before the end of your project.

Your list may contain a section called *Species of Concern*. This term includes former *category 2 candidate species* and other plants and animals of concern to the Service and other Federal, State and private conservation agencies and organizations. Some of these species may become candidate species in the future.

Wetlands

If your project will impact wetlands, riparian habitat, or other jurisdictional waters as defined by section 404 of the Clean Water Act and/or section 10 of the Rivers and Harbors Act, you will need to obtain a permit from the U.S. Army Corps of Engineers. Impacts to wetland habitats require site specific mitigation and monitoring. For questions regarding wetlands, please contact Mark Littlefield of this office at (916) 414-6580.

Updates

Our database is constantly updated as species are proposed, listed and delisted. If you address proposed, candidate and special concern species in your planning, this should not be a problem. We also continually strive to make our information as accurate as possible. Sometimes we learn that a particular species has a different range than we thought. This should not be a problem if you consider the species on the county or surrounding-quad lists that we have enclosed. If you have a long-term project or if your project is delayed, please feel free to contact us about getting a current list. You can also find out the current status of a species by going to the Service's Internet page: *www.fws.gov*

GUIDELINES FOR CONDUCTING AND REPORTING BOTANICAL INVENTORIES FOR FEDERALLY LISTED, PROPOSED AND CANDIDATE PLANTS
(September 23, 1996)

These guidelines describe protocols for conducting botanical inventories for federally listed, proposed and candidate plants, and describe minimum standards for reporting results. The Service will use, in part, the information outlined below in determining whether the project under consideration may affect any listed, proposed or candidate plants, and in determining the direct, indirect, and cumulative effects.

Field inventories should be conducted in a manner that will locate listed, proposed, or candidate species (target species) that may be present. The entire project area requires a botanical inventory, except developed agricultural lands. The field investigator(s) should:

1. Conduct inventories at the appropriate times of year when target species are present and identifiable. Inventories will include all potential habitats. Multiple site visits during a field season may be necessary to make observations during the appropriate phenological stage of all target species.

2. If available, use a regional or local reference population to obtain a visual image of the target species and associated habitat(s). If access to reference populations is not available, investigators should study specimens from local herbaria.

3. List every species observed and compile a comprehensive list of vascular plants for the entire project site. Vascular plants need to be identified to a taxonomic level which allows rarity to be determined.

4. Report results of botanical field inventories that include:

   a. a description of the biological setting, including plant community, topography, soils, potential habitat of target species, and an evaluation of environmental conditions, such as timing or quantity of rainfall, which may influence the performance and expression of target species.

   b. a map of project location showing scale, orientation, project boundaries, parcel size, and map quadrangle name.

   c. survey dates and survey methodology(ies).

   d. if a reference population is available, provide a written narrative describing the target species reference population(s) used, and date(s) when observations were made.

   e. a comprehensive list of all vascular plants occurring on the project site for each habitat type.

   f. current and historic land uses of the habitat(s) and degree of site alteration.

   g. presence of target species off-site on adjacent parcels, if known.

h. an assessment of the biological significance or ecological quality of the project site in a local and regional context.

5. If target species is(are) found, report results that additionally include:

   a. a map showing federally listed, proposed and candidate species distribution as they relate to the proposed project.

   b. if target species is (are) associated with wetlands, a description of the direction and integrity of flow of surface hydrology. If target species is (are) affected by adjacent off-site hydrological influences, describe these factors.

   c. the target species phenology and microhabitat, an estimate of the number of individuals of each target species per unit area; identify areas of high, medium and low density of target species over the project site, and provide acres of occupied habitat of target species. Investigators could provide color slides, photos or color copies of photos of target species or representative habitats to support information or descriptions contained in reports.

   d. the degree of impact(s), if any, of the proposed project as it relates to the potential unoccupied habitat of target habitat.

6. Document findings of target species by completing California Native Species Field Survey Form(s) and submit form(s) to the Natural Diversity Data Base. Documentation of determinations and/or voucher specimens may be useful in cases of taxonomic ambiguities, habitat or range extensions.

7. Report as an addendum to the original survey, any change in abundance and distribution of target plants in subsequent years. Project sites with inventories older than three years from the current date of project proposal submission will likely need additional survey. Investigators need to assess whether an additional survey(s) is (are) needed.

8. Adverse conditions may prevent investigator(s) from determining presence or identifying some target species in potential habitat(s) of target species. Disease, drought, predation, or herbivory may preclude the presence or identification of target species in any year. An additional botanical inventory(ies) in a subsequent year(s) may be required if adverse conditions occur in a potential habitat(s). Investigator(s) may need to discuss such conditions.

9. Guidance from California Department of Fish and Game (CDFG) regarding plant and plant community surveys can be found in Guidelines for Assessing the Effects of Proposed Developments on Rare and Endangered Plants and Plant Communities, 1984. Please contact the CDFG Regional Office for questions regarding the CDFG guidelines and for assistance in determining any applicable State regulatory requirements.

ENCLOSURE A

Endangered and Threatened Species that May Occur in or be Affected by
Projects in the Area of the Following California Counties

Reference File No. 1-1-01-SP-595

December 27, 2000

ALAMEDA COUNTY

Listed Species

Mammals

- salt marsh harvest mouse, *Reithrodontomys raviventris* (E)
- San Joaquin kit fox, *Vulpes macrotis mutica* (E)
- riparian (San Joaquin Valley) woodrat, *Neotoma fuscipes riparia* (E) *
- riparian brush rabbit, *Sylvilagus bachmani riparius* (E) *

Birds

- California brown pelican, *Pelecanus occidentalis californicus* (E)
- California clapper rail, *Rallus longirostris obsoletus* (E)
- California least tern, *Sterna antillarum (=albifrons) browni* (E)
- Aleutian Canada goose, *Branta canadensis leucopareia* (T)
- bald eagle, *Haliaeetus leucocephalus* (T)

Reptiles

- Alameda whipsnake, *Masticophis lateralis euryxanthus* (T)
- Critical habitat, Alameda whipsnake, *Masticophis lateralis euryxanthus* (T)
- giant garter snake, *Thamnophis gigas* (T)

Amphibians

- California red-legged frog, *Rana aurora draytonii* (T)

Fish

- tidewater goby, *Eucyclogobius newberryi* (E)
- Critical habitat, winter-run chinook salmon, *Oncorhynchus tshawytscha* (E)
- winter-run chinook salmon, *Oncorhynchus tshawytscha* (E)
- delta smelt, *Hypomesus transpacificus* (T)
- Central California Coastal steelhead, *Oncorhynchus mykiss* (T)
- Central Valley spring-run chinook salmon, *Oncorhynchus tshawytscha* (T)
- Critical Habitat, Central Valley spring-run chinook, *Oncorhynchus tshawytscha* (T)
- Sacramento splittail, *Pogonichthys macrolepidotus* (T)

Invertebrates

- longhorn fairy shrimp, *Branchinecta longiantenna* (E)
- vernal pool tadpole shrimp, *Lepidurus packardi* (E)
- callippe silverspot butterfly, *Speyeria callippe callippe* (E)
- vernal pool fairy shrimp, *Branchinecta lynchi* (T)
- bay checkerspot butterfly, *Euphydryas editha bayensis* (T)

Plants

large-flowered fiddleneck, *Amsinckia grandiflora* (E)
Presidio clarkia, *Clarkia franciscana* (E)
palmate-bracted bird's-beak, *Cordylanthus palmatus* (E)
pallid manzanita (Alameda manzanita), *Arctostaphylos pallida* (T)
robust spineflower, *Chorizanthe robusta* (E) *
Contra Costa goldfields, *Lasthenia conjugens* (E) *
California sea blite, *Suaeda californica* (E) *
showy Indian clover, *Trifolium amoenum* (E) *
Santa Cruz tarplant, *Holocarpha macradenia* (T) *

Proposed Species

Birds

mountain plover, *Charadrius montanus* (PT)

Candidate Species

Amphibians

California tiger salamander, *Ambystoma californiense* (C)

Fish

Central Valley fall/late fall-run chinook salmon, *Oncorhynchus tshawytscha* (C)

Species of Concern

Mammals

Pacific western big-eared bat, *Corynorhinus (=Plecotus) townsendii townsendii* (SC)
greater western mastiff-bat, *Eumops perotis californicus* (SC)
small-footed myotis bat, *Myotis ciliolabrum* (SC)
long-eared myotis bat, *Myotis evotis* (SC)
fringed myotis bat, *Myotis thysanodes* (SC)
long-legged myotis bat, *Myotis volans* (SC)
Yuma myotis bat, *Myotis yumanensis* (SC)
San Francisco dusky-footed woodrat, *Neotoma fuscipes annectens* (SC)
San Joaquin pocket mouse, *Perognathus inornatus* (SC)
Alameda Island mole, *Scapanus latimanus parvus* (SC)
salt marsh vagrant shrew, *Sorex vagrans halicoetes* (SC)
Berkeley kangaroo rat, *Dipodomys heermanni berkeleyensis* (SC) *

Birds

little willow flycatcher, *Empidonax traillii brewsteri* (CA)
black rail, *Laterallus jamaicensis coturniculus* (CA)
bank swallow, *Riparia riparia* (CA)
American peregrine falcon, *Falco peregrinus anatum* (D)
Black-Crowned Night Heron, *Nycticorax nycticorax* (MB)

tricolored blackbird, *Agelaius tricolor* (SC)
grasshopper sparrow, *Ammodramus savannarum* (SC)
Bell's sage sparrow, *Amphispiza belli belli* (SC)
short-eared owl, *Asio flammeus* (SC)
western burrowing owl, *Athene cunicularia hypugea* (SC)
American bittern, *Botaurus lentiginosus* (SC)
ferruginous hawk, *Buteo regalis* (SC)
Costa's hummingbird, *Calypte costae* (SC)
Lawrence's goldfinch, *Carduelis lawrencei* (SC)
Vaux's swift, *Chaetura vauxi* (SC)
lark sparrow, *Chondestes grammacus* (SC)
olive-sided flycatcher, *Contopus cooperi* (SC)
hermit warbler, *Dendroica occidentalis* (SC)
white-tailed (=black shouldered) kite, *Elanus leucurus* (SC)
Pacific-slope flycatcher, *Empidonax difficilis* (SC)
common loon, *Gavia immer* (SC)
saltmarsh common yellowthroat, *Geothlypis trichas sinuosa* (SC)
loggerhead shrike, *Lanius ludovicianus* (SC)
Lewis' woodpecker, *Melanerpes lewis* (SC)
Alameda (South Bay) song sparrow, *Melospiza melodia pusillula* (SC)
long-billed curlew, *Numenius americanus* (SC)
white-faced ibis, *Plegadis chihi* (SC)
rufous hummingbird, *Selasphorus rufus* (SC)
Allen's hummingbird, *Selasphorus sasin* (SC)
red-breasted sapsucker, *Sphyrapicus ruber* (SC)
Bewick's wren, *Thryomanes bewickii* (SC)
California thrasher, *Toxostoma redivivum* (SC)

Reptiles

silvery legless lizard, *Anniella pulchra pulchra* (SC)
northwestern pond turtle, *Clemmys marmorata marmorata* (SC)
southwestern pond turtle, *Clemmys marmorata pallida* (SC)
San Joaquin coachwhip (=whipsnake), *Masticophis flagellum ruddocki* (SC)
California horned lizard, *Phrynosoma coronatum frontale* (SC)

Amphibians

foothill yellow-legged frog, *Rana boylii* (SC)
western spadefoot toad, *Scaphiopus hammondii* (SC)

Fish

green sturgeon, *Acipenser medirostris* (SC)
river lamprey, *Lampetra ayresi* (SC)

Pacific lamprey, *Lampetra tridentata* (SC)
longfin smelt, *Spirinchus thaleichthys* (SC)

Invertebrates

Opler's longhorn moth, *Adela oplerella* (SC)
Bridges' Coast Range shoulderband snail, *Helminthoglypta nickliniana bridgesi* (SC)
Ricksecker's water scavenger beetle, *Hydrochara rickseckeri* (SC)
curved-foot hygrotus diving beetle, *Hygrotus curvipes* (SC)
California linderiella fairy shrimp, *Linderiella occidentalis* (SC)
San Francisco lacewing, *Nothochrysa californica* (SC)

Plants

heartscale, *Atriplex cordulata* (SC)
brittlescale, *Atriplex depressa* (SC)
valley spearscale, *Atriplex joaquiniana* (SC)
Mt. Hamilton thistle, *Cirsium fontinale var. campylon* (SC)
South Bay clarkia, *Clarkia concinna ssp. automixa* (SC)
hispid bird's-beak, *Cordylanthus mollis ssp. hispidus* (SC)
Livermore tarplant, *Deinandra bacigalupii* (SC)
interior California larkspur, *Delphinium californicum ssp. interius* (SC)
recurved larkspur, *Delphinium recurvatum* (SC)
diamond-petaled poppy, *Eschscholzia rhombipetala* (SC)
talus fritillary, *Fritillaria falcata* (SC)
fragrant fritillary, *Fritillaria liliacea* (SC)
Diablo helianthella (=rock-rose), *Helianthella castanea* (SC)
pappose spikeweed, *Hemizonia parryi ssp. congdonii* (SC)
delta tule-pea, *Lathyrus jepsonii var. jepsonii* (SC)
Mason's lilaeopsis, *Lilaeopsis masonii* (SC)
little mousetail, *Myosurus minimus ssp. apus* (SC)
most beautiful (uncommon) jewelflower, *Streptanthus albidus ssp. peramoenus* (SC)
alkali milk-vetch, *Astragalus tener var. tener* (SC) *
San Francisco Bay spineflower, *Chorizanthe cuspidata var. cuspidata* (SC) *
northcoast bird's-beak, *Cordylanthus maritimus ssp. palustris* (SC) *
Kellogg's (wedge-leaved) horkelia, *Horkelia cuneata ssp. sericea* (SC) *
adobe sanicle, *Sanicula maritima* (SC) *
caper-fruited tropidocarpum, *Tropidocarpum capparideum* (SC) **
Mt. Diablo phacelia, *Phacelia phacelioides* (SC)

CONTRA COSTA COUNTY

Listed Species

Mammals

- salt marsh harvest mouse, *Reithrodontomys raviventris* (E)
- San Joaquin kit fox, *Vulpes macrotis mutica* (E)
- riparian (San Joaquin Valley) woodrat, *Neotoma fuscipes riparia* (E) *
- riparian brush rabbit, *Sylvilagus bachmani riparius* (E) *

Birds

- California brown pelican, *Pelecanus occidentalis californicus* (E)
- California clapper rail, *Rallus longirostris obsoletus* (E)
- California least tern, *Sterna antillarum (=albifrons) browni* (E)
- Aleutian Canada goose, *Branta canadensis leucopareia* (T)
- western snowy plover, *Charadrius alexandrinus nivosus* (T)
- bald eagle, *Haliaeetus leucocephalus* (T)

Reptiles

- Alameda whipsnake, *Masticophis lateralis euryxanthus* (T)
- Critical habitat, Alameda whipsnake, *Masticophis lateralis euryxanthus* (T)
- giant garter snake, *Thamnophis gigas* (T)

Amphibians

- California red-legged frog, *Rana aurora draytonii* (T)

Fish

- tidewater goby, *Eucyclogobius newberryi* (E)
- Critical habitat, winter-run chinook salmon, *Oncorhynchus tshawytscha* (E)
- winter-run chinook salmon, *Oncorhynchus tshawytscha* (E)
- Critical habitat, delta smelt, *Hypomesus transpacificus* (T)
- delta smelt, *Hypomesus transpacificus* (T)
- Central California Coastal steelhead, *Oncorhynchus mykiss* (T)
- Central Valley steelhead, *Oncorhynchus mykiss* (T)
- Central Valley spring-run chinook salmon, *Oncorhynchus tshawytscha* (T)
- Critical Habitat, Central Valley spring-run chinook, *Oncorhynchus tshawytscha* (T)
- Sacramento splittail, *Pogonichthys macrolepidotus* (T)

Invertebrates

- Lange's metalmark butterfly, *Apodemia mormo langei* (E)
- Conservancy fairy shrimp, *Branchinecta conservatio* (E)
- longhorn fairy shrimp, *Branchinecta longiantenna* (E)
- vernal pool tadpole shrimp, *Lepidurus packardi* (E)
- callippe silverspot butterfly, *Speyeria callippe callippe* (E)
- vernal pool fairy shrimp, *Branchinecta lynchi* (T)
- valley elderberry longhorn beetle, *Desmocerus californicus dimorphus* (T)

Plants

large-flowered fiddleneck, *Amsinckia grandiflora* (E)
soft bird's-beak, *Cordylanthus mollis ssp. mollis* (E)
Contra Costa wallflower, *Erysimum capitatum ssp. angustatum* (E)
Antioch Dunes evening-primrose, *Oenothera deltoides ssp. howellii* (E)
Critical habitat, Antioch Dunes evening-primrose, *Oenothera deltoides ssp. howellii* (E)
pallid manzanita (Alameda manzanita), *Arctostaphylos pallida* (T)
Santa Cruz tarplant, *Holocarpha macradenia* (T)
Contra Costa goldfields, *Lasthenia conjugens* (E) *

Proposed Species

Birds

mountain plover, *Charadrius montanus* (PT)

Candidate Species

Amphibians

California tiger salamander, *Ambystoma californiense* (C)

Fish

Central Valley fall/late fall-run chinook salmon, *Oncorhynchus tshawytscha* (C)

Species of Concern

Mammals

Pacific western big-eared bat, *Corynorhinus (=Plecotus) townsendii townsendii* (SC)
greater western mastiff-bat, *Eumops perotis californicus* (SC)
small-footed myotis bat, *Myotis ciliolabrum* (SC)
long-eared myotis bat, *Myotis evotis* (SC)
fringed myotis bat, *Myotis thysanodes* (SC)
long-legged myotis bat, *Myotis volans* (SC)
Yuma myotis bat, *Myotis yumanensis* (SC)
San Francisco dusky-footed woodrat, *Neotoma fuscipes annectens* (SC)
San Joaquin pocket mouse, *Perognathus inornatus* (SC)
Suisun ornate shrew, *Sorex ornatus sinuosus* (SC)
salt marsh vagrant shrew, *Sorex vagrans halicoetes* (SC)
Berkeley kangaroo rat, *Dipodomys heermanni berkeleyensis* (SC) *

Birds

Swainson's hawk, *Buteo Swainsoni* (CA)
little willow flycatcher, *Empidonax traillii brewsteri* (CA)
black rail, *Laterallus jamaicensis coturniculus* (CA)
bank swallow, *Riparia riparia* (CA)
American peregrine falcon, *Falco peregrinus anatum* (D)
Black-Crowned Night Heron, *Nycticorax nycticorax* (MB)

tricolored blackbird, *Agelaius tricolor* (SC)
grasshopper sparrow, *Ammodramus savannarum* (SC)
Bell's sage sparrow, *Amphispiza belli belli* (SC)
short-eared owl, *Asio flammeus* (SC)
western burrowing owl, *Athene cunicularia hypugea* (SC)
American bittern, *Botaurus lentiginosus* (SC)
ferruginous hawk, *Buteo regalis* (SC)
Costa's hummingbird, *Calypte costae* (SC)
Lawrence's goldfinch, *Carduelis lawrencei* (SC)
Vaux's swift, *Chaetura vauxi* (SC)
lark sparrow, *Chondestes grammacus* (SC)
olive-sided flycatcher, *Contopus cooperi* (SC)
hermit warbler, *Dendroica occidentalis* (SC)
white-tailed (=black shouldered) kite, *Elanus leucurus* (SC)
Pacific-slope flycatcher, *Empidonax difficilis* (SC)
common loon, *Gavia immer* (SC)
saltmarsh common yellowthroat, *Geothlypis trichas sinuosa* (SC)
loggerhead shrike, *Lanius ludovicianus* (SC)
Lewis' woodpecker, *Melanerpes lewis* (SC)
Suisun song sparrow, *Melospiza melodia maxillaris* (SC)
Alameda (South Bay) song sparrow, *Melospiza melodia pusillula* (SC)
San Pablo song sparrow, *Melospiza melodia samuelis* (SC)
long-billed curlew, *Numenius americanus* (SC)
white-faced ibis, *Plegadis chihi* (SC)
rufous hummingbird, *Selasphorus rufus* (SC)
Allen's hummingbird, *Selasphorus sasin* (SC)
red-breasted sapsucker, *Sphyrapicus ruber* (SC)
Bewick's wren, *Thryomanes bewickii* (SC)
California thrasher, *Toxostoma redivivum* (SC)

Reptiles

silvery legless lizard, *Anniella pulchra pulchra* (SC)
northwestern pond turtle, *Clemmys marmorata marmorata* (SC)
southwestern pond turtle, *Clemmys marmorata pallida* (SC)
San Joaquin coachwhip (=whipsnake), *Masticophis flagellum ruddocki* (SC)
California horned lizard, *Phrynosoma coronatum frontale* (SC)

Amphibians

foothill yellow-legged frog, *Rana boylii* (SC)
western spadefoot toad, *Scaphiopus hammondii* (SC)

Fish

green sturgeon, *Acipenser medirostris* (SC)
river lamprey, *Lampetra ayresi* (SC)
Pacific lamprey, *Lampetra tridentata* (SC)
longfin smelt, *Spirinchus thaleichthys* (SC)

Invertebrates

Ciervo aegialian scarab beetle, *Aegialia concinna* (SC)
Antioch Dunes anthicid beetle, *Anthicus antiochensis* (SC)
Sacramento anthicid beetle, *Anthicus sacramento* (SC)
San Joaquin dune beetle, *Coelus gracilis* (SC)
Antioch cophuran robberfly, *Cophura hurdi* (SC)
Antioch efferian robberfly, *Efferia antiochi* (SC)
Bridges' Coast Range shoulderband snail, *Helminthoglypta nickliniana bridgesi* (SC)
Ricksecker's water scavenger beetle, *Hydrochara rickseckeri* (SC)
curved-foot hygrotus diving beetle, *Hygrotus curvipes* (SC)
Middlekauf's shieldback katydid, *Idiostatus middlekaufi* (SC)
Marin elfin butterfly, *Incisalia mossii* (SC)
California linderiella fairy shrimp, *Linderiella occidentalis* (SC)
molestan blister beetle, *Lytta molesta* (SC)
Hurd's metapogon robberfly, *Metapogon hurdi* (SC)
Antioch mutillid wasp, *Myrmosula pacifica* (SC)
San Francisco lacewing, *Nothochrysa californica* (SC)
yellow-banded andrenid bee, *Perdita hirticeps luteocincta* (SC)
Antioch sphecid wasp, *Philanthus nasilis* (SC)

Plants

Suisun Marsh aster, *Aster lentus* (SC)
brittlescale, *Atriplex depressa* (SC)
valley spearscale, *Atriplex joaquiniana* (SC)
Mt. Diablo bird's-beak, *Cordylanthus nidularius* (SC)
interior California larkspur, *Delphinium californicum ssp. interius* (SC)
recurved larkspur, *Delphinium recurvatum* (SC)
fragrant fritillary, *Fritillaria liliacea* (SC)
Diablo helianthella (=rock-rose), *Helianthella castanea* (SC)
Brewer's dwarf-flax, *Hesperolinon breweri* (SC)
Carquinez goldenbush, *Isocoma arguta* (SC)
Northern California black walnut, *Juglans californica var. hindsii* (SC)
delta tule-pea, *Lathyrus jepsonii var. jepsonii* (SC)
Mason's lilaeopsis, *Lilaeopsis masonii* (SC)
little mousetail, *Myosurus minimus ssp. apus* (SC)

Mt. Diablo phacelia, *Phacelia phacelioides* (SC)
rock sanicle, *Sanicula saxatilis* (SC)
most beautiful (uncommon) jewelflower, *Streptanthus albidus ssp. peramoenus* (SC)
Mt. Diablo jewelflower, *Streptanthus hispidus* (SC)
alkali milk-vetch, *Astragalus tener var. tener* (SC) *
heartscale, *Atriplex cordulata* (SC) *
diamond-petaled poppy, *Eschscholzia rhombipetala* (SC) *
pappose spikeweed, *Hemizonia parryi ssp. congdonii* (SC) *
caper-fruited tropidocarpum, *Tropidocarpum capparideum* (SC) **
Livermore tarplant, *Deinandra bacigalupii* (SC)

SAN JOAQUIN COUNTY

Listed Species

Mammals

riparian (San Joaquin Valley) woodrat, *Neotoma fuscipes riparia* (E)
riparian brush rabbit, *Sylvilagus bachmani riparius* (E)
San Joaquin kit fox, *Vulpes macrotis mutica* (E)

Birds

Aleutian Canada goose, *Branta canadensis leucopareia* (T)
bald eagle, *Haliaeetus leucocephalus* (T)

Reptiles

Alameda whipsnake, *Masticophis lateralis euryxanthus* (T)
Critical habitat, Alameda whipsnake, *Masticophis lateralis euryxanthus* (T)
giant garter snake, *Thamnophis gigas* (T)

Amphibians

California red-legged frog, *Rana aurora draytonii* (T)

Fish

Critical habitat, winter-run chinook salmon, *Oncorhynchus tshawytscha* (E)
winter-run chinook salmon, *Oncorhynchus tshawytscha* (E)
Critical habitat, delta smelt, *Hypomesus transpacificus* (T)
delta smelt, *Hypomesus transpacificus* (T)
Central Valley steelhead, *Oncorhynchus mykiss* (T)
Sacramento splittail, *Pogonichthys macrolepidotus* (T)

Invertebrates

Conservancy fairy shrimp, *Branchinecta conservatio* (E)
longhorn fairy shrimp, *Branchinecta longiantenna* (E)
vernal pool tadpole shrimp, *Lepidurus packardi* (E)
vernal pool fairy shrimp, *Branchinecta lynchi* (T)
valley elderberry longhorn beetle, *Desmocerus californicus dimorphus* (T)

Plants

Critical habitat, large-flowered fiddleneck, *Amsinckia grandiflora* (E)
large-flowered fiddleneck, *Amsinckia grandiflora* (E)
fleshy owl's-clover, *Castilleja campestris ssp. succulenta* (T)
palmate-bracted bird's-beak, *Cordylanthus palmatus* (E) *
Greene's tuctoria, *Tuctoria greenei* (E) *

Proposed Species

Birds

mountain plover, *Charadrius montanus* (PT)

Candidate Species

Amphibians

California tiger salamander, *Ambystoma californiense* (C)

Fish

Central Valley fall/late fall-run chinook salmon, *Oncorhynchus tshawytscha* (C)

Species of Concern

Mammals

Pacific western big-eared bat, *Corynorhinus (=Plecotus) townsendii townsendii* (SC)
Merced kangaroo rat, *Dipodomys heermanni dixoni* (SC)
greater western mastiff-bat, *Eumops perotis californicus* (SC)
small-footed myotis bat, *Myotis ciliolabrum* (SC)
long-eared myotis bat, *Myotis evotis* (SC)
fringed myotis bat, *Myotis thysanodes* (SC)
long-legged myotis bat, *Myotis volans* (SC)
Yuma myotis bat, *Myotis yumanensis* (SC)
San Joaquin pocket mouse, *Perognathus inornatus* (SC)

Birds

Swainson's hawk, *Buteo Swainsoni* (CA)
little willow flycatcher, *Empidonax traillii brewsteri* (CA)
greater sandhill crane, *Grus canadensis tabida* (CA)
black rail, *Laterallus jamaicensis coturniculus* (CA)
bank swallow, *Riparia riparia* (CA)
American peregrine falcon, *Falco peregrinus anatum* (D)
Black-Crowned Night Heron, *Nycticorax nycticorax* (MB)
tricolored blackbird, *Agelaius tricolor* (SC)
grasshopper sparrow, *Ammodramus savannarum* (SC)
Bell's sage sparrow, *Amphispiza belli belli* (SC)
short-eared owl, *Asio flammeus* (SC)
western burrowing owl, *Athene cunicularia hypugea* (SC)

American bittern, *Botaurus lentiginosus* (SC)
ferruginous hawk, *Buteo regalis* (SC)
Lawrence's goldfinch, *Carduelis lawrencei* (SC)
black tern, *Chlidonias niger* (SC)
lark sparrow, *Chondestes grammacus* (SC)
olive-sided flycatcher, *Contopus cooperi* (SC)
hermit warbler, *Dendroica occidentalis* (SC)
white-tailed (=black shouldered) kite, *Elanus leucurus* (SC)
Pacific-slope flycatcher, *Empidonax difficilis* (SC)
loggerhead shrike, *Lanius ludovicianus* (SC)
Lewis' woodpecker, *Melanerpes lewis* (SC)
long-billed curlew, *Numenius americanus* (SC)
white-faced ibis, *Plegadis chihi* (SC)
rufous hummingbird, *Selasphorus rufus* (SC)
red-breasted sapsucker, *Sphyrapicus ruber* (SC)
Brewer's sparrow, *Spizella breweri* (SC)
Bewick's wren, *Thryomanes bewickii* (SC)
California thrasher, *Toxostoma redivivum* (SC)

Reptiles

silvery legless lizard, *Anniella pulchra pulchra* (SC)
northwestern pond turtle, *Clemmys marmorata marmorata* (SC)
southwestern pond turtle, *Clemmys marmorata pallida* (SC)
San Joaquin coachwhip (=whipsnake), *Masticophis flagellum ruddocki* (SC)
California horned lizard, *Phrynosoma coronatum frontale* (SC)

Amphibians

foothill yellow-legged frog, *Rana boylii* (SC)
western spadefoot toad, *Scaphiopus hammondii* (SC)

Fish

green sturgeon, *Acipenser medirostris* (SC)
river lamprey, *Lampetra ayresi* (SC)
Kern brook lamprey, *Lampetra hubbsi* (SC)
Pacific lamprey, *Lampetra tridentata* (SC)
longfin smelt, *Spirinchus thaleichthys* (SC)

Invertebrates

Antioch Dunes anthicid beetle, *Anthicus antiochensis* (SC)
Sacramento anthicid beetle, *Anthicus sacramento* (SC)
curved-foot hygrotus diving beetle, *Hygrotus curvipes* (SC)
California linderiella fairy shrimp, *Linderiella occidentalis* (SC)
moestan blister beetle, *Lytta moesta* (SC)

EAEC: MITIGATION FOR FEDERALLY PROTECTED SPECIES - SJ Kit Fox; CR Frog

ATTENDEES: Sheila Larsen (FWS)
Susan Strachan (Strachan Assoc).

FROM: EJ Koford

DATE: May 24, 2001

The AFC for EAEC identified potential impacts to San Joaquin Kit Fox (SJKF) and California Red legged frog (CRLF). The purpose of this meeting was to determine if protocol level field surveys for SJKF or CRLF would be required by the FWS and what potential options for mitigation would be. We also wanted to determine if there were other species (fairy shrimp, tiger salamander) that were likely to be of concern, althouth the AFC indicates it is unlikely that the project would affect these species. Finally, we wanted to clarify the administrative pathway under which EAEC would propose and complete mitigation for federal species. The following summarizes our meeting.

- Sheila is the FWS kit fox expert and knows the area well.
- FWS agreed that additional protocol level surveys were not going to be useful to determining mitigation. The area is foraging habitat, although no kit foxes have been confirmed there in a long time.
- Typical mitigation ratio for the permanently affected project area (plant site) is 3:1. If the site is 30 acres, mitigation should be 90. This number can be slightly higher or lower based on habitat quality, location and logistics. If we find a perfect parcel that is 86 acres FWS will find it acceptable.
- Temporary impacts are mitigated at 1:1.
- Mitigation should be in Alameda or Contra Costa Counties in the project vicinity. Mitigation bank or purchase land and give it to CDFG or other third party to operate is fine.
- Endowment for the mitigation needs to be determined on case by case basis, but other projects have agreed to $450-$1500 acre for management and monitoring.
- Construction in gravel roads or asphalt require no mitigation.
- If a kit fox natal den is discovered in the project are, no construction woudl be allowed in the broad vicinity of the den. The 100-foot setback quoted in 1997 guidance is not appropriate for natal dens.
- FWS is reasonably certain that CRLF can be avoided by constructing through the canals during dry periods or boring under them.

- Standard language for avoiding impacts during construction... pre-construction surveys, covering pipes, providing escape routes from ditches, maintaining a closed construction area that doesn't leave open trenches.
- With respect to the administrative nexus, she says unequivocally we want to be in a Section 7 environment (federal agency consultation). The potential nexus would be the Western EIS, but other possibilities are the EPA air permit, or a Corps 404 permit. She warns that the Corps has rejected applicant's desire to have some projects nexus through the 404.

We agreed to provide FWS a copy of these notes and that FWS would issue a letter memorializing our consultation and the finding that additional protocol surveys would not be needed at this time.

EAST ALTAMONT ENERGY CENTER
DATA REQUESTS #2A
(01-AFC-4)

Attachment HM-69

East Altamont Energy Center
Attachment HM-69
Offsite Consequence Analysis

Off-Site Consequence Analysis for Anhydrous Ammonia

The East Altamont Energy Center (EAEC) is required by both the Clean Air Act and the Bay Area Air Quality Management District to install Best Available Control Technology to control emissions of criteria air pollutants from the combustion turbines. The EAEC turbines will incorporate dry low NOx combustors that reduce emissions of oxides of nitrogen (NOx), carbon monoxide (CO), and volatile organic compounds (VOC). In addition, the turbines (and duct burner) emissions of NOx will be further reduced through the use of selective catalytic reduction (SCR). The SCR control system utilizes ammonia as the reduction medium in the presence of a catalyst. Two forms of ammonia may be used in currently designed SCR systems, i.e., aqueous ammonia or anhydrous ammonia. The EAEC facility is proposing to use anhydrous ammonia. Section 8.12 of the AFC contains a detailed description of the facility location and process data. Figure 8.12-1 (Section 8.12) shows the facility site plan.

Anhydrous ammonia is a gas which is maintained in a liquid state through pressurization of the handling and storage systems. Anhydrous ammonia has a boiling point of approximately –28.1 deg F. When spilled, anhydrous ammonia will vaporize, releasing ammonia vapors to the surrounding atmosphere.

Accidental releases of anhydrous ammonia in industrial use situations are rare. Statistics compiled on the normalized accident rates for RMP chemicals for the years 1994-1999 from *Chemical Accident Risks in U.S. Industry-A Preliminary Analysis of Accident Risk Data from U.S. Hazardous Chemical Facilities, J. C. Belke, Sept 2000,* indicates that ammonia (all forms) averages 0.017 accidental releases per process per year, and 0.018 accidental releases per million pounds stored per year. Data derived from *The Center for Chemical Process Safety, 1989*, indicates the following accidental release scenarios and probabilities for ammonia in general.

Accident Scenario	Failure Probability
Onsite Truck Release	0.0000022
Loading Line Failure	0.005
Storage Tank Failure	0.000095
Process Line Failure	0.00053
Evaporator Failure	0.00015

EAEC will store anhydrous ammonia in two stationary, pressurized storage tanks. The capacity or each tank will be approximately 12,000 gallons, but each of the tanks will be limited by regulation to storing a maximum amount of 10,200 gallons, or 58,038 lbs or ammonia. The tanks will be enclosed by a secondary containment structure capable of holding the full contents of the tanks. The floor of the containment structure will be sloped to a trench located between the two tanks. The trench, in turn, will be sloped to drain to a single sump. The sump dimensions are as follows:

- Length 15 ft.
- Width 15 ft.
- Depth 6.5 ft.

The surface area of the sump will be 225 sq.ft., and the volume will be approximately 10,900 gallons. The trench will be approximately 21 ft. long and 1 ft. wide, with a resultant surface area of 21 sq.ft. The total surface area for purposes of the OCA analysis will therefore be 246 sq.ft, or 22.85 sq.m.

The delivery truck will connect to the pressurized tank via a 25 ft. loading hose. The loading hose will have an inside diameter of 2 inches.

Pursuant to the federal RMP and CalARP regulations, the offsite consequence analysis (OCA) is to be performed for the release scenario, which involves the failure and complete discharge of the main storage tank, as well as an alternative release scenario as determined by facility staff. As such, two scenarios were modeled for this response, as follows:

- Tank failure scenario incorporating the secondary containment area (trench and sump).
- Delivery vessel loading hose failure with complete contents being spilled to the ground surface.

For purposes of this OCA two sets of meteorological data were used as follows:

- EPA default meteorological data for the worst case release.
- EPA default meteorological data for the alternative case release.

The default meteorological data was supplemented, for the worst case scenario, by daily temperature data as required by CCR Title 19, Section 2750.2.

Table 1 shows the meteorological data values used in the modeling scenarios.

Table 1

Parameter	Worst Case Meteorological	Alternate Case Meteorological
Wind Speed m/sec	1.5	3.0
Stability Class	F	D
Relative Humidity %	50	50
Ambient Temperature C	41	25

A total of two (2) modeling runs were conducted, i.e., single tank failure, and truck loading hose failure for the corresponding meteorological scenarios listed in Table 1.

OCA modeling was conducted using the SLAB model. A complete description of the SLAB model is available in *User's Manual for SLAB: An Atmospheric Dispersion Model for Denser-Than-Air-Releases, D. E. Ermak, Lawrence Livermore National Laboratory, June 1990*. The current version of SLAB contains an internal substance database including chemical specific data for ammonia. This data was used in all modeling runs without exception or modification.

Emissions of anhydrous ammonia were calculated pursuant to the guidance given in *RMP Offsite Consequence Analysis Guidance, EPA, April 1999*.

- For the main storage tank scenario, the total amount released would be equal to the maximum amount allowed for storage, i.e., 10,200 gallons or 58,038 lbs. The complete failure of a single tank would in all probability result in release of both vapor and liquid fractions of anhydrous ammonia. The liquid would form an "instantaneously evaporating pool". The total release and evaporation of 58,038 lbs of ammonia over the required 10-minute release period would result in an emission rate of 5,803.8 lbs/min.

- Emissions for the truck loading hose failure scenario are based upon a 25 ft. hose length, with a 2-inch diameter. The hose would hold approximately 26 lbs of ammonia. Using a 10-minute release period would result in emissions of ammonia from this scenario of approximately 2.6 lbs/min.

The specified toxic endpoint (Te) value for ammonia is 0.14 mg/l, which is approximately equal to 212 ppm. The Te value is based on a one-hour exposure or averaging time, therefore, the modeling concentrations at all offsite receptors will be given in terms of one-hour (or 60 minute) averaging time.

Although the edge of the tank containment area is raised above ground level, the release heights used in the modeling were set at 0 ft. AGL to maintain the conservative nature of the analysis.

The nearest sensitive receptor is residences located approximately 800 m southeast of the tank location. Another sensitive receptor is Mountain House School located approximately 1600 m south of the tank location.

With respect to the assessment of potential impacts associated with an accidental release of ammonia, four offsite "bench mark" exposure levels are typically evaluated, as follows; (1) the lowest concentration posing a risk of lethality, 2000 ppm; (2) the Immediately Dangerous to Life and Health (IDLH) level of 300 ppm; (3) the Emergency Response Planning Guideline (ERPG) level of 200 ppm, which is also the RMP level 1 criterion used by the USEPA and California; and (4) the level considered by CEC staff to be without serious adverse effects on the public for a one-time exposure of 75 ppm (*Preliminary Staff Assessment-Otay Mesa Generating Project, 99-AFC-5, May 2000)*.

Figure 1 shows distance from the ammonia storage tank to the TE and CEC significance values.

Table 2 shows the distances for the two release scenarios to the EPA/CalARP toxic endpoint of 212 ppm and the CEC significance value of 75 ppm. In addition, the data indicates that neither of these concentrations is experienced at any of the identified sensitive receptors.

Scenario	Distance, m To EPA/CalARP TE, 212 ppm	Distance, m To CEC Significance Value, 75 ppm	Sensitive Receptors Impacted
Tank Rupture	< 400 m	< 450 m	None
Loading Hose Rupture	(1)	< 100 m	None

(1) No concentration equaling or exceeding the Te value was modeled for this scenario.

(The primary input file and the output files are available upon request.)

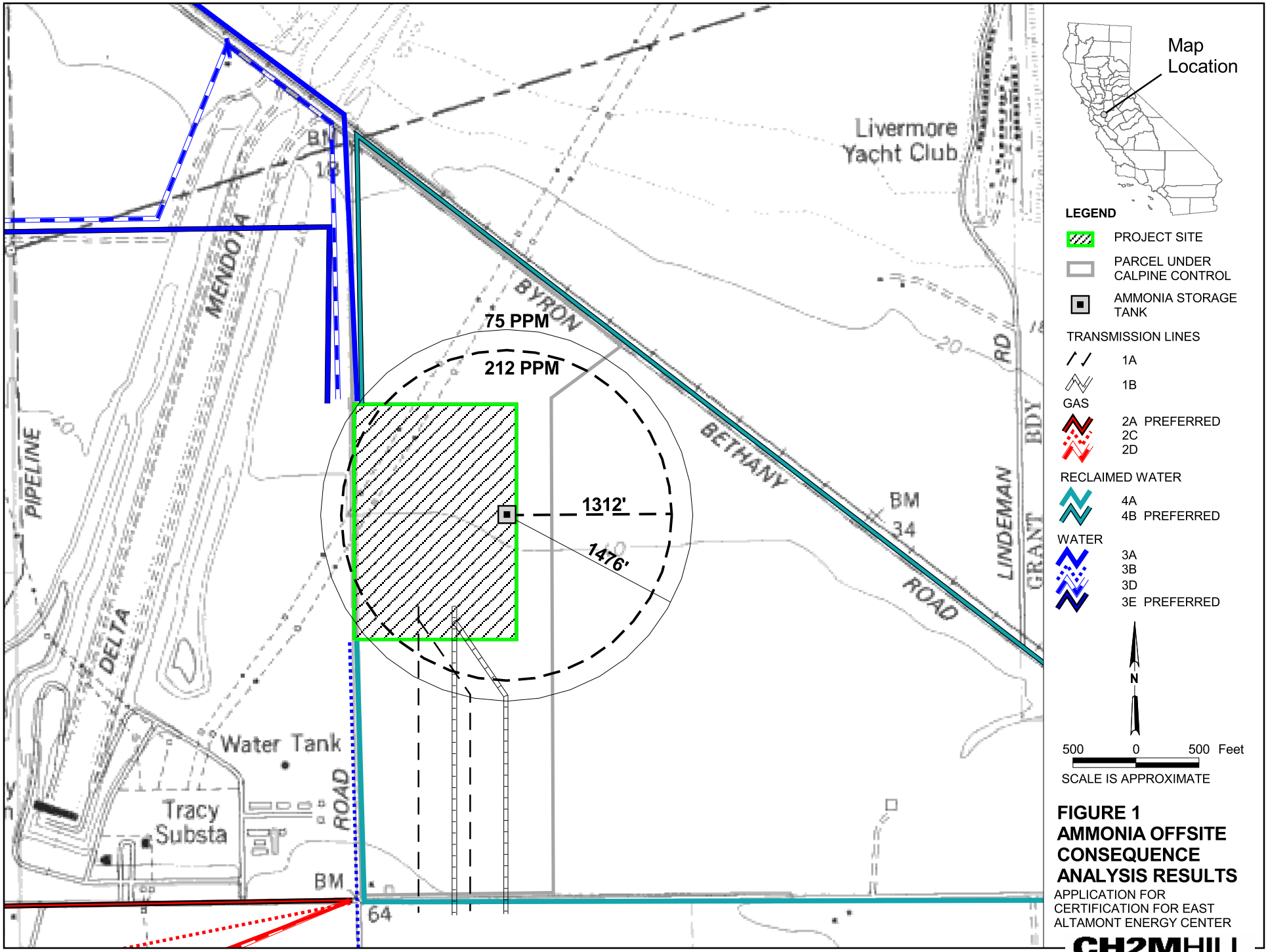


FIGURE 1
AMMONIA OFFSITE CONSEQUENCE ANALYSIS RESULTS
APPLICATION FOR CERTIFICATION FOR EAST ALTAMONT ENERGY CENTER

CH2MHILL

CH2M Hill RDD ArcView Project File \\Thor\Cart1\rddgis\east_alt\east_alt.apr 10:23 a.m. 08-17-2001

EAST ALTAMONT ENERGY CENTER
DATA REQUESTS #2A
(01-AFC-4)

Attachment LU-75

ALAMEDA COUNTY COMMUNITY DEVELOPMENT AGENCY
PLANNING DEPARTMENT

Adolph Martinelli
Agency Director

James E. Sorensen
Planning Director

399
Elmhurst Street
Room 136

Hayward
California
94544-1307

phone
510.670.5400
fax
510.785.8793

www.
co.alameda.ca.us/cda

August 15, 2001

Ms. Cheri Davis,
Energy Facility Siting Project Manager
California Energy Commission
1516 Ninth Street
Sacramento, CA 95814-5512

Subject: East Altamont Energy Center LLC (EAEC), (01-AFC-4), responses of Alameda County Community Development Agency (ACCDA) to Data Request Set No. 2.

Dear Ms. Davis:

The Alameda County Community Development Agency is pleased to provide responses to a small number of pertinent questions raised in your Second Set of Data Requests, dated July 19, 2001. In the following responses, we identify the number of the data request as listed in the July 19, 2001 document, and provide a response.

No. 61: Tree planting versus berms for visual impact mitigation. Biological effects notwithstanding, ACCDA favors the method of visual screening using trees and shrubs for this site. Vegetation would be more visually attractive and natural-looking than tiered berms, placement of trees and shrubs would result in only modest loss of farmland and quality soils compared to the placement of large berms, and tree planting would require far less import of material (which may have its own impact at the source of the material). The aesthetic argument for vegetation rather than berms is relatively obvious; however, considering the endangered species issues, based on the information available so far, the potential effect on wildlife as discussed in the document is speculative. Further, the tree palette could be chosen to use relatively small trees near the road, which would be less desirable as raptor perches than taller existing trees in the area and would still provide a visual screen for the facility.

No. 74: Parcel legality and creation; potential subdivision of parcel. ACCDA believes that the existing 174-acre parcel for which the project is proposed is a legally recorded parcel. This land was made a parcel prior to the Subdivision Map Act, and may have existed as a parcel as early as the 1800's. No subdivision of the parcel has been proposed to our knowledge, although our understanding is that the power plant would share the parcel with continued agricultural activities. To reiterate, ACCDA staff believes this parcel to be a legal parcel, and is preparing a Certificate of Compliance to demonstrate this status. The Certificate of Compliance will be made available to the CEC upon completion.

No. 75: Height limitations in the "A" - Agriculture Zone. The Alameda County Zoning Ordinance specifies no height limitation for the "A" - Agriculture Zone, therefore, no variance process would apply.

No. 76: Consistency with Policies 75 and 76 of the East County Area Plan; consistency with Section 17.06.010 of the Zoning Ordinance. As stated in the Data Request document, Policies 75 and 76 of the ECAP promote conservation of prime soils and preservation of intensive agricultural use. The ACCDA believes that the project as proposed, without mitigation, would be inconsistent with these specific policies, and its construction would result in environmental impacts based on these policies. However, the applicant has proposed to mitigate these effects through the preservation and enhancement of existing farmland on the remainder of the parcel, as well as providing funding to Alameda County for acquisition and preservation of additional agricultural land in the County that would fully mitigate the project's policy impacts. The negotiation for the draft agreement for this measure is nearing completion, and a copy of the agreement will be made available upon approval. Based on the expected outcome of the current negotiations, the ACCDA anticipates that the EAEC will be consistent with Policies 75 and 76 of the East County Area Plan, as well as Section 17.06.010 of the Zoning Ordinance.

In addition to the agricultural use prescription required by Section 17.06.010 of the County Zoning Ordinance, Section 17.06.060 also specifies a number of utility-type uses that may be conditionally approved by the Zoning Administrator if they can be deemed appropriate uses for the area within the "A" District. The provisions of Measure D, which was passed by Alameda County voters in November 2000 and which is a *de facto* amendment to the zoning ordinance, further illuminate the possibility of having a power generation facility in the "A" District by specifying that the Large Parcel Agriculture designation may include "utility corridors and similar uses compatible with agriculture." In our estimation, and as confirmed to us by Alameda County Counsel, this provision would allow the development of a power generation facility with adequate discretionary review such as that provided by the California Energy Commission siting process. No rezoning or general plan amendment is necessary.

No. 78: Noise levels, significance and mitigation. The Alameda County Noise Ordinance specifies a noise level of 45dBA at night as a legal limit in agricultural and residential areas. Noise levels at sensitive receptors should not exceed this value. Beyond this requirement, Alameda County has no specific requirement for further noise reduction, and does not believe an impact would occur as a result of any measured noise levels below this threshold. However, Alameda County would not be opposed to other measures that would provide site-specific noise reduction (such as sound deadening windows and air conditioning) as necessary at individual local residences.

This concludes ACCDA's responses to the Data Request questions. If you require other information or clarification of these responses, please feel free to contact Mr. Bruce Jensen at phone (510) 670-6527 or bjensen3@co.alameda.ca.us. Thank you for conducting a thorough and thoughtful review process.

Very truly yours,

Adolph Martinelli,
Community Development Director

cc: James Sorensen, Planning Director, Alameda County
Alicia Torre

AM/bhj

H:\Calpine_Altamont\Data Request Response.wpd

EAST ALTAMONT ENERGY CENTER
DATA REQUESTS #2A
(01-AFC-4)

Attachment VR-111

Federal Aviation Administration
Western/Pacific Region, AWP-520
P. O. Box 92007
Los Angeles, CA 90009

AERONAUTICAL STUDY
No: 01-AWP-2169-OE

ISSUED DATE: 06/28/01

STEVE DEYOUNG
EAST ALTAMOUNT ENERGY CENTER
6700 KOLL CENTER PARKWAY, STE 200
PLEASANTON, CA 94566

** DETERMINATION OF NO HAZARD TO AIR NAVIGATION **

The Federal Aviation Administration has completed an aeronautical study under the provisions of 49 U.S.C., Section 44718 and, if applicable, Title 14 of the Code of Federal Regulations, part 77, concerning:

Description: "EAST ALTAMONT ENERGY CENTER" POWERPLANT FACILITY
SOUTHEAST OF BYRON BETHANY & MOUNTAIN HOUSE ROADS
Location: TRACY CA
Latitude: 37-48-14.22 NAD 83
Longitude: 121-34-27.88
Heights: 175 feet above ground level (AGL)
209 feet above mean sea level (AMSL)

This aeronautical study revealed that the structure does not exceed obstruction standards and would not be a hazard to air navigation provided the following condition(s), if any, is(are) met:

Based on this evaluation, marking and lighting are not necessary for aviation safety. However, if marking and/or lighting are accomplished on a voluntary basis, we recommend it be installed and maintained in accordance with FAA Advisory Circular 70/7460-1K Change 1.

This determination expires on 12/28/02 unless:

(a) extended, revised or terminated by the issuing office or
(b) the construction is subject to the licensing authority of the Federal Communications Commission (FCC) and an application for a construction permit has been filed, as required by the FCC, within 6 months of the date of this determination. In such case the determination expires on the date prescribed by the FCC for completion of construction or on the date the FCC denies the application.

NOTE: REQUEST FOR EXTENSION OF THE EFFECTIVE PERIOD OF THIS DETERMINATION MUST BE POSTMARKED OR DELIVERED TO THIS OFFICE AT LEAST 15 DAYS PRIOR TO THE EXPIRATION DATE.

This determination is based, in part, on the foregoing description which includes specific coordinates, heights, frequency(ies) and power. Any changes in coordinates, heights, frequency(ies) or use of greater power will void this determination. Any future construction or alteration,

including increase in heights, power, or the addition of other transmitters, requires separate notice to the FAA.

This determination does include temporary construction equipment such as cranes, derricks, etc., which may be used during actual construction of the structure. However, this equipment shall not exceed the overall heights as indicated above. Equipment which has a height greater than the studied structure requires separate notice to the FAA.

This determination concerns the effect of this structure on the safe and efficient use of navigable airspace by aircraft and does not relieve the sponsor of compliance responsibilities relating to any law, ordinance, or regulation of any Federal, State, or local government body.

A copy of this determination will be forwarded to the Federal Communications Commission if the structure is subject to their licensing authority.

If we can be of further assistance, please contact our office at 310 725-6557. On any future correspondence concerning this matter, please refer to Aeronautical Study Number 01-AWP-2169-OE.

Karen Mc Donald
Specialist, Airspace Branch

(DNE)

EAST ALTAMONT ENERGY CENTER
DATA REQUESTS #2A
(01-AFC-4)

Attachment WR-83

Draft

East Altamont Energy Center

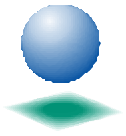
Draft Construction Storm Water Pollution Prevention Plan

Prepared for

Calpine

WDID No.

August, 2001



CH2MHILL

2485 Natomas Park Drive
Sacramento, California 95833

Contents

1.0 INTRODUCTION

1.1 Objectives

This Storm Water Pollution Prevention Plan[1] (SWPPP) was developed to address the new construction activity associated with the East Altamont Energy Center (EAEC). As required by the State Water Resources Control Board (SWRCB), this SWPPP was developed and will be amended or revised, when necessary, to meet the following objectives:

- Identify all pollutant sources including sources of sediment that may affect the quality of storm water discharges associated with construction activity (storm water discharges) from the construction site;
- Identify non-storm water discharges;
- Identify, construct, implement, and maintain Best Management Practices (BMPs) to reduce or eliminate pollutants in storm water discharges and authorized non-storm water discharges from the construction site during construction, and
- Develop a maintenance schedule for BMPs installed during construction designed to reduce or eliminate pollutants after construction is completed (post-construction BMPs).

1.2 Project Overview

The East Altamont Energy Center will be located on approximately 55 acres within a 174-acre parcel of land in unincorporated Alameda County. The site is approximately 1 mile west of the San Joaquin County line, and 1 mile south and east of the Contra Costa County line (see Figure 1). The EAEC will be located between Byron Bethany Road and Kelso Road, with Mountain House Road forming the western border of the site.

The EAEC will be a nominal 1,100-megawatt (MW) natural-gas-fired combined-cycle generating facility, with a 230-kilovolt (kV) switchyard and approximately 0.5 mile of new 230-kV transmission lines. The generating facility will consist of three combustion turbine generators (CTGs) equipped with dry, low oxides of nitrogen (NO_x) combustors and steam

[1] In 1972, the Federal Water Pollution Control Act (also referred to as the Clean Water Act [CWA]) was amended to provide that the discharge of pollutants to waters of the United States from any point source is unlawful unless the discharge is in compliance with a National Pollution Discharge Elimination System (NPDES) permit. The 1987 amendments to the CWA added Section 402(p), which established a framework for regulating municipal and industrial storm water discharges under the NPDES Program. On November 16, 1990, the U.S. Environmental Protection Agency (USEPA) published final regulations that establish storm water permit application requirements for specified categories of industries. The regulations provide that discharges of storm water to waters of the United States from construction projects that encompass five (5) or more acres of soil disturbance are effectively prohibited unless the discharge is in compliance with an NPDES Permit. While federal regulations allow two permitting options for storm water discharges (individual permits and General Permits), the California State Water Resources Control Board elected to adopt only one statewide General Permit that (with few exceptions) apply to all storm water discharges associated with construction activity, upon submittal of a Notice of Intent to comply, certain fees and a Stormwater Pollution Prevention Plan. The SWPPP must be kept onsite during construction and made available upon request by a representative of the Regional Water Quality Control Board or local agency.

injection power augmentation capability; three heat recovery steam generators (HRSG) with duct burners; one condensing steam turbine generator (STG); a de-aerating surface condenser; a mechanical-draft cooling tower; and associated support equipment. The switchyard, which will be owned by Western Area Power Authority (Western), will function as an extension of Western's existing Tracy substation, located across Mountain House Road, immediately to the west of the project site.

Up to approximately 55 fenced acres will be required to accommodate the generation facilities, including the storage tank areas, parking area, control/administration building, water treatment facility, evaporation ponds, wastewater recycle pond, stormwater retention pond, switchyard, emission control equipment, and generation equipment. Access to the site will be provided via a 30-foot-wide road leading from Mountain House Road to the site and terminating at a controlled gate.

The proposed EAEC will consist of the following features:

- A 1,100-megawatt (MW) nominal, natural-gas-fired, combined-cycle generating Facility consisting of three modern combustion turbines and a condensing steam turbine.
- A 230-kilovolt-(kV) switchyard.
- Approximately 0.5 mile of new 230-kV transmission line onsite to join an existing 230-kV transmission line that connects to the Western Area Power Administration (Western) Substation.
- Approximately 1.4 miles of new natural gas supply line.
- Approximately 4.6 miles of to-be-constructed recycled water supply line.
- Approximately 2.1 miles of new water supply line.
- Approximately 5.68 acres of stormwater retention and waste storage ponds.
- A small treatment system for domestic water uses.
- A septic tank/leach system for sanitary wastes.

1.3 Project Ownership

Calpine is the sponsor of the EAEC, which will be owned by the East Altamont Energy Center Limited Liability Company (EAEC LLC), a wholly owned subsidiary of Calpine Corporation. The switchyard will be owned by Western Area Power Authority (Western), and will function as an extension of Western's existing Tracy substation.

1.4 Implementation Schedule

Calpine has requested that the Application for Certification (AFC) for the EAEC, filed with the California Energy Commission (CEC) on March 29, 2001, be processed under the CEC's power plant licensing process. Assuming the project receives a license by January 2002, construction is planned to begin in June 2002. Plant testing will commence in the first quarter 2004, and full-scale commercial operation is expected to begin in June 2004.

The phases of the EAEC construction as they pertain to stormwater management are as follows:

- Preparation - Parking areas for construction workers and laydown areas for construction materials will be prepared. A vehicle wheel wash rack will be constructed near the entrance to the project area. Sandbags will be placed around the EAEC perimeter. Any debris on the project site will be removed and properly disposed.
- Site Grading - Rough grading of the site will be based on one per cent slopes established across the project area within the site perimeter. Swales will be constructed directing water to a sediment retention basin to be installed on the site. The sediment retention basin will be connected via an overflow pipe to the existing drainage channel.
- Foundation - All underground piping and wiring will be installed, followed by installation of the foundation for the new power plant and advanced water treatment structures. Stormwater will continue to be directed via the swales into the sediment retention basin until the underground piping and foundation are completed. Stormwater will then be directed towards a system of storm drains, into the underground piping, and to the sediment retention basin and discharged when necessary.
- Plant Construction -The new combined cycle units and switchyard will be constructed. Stormwater will continue to be directed towards the array of storm drains, into the underground piping, into the sediment retention basin and discharged when necessary.
- Site Stabilization - Permanent stormwater management fixtures will replace any temporary items. Site seeding and landscaping will, be conducted.
- Demobilization - All temporary construction facilities will be removed. Stormwater will continue to be be directed towards the array of storm drains, into the underground piping and discharged to the stormwater detention basin.

Preparation and Site Grading will likely take about a month. Foundation work will take from three to five months, while actual Plant Construction will take about 24 months. Site Stabilization and Demobilization should last about a month. While the Project phases will generally proceed in order, it will be possible that certain phases will overlap.

A Notice of Intent (NOI) to comply with the terms of the General Permit To Discharge Storm Water Associated With Construction Activity will be prepared and submitted prior to the commencement of construction (Attachment 2). Any necessary revisions to the SWPPP will be prepared in a timely manner. The SWPPP will be amended whenever there is a change in construction or operations that may affect the discharge of pollutants to surface waters. As required by the SWRCB, a separate NOI shall be submitted to the Regional Board for each construction site and a separate storm water plan will describe operations there. Once construction activity has been concluded, a Notice of Termination Form will be submitted to the Regional Board and this Construction SWPPP will no longer be in effect. Storm water for the EAEC will then be managed under the facility's Operations Stormwater Pollution Prevention Plan.

1.5 Plan Availability

The SWPPP will remain on the construction site while the site is under construction during working hours, commencing with the initial construction activity and ending with termination of coverage under the General Permit. A copy of the California General Permit

will also be maintained on the construction site. The SWPPP will be provided to the Regional Board, and be available to the public through the Regional Board.

2.0 Site Description

2.1 Site Description and Project Activity

Site Maps showing the construction project in detail will be shown on figures developed for site construction. Site conditions, including paved areas, buildings, lots and roadways, general topography and drainage patterns with stormwater collection and discharge points are shown for the following phases of construction:

- Finished Project – A figure showing the Conceptual Site Map for the EAEC site will be included. It will show the completed EAEC, switchyard and all associated linears.
- Existing Site Topography – A figure showing the existing topography for the EAEC site will be included.
- Conceptual Rough Grading – A figure showing the Conceptual Plan for Interim Grading and Erosion Control will be included. It shows the temporary on-site drainage patterns to be established by the Rough Grading of the project site.
- Stabilized Site – A figure showing the Conceptual Finish Grading and Drainage Plan will be included.

A figure presenting descriptive notes and references for the figures identified above will be shown on separate figure. A figure showing a typical erosion control plan that will vary in size and shape according to the particular need will be included. When it is necessary to construct an area for parking, for temporary stockpiling of soil, or for storing construction materials (i.e., a laydown area), the area will be graded in a fashion similar to that shown on this figure, prior to use.

2.2 Vegetation and Soils

The dominant land use in the area is agricultural production, comprising hay, alfalfa, tomatoes, and other row crops. All 174 acres of the parcel are farmed as alfalfa-oats in rotation, or hay. Lands to the north, east, and south of the proposed site are used similarly, but the parcel directly west of the site is developed for industrial uses (the Western electrical substation). All the land on the EAEC site is classified as prime farmland as is most of the surrounding area. Once developed, most of the land not required for project facilities, including the site and evaporation ponds, would be returned to agricultural production.

Information on types and distribution of soils within the project area was derived from three published soil survey reports by the National Resource Conservation Service (NRCS) [formerly the Soil Conservation Service], *Soil Survey of Alameda County (*NRCS, 1966*), Full Soil Survey of San Joaquin County (*NRCS, 1992*), and Soil Survey of Contra Costa County* (NRCS, 1977), as well as a review of national soil data base information (NRCS, 2000). Soils occuring within the project area include Linne Clay Loam (LaC/LbD), Rincon Clay Loam

(RdA), Rincon Clay Loam (RdB), Solano Fine Sandy Loam (Sf, Sh), Sacramento Clay (Sa), and San Ysidro Loam (Sc). A figure showing the locations of the different soil types with respect to the EAEC will be included. A more detailed discussion of the soil at and around the project site is found in the Application for Certification.

2.3 Hydrology

Most of the precipitation in the project area falls between November and April. Monthly average rainfall in Tracy, which is similar to that at the project site, is presented in Table 1. The total annual average rainfall in Tracy is 10 to 12 inches.

TABLE 1
Average Monthly Rainfall near the Proposed Project Site (Tracy) 1950 – 1998

Precipitation	Jan	Feb	Mar	Apr	May	June	July	Aug	Sept	Oct	Nov	Dec
Rainfall (in.)	2.38	1.92	1.71	0.80	0.22	0.14	0.05	0.10	0.26	0.67	1.88	1.72

2.4 Estimated Total Site Area and Total Disturbed Area

Up to approximately 55 fenced acres will be required to accommodate the generation facilities, including the storage tank areas, parking area, control/administration building, water treatment facility, evaporation ponds, wastewater recycle pond, stormwater retention pond, switchyard, emission control equipment, and generation equipment. Additionally, a 22-acre construction laydown area, used for employee parking and equipment storage during construction, will be created. This 22-acre laydown area will be returned to agricultural use following construction activities.

Total Area	174 acres
Proposed Developed Area	55.00 acres
Impervious	13.35 acres
Cooling Tower Area	1.57 acres
Gravel	14.10 acres
Stormwater Retention Basin	1.70 acres
Waste Storage Pond	3.98 acres
Landscaping / Grass (Site Area)	9.99 acres
Return to Agriculture (Laydown Area)	22.00 acres
Balance of Site (Agriculture / Grass)	97.0 acres

2.5 Existing Drainage

Currently, stormwater runoff from the project site runs by sheet flow to the north, where it is collected in an east-west running drainage ditch which, in turn, discharges into a north-south running drainage ditch that runs along the east side of the property. The north-south

running drainage ditch drains to the north and discharges into the intake channel of the Delta-Mendota Canal. The site is currently farmed, with soil types that have poor drainage.

The total runoff values indicated in Table 2 are based on the runoff from a site area of 23.7 acres. This allows a direct comparison to the portion of the final developed site area that will have surface runoff collected by inlets, storm sewer piping, and channels and directed to the proposed stormwater detention pond.

TABLE 2
Stormwater Runoff Prior to Construction

Return Period of Storm (years)	Rainfall Depth for 24-hr Storm[a] (inches)	Total Runoff from Site for 24-hr Storm[b] (millions of gallons)
10	2.9	0.746
25	3.2	0.824
50	3.8	0.978
100	3.9	1.004

[a] From Technical Paper 40 – Rainfall Frequency Atlas of the United States.
[b] Represents 23.7-acre area, which will drain to proposed stormwater detention basin, factored for surface condition.

2.6 Proposed Drainage

Most of the site will be paved to provide internal access to all project facilities and onsite buildings. The switchyard and areas around equipment, where not paved, will have gravel surfacing. The wastewater recycle pond, cooling tower, evaporation ponds, landscaping, and natural areas will cover the remaining portion of the 55-acre developed site. Post-construction drainage is designed to drain stormwater runoff to an onsite detention pond. From the detention pond, the stormwater will be discharged into the existing drainage ditch, which runs along the east side of the project site. The peak discharge from the detention pond will be regulated to less than the pre-construction flow rate. Figure 8.14-4 shows the post-construction runoff and drainage pattern. The post-construction stormwater runoff from these areas will be significantly less than the pre-construction runoff as a result of the stormwater captured in the wastewater recycle pond, cooling tower, and evaporation ponds (see Table 3).

TABLE 3
Stormwater Runoff Following Construction

Return Period of Storm (years)	Rainfall Depth for 24-hr Storm[a] (inches)	Total Runoff from Site for 24-hr Storm[b] (millions of gallons)
10	2.9	1.344
25	3.2	1.483
50	3.8	1.761
100	3.9	1.807

[a] From Technical Paper 40 – Rainfall Frequency Atlas of the United States.
[b] Represents 23.7-acre area, which will drain to proposed stormwater detention basin, factored for surface condition.

2.7 Construction and Maintenance Access Road

Construction access will be from Mountain House Road, as shown on Figure 2.2-3.

2.8 Earthwork

Excavation work will consist of the removal, storage, and/or disposal of earth, sand, gravel, vegetation, organic matter, loose rock, boulders, and debris to the lines and grades necessary for construction. Materials suitable for backfill will be stored in stockpiles at designated locations using proper erosion control measures. Where contaminated material is encountered during excavation, its disposal will comply with applicable federal, state, and local regulations. Disposal options for contaminated soils include on-site bioremediation and/or disposal at a designated contaminated materials disposal site.

2.9 Name of Receiving Water

All stormwater from the project site will be collected in the stormwater detention basin. If necessary, water will be discharged to the existing drainage ditch, which runs north-south along the east side of the project site. The ditch drains to the north and discharges into the intake channel of the Delta-Mendota Canal.

2.10 Potential Pollutant Sources

Construction of the project will involve handling of a large variety of building materials. Acutely hazardous materials, as defined in California's Health and Safety Code Section 25531, will not be used. Hazardous materials to be used during construction of the project and its associated linear facilities will be limited to gasoline, diesel fuel, motor oil, hydraulic fluid, solvents, cleaners, sealants, welding flux, various lubricants, paint, and paint thinner. A list of typical construction site potential pollutants is given in Appendix A. Because some of these materials may be used outdoors at the site, there is potential that some of these materials may be present in storm water.

East Altamont Construction SWPPP

The primary potential pollutant source for stormwater during the construction of the EAEC results from soil materials being exposed to wind and water movement. The greatest amount of soil will be exposed during the Preparation and Site Grading Phases of the project. Upon completion of the Foundation Phase, the amount of soil exposed will be significantly reduced. Due to the controls and Best Management Practices (BMPs) described in subsequent sections of this SWPPP, soils and sediments in stormwater runoff from the EAEC site will be minimized, and then significantly reduced or eliminated prior to discharge from the stormwater detention basin.

3.0 Erosion Control Plan

3.1 Best Management Practices (BMPs)

The following section presents standard construction practice Best Management Practices (BMPs) most of which are described in the California Storm Water Best Management Practice Handbook (1993) and the Caltrans Storm Water Quality Handbook (1997). These resource handbooks provide comprehensive details on BMP implementation and will be obtained and reviewed by managers for all construction contractors that may have an impact on implementation of the SWPPP. A code and number follow BMPs within this SWPPP. The code and number provide a cross-reference to the BMPs described in the handbooks. Codes of SC, ESC, CA or TC correspond to the California Storm Water Best Management Practice Handbook. Codes of PD or CD correspond to Caltrans Storm Water Quality Handbook. Additional BMPs are described where appropriate. The BMPs outlined in this SWPPP are considered the minimum requirements for erosion and sediment control. The contractors may implement additional control measures if necessary.

3.2 General Erosion Control Measures

The project has been designed to impact as small an area as possible, thereby limiting the amount of disturbed vegetation and exposed soil. Construction is expected to proceed with all appropriate speed, as quickly as is reasonable and safe, thereby ensuring that as little soil is exposed for as short a time as possible. In general, all work areas are surrounded by dikes, drainage swales, lines of sand bags, or combinations of these to prevent run-on and uncontrolled run-off. General erosion and sediment controls will include installation of filter fabric fencing, hay bale fencing or sand bags wherever appropriate.

All equipment will be maintained to prevent leaks and spills, and fueling will only be conducted within contained areas. Topping off will be discouraged. Spill containment equipment will be available in the event that they are needed. Any contaminated soils resulting from spills will be dug up as quickly as possible, and then removed from the site for proper disposal.

Personnel will receive training to conduct their jobs properly and recognize and report aberrant situations so that they can be quickly corrected.

The following BMPs will be utilized:

- Proper scheduling and sequencing of activities - ESC I
- Preservation of existing vegetation - ESC 2
- Temporary drains and swales - ESC 31
- Silt fencing - CD 36, ESC 50
- Hay bale barriers - ESC 51
- Sand bag barriers - ESC 52

- Sanitary and septic waste management - CA 24
- Vehicle and equipment maintenance - CA 32
- Vehicle and equipment fueling - CA 31
- Spill prevention and control - CAI 2
- Employee and contractor training - CA 40

3.2.1 Access Road, Entrance, and Parking, Staging and Laydown Areas

The access road, entrance and areas used for parking, staging and laydown will be stabilized using coarse aggregate. The aggregate cover will be maintained so as to limit sediment tracking and creation of dust. Surfaces will be watered to further reduce generation of dust, but will not be excessively watered so as to prevent generating runoff. Filter fabric fencing will be used at edges of these areas to minimize sediment discharging into swales or ditches. Vehicles exiting the construction area will be required to go through the wheel wash rack shown in Figure 9. It may be necessary to install geotextile matting prior to the coarse aggregate in certain parking, staging and laydown areas to further assist with stabilization.

The following BMPs will be utilized:

- Silt fencing - CD 36, ESC 50
- Stabilizing surfaces with coarse aggregate - CD 24, ESC 24
- Compacting access road surfaces - ESC 23
- Proper scheduling and sequencing of activities - ESC I
- Preservation of existing vegetation - ESC 2
- Placement of geotextile - ESC 20
- Dust control - ESC 21
- Temporary drains and swales - ESC 31
- Hay bale barriers - ESC 51
- Vehicle and equipment cleaning - CA 30

3.2.2 Site Grading, Drainage Swales and Sediment Retention Basin

Temporary ditches and swales will be constructed during the Site Grading phase of the project. These swales will direct stormwater into the sediment retention basins. The basins will have an overflow discharge that will be connected to the flood control channel (Zone 4, Line F) that runs along the southern boundary of the site.

The work site will require minimal grading, and will be contoured to have a gentle slope following natural drainage patterns towards the swales. This will reduce water velocity and thus the amount of transported sediment. If it is necessary to establish temporary stockpiles of soil or excavated material, the down slope side of the stockpiles will be surrounded with silt fences, hay bale barriers and / or diversion mounds.

Periodic check dams, rock filters and / or hay bales will be placed in the swales to further reduce water velocity and trap sediment. In addition, petroleum-absorbing fabric will be staked into position above one or more of the check dams or hay bale barriers. At a minimum, petroleum-absorbing fabric will be placed above the last check dam or barrier

upstream of the sediment retention basin. This will limit or prevent hydrocarbons resulting from incidental leaks or drips from entering the basin.

Outlet protection composed of rock, riprap or concrete rubble will be installed at the end of the drainage swale at the entrance into the sediment retention basin. The rock outlet protection reduces or eliminates scouring and erosion of the entrance into the basin, further reducing water velocity which also allows for deposition of sediment before entering the basin. A means for closing the entrance into the basin will be available such as a closeable gate, or sufficient earthen material. This will be used in the event of a spill on the project site, to prevent the contaminated material from entering the sediment retention basin. Similarly, the discharge from the sediment retention basin will be closeable, should it be necessary.

The following BMPs will be utilized:

- Temporary drains and swales - ESC 31
- Check dams - ESC 41
- Hay bale barriers - ESC 51
- Brush or rock filter – ESC 53
- Outlet protection – ESC 40

3.2.3 Foundations

As the foundation for the new power plant structures are developed, drainage swales will be replaced with surface collectors and underground drainpipes. Sediments and hydrocarbons will be minimized or prevented from entering the surface collectors with storm drain inlet protection devices and rings of hydrocarbon-absorbing fabric.

A designated concrete washout site will be identified that is at least 50 feet from storm drains, open ditches and water bodies. Dumping of excess concrete and washing out of delivery vehicles will be prohibited at other locations on site. Notices will be posted to inform all drivers.

The following BMPs will be utilized:

- Storm drain inlet protection - ESC 54
- Concrete waste management - CA 23

3.2.4 Site Stabilization and Demobilization

As construction nears completion, areas used for parking, storage and laydown can be stabilized. This means that areas that will continue to be utilized (e.g., for parking, storage, etc.) will have permanent stormwater collection and conveyance structures provided, and other areas can be seeded and/or provided with landscaping and vegetative cover. Vegetative cover significantly reduces the likelihood of erosion and sediment transport. Vegetative coverage will be considered sufficient for purposes of submitting the Notice of Termination when 70% of the surface area has established cover. Alternatively, if pre-construction vegetative coverage was not complete, coverage will be considered

sufficient when 70% of pre-construction levels has been achieved. Native vegetation will be used whenever possible in revegetation efforts.

Vegetation restoration will be monitored following the completion of construction. Areas where vegetation is not re-established or where erosion takes place will be identified, and appropriate remedial actions implemented. Potential actions will include additional seeding, installation of irrigation systems to promote vegetation growth, regrading, or installation of engineered structures to control surface-runoff. Corrective actions will be implemented as soon as feasible, but not later than the start of the next rainy season.

Vegetation monitoring will be conducted as part of routine project maintenance activities, and after major storm events. Areas that have been re-seeded will be monitored at least annually for a period of 2 years following seeding. When needed, additional remedial measures will be implemented as part of the project maintenance program.

3.3 Other Controls

3.3.1 Contractor Waste

The generation of waste materials will be minimized through efficient and careful use of materials. Non-hazardous materials will be utilized where acceptable to meet construction requirements. Manufacturers' instructions regarding use and proper disposal of hazardous materials will be followed. Chemicals, drums and bagged materials will not be stored directly on the ground, and will be covered or stored indoors where feasible. Incompatible materials will be separated, and secondary containment will be provided for liquids. Sufficient spill cleanup materials will be kept in proximity to areas where hazardous materials are stored and used. Appropriate fire suppression equipment will be available.

Contractor waste materials will be collected and stored in metal dumpsters provided by a licensed solid waste management company. The dumpster will meet local and state solid waste management regulations, and be provided with solid lids or removable flexible covers. Trash and construction debris will be deposited in the dumpsters, the dumpsters will be covered and then hauled offsite to an approved landfill. No construction waste will be buried onsite. Personnel will be instructed as to proper disposal procedures, notices will be posted, and individuals will be designated to assure that the procedures are followed.

A licensed contractor will regularly collect all sanitary wastes from portable units.

In the event that hazardous waste is generated, all hazardous waste will be secured in separate containers for storage in designated areas, followed by offsite management according to regulations.

The following BMPs will be utilized:

- Cover or store hazardous materials indoors - CD 10
- Material delivery and storage - CA 10
- Material use - CA 11
- Spill Prevention and Control - CA 12
- Solid Waste Management - CA 20

- Hazardous Waste Management - CA 21
- Use of covered dumpsters and containers for waste - CD 13
- Use of designated storage areas - CD 13, CD 14

3.3.2 Groundwater Controls

Construction excavations will be dewatered if necessary by pumping any groundwater encountered into storage tanks located on-site for characterization. Samples will be taken from each storage tank and sent to a California State-certified analytical laboratory for testing. If any contamination is detected, the waste will be handled and properly disposed in a manner consistent with federal, state, and local regulations. Otherwise, the stored groundwater will be pumped to the stormwater detention basin.

3.3.3 Offsite Vehicle Tracking

Because sediment reaching public roads generally has a clear path to wetlands and water bodies, controls will be in place to minimize or eliminate soils from being tracked off the project site from vehicles. The site will have roadways and parking areas made of coarse aggregate to limit the amount of material adhering to tires. A construction vehicle tire wash. rack will be installed near the exit to the project site. Paved roads immediately surrounding the construction site will be inspected daily and cleaned as necessary using manual or mechanical street sweepers.

3.3.4 Dust Suppression and Control

Wind may also result in airborne particulate matter, so controls will be in place to reduce or eliminate blowing dust and debris. The following suppression and control methods will be used:

- Water aggregate roadways, parking areas and construction areas as needed.
- Cover all trucks hauling soil, sand and other loose materials or require all trucks to maintain at least eighteen inches of freeboard.
- Sweep adjacent streets and on-site paved roadways.
- Hydroseed or apply non-toxic soil stabilizers to inactive or completed construction areas as soon as is practical.
- Enclose, cover, water or apply non-toxic soil stabilizers to exposed stockpiles of sand, dirt, etc.
- Limit traffic speed onsite to 15mph or less.
- Suspend excavation and grading during periods of high winds.
- Replant vegetation in disturbed areas as quickly as possible.

3.3.5 Awareness of Potential Prior Industrial Waste

It is possible that previously unknown pockets of contaminants from prior industrial activity may be encountered during construction. Operators of heavy equipment during excavation activity will be asked to report unusual conditions to their supervisor. If any of

the following are encountered during earthmoving activities, operators are to inform their supervisors:

- Buried tanks, drums or containers
- Discolored or oily soil
- Unusual odors
- Material that is smoking or fuming

Supervisors will report the conditions to the Project Supervisor and / or the environmental manager for the EAEC. They will be responsible for investigating the situation and providing advice for next steps and further action.

3.4 Training

Prior to project startup, all designated onsite representatives will participate in a pre-project storm-water training workshop. The workshop will cover basic storm-water information, the requirements of the general permit, and the SWPPP. Specifically, the workshop will focus on implementation, inspection, and maintenance of storm-water controls. All new employees will be trained by staff familiar with these topics.

As required by the SWRCB, individuals responsible for SWPPP preparation, implementation, and permit compliance will be appropriately trained, and the training will be documented. This includes those personnel responsible for installation, inspection, maintenance, and repair of BMPs. Those responsible for overseeing, revising, and amending the SWPPP shall also document their training.

All contractors are responsible for familiarizing their personnel with the information contained in the SWPPP. Contractors will be informed of this obligation and will be expected to have one or more employee training or briefing sessions conducted. The purpose of the meetings will be to review the proper installation methods and maintenance of all erosion control BMPs to be used on the project. Monitoring and inspection activities will only be conducted by individuals who have had additional training specific for this purpose. Records will be maintained of training.

Each contractor will be required to certify that they understand the requirements of the SWPPP, and will perform their duties in accordance with its requirements. An example Certification Form is included in Attachment 3. These signed Certifications will be collected by the Project Manager (or designee) to identify authorized contractors in the SWPPP (see Attachment 4).

4.0 Maintenance, Inspection, and Repair

4.1 Maintenance

Erosion and sediment control structures must be maintained to remain effective. Features that are washed out or damaged will be repaired as soon as possible, depending on worker safety. Structures designed to accumulate sediment will have sediment removed in advance of the rainy season, and before major storm events. The following criteria will be used to determine whether erosion and sediment control features should be cleaned, repaired, or replaced:

- Sediment or other debris has accumulated to greater than one-third the height of sediment fabric fences or hay bale barriers
- Sediment or debris has reduced the storage capacity of sediment retention basins or sediment traps by 50% or more
- More than one-third of the cross-section of conveyance structures, such as drainage swales or ditches are plugged or blocked

In addition, the following maintenance activities will be performed:

- Paved roads immediately surrounding the construction site will be cleaned as necessary using manual or mechanical street sweepers.
- Coarse aggregate on access roads and parking areas will be maintained so as to limit sediment tracking and creation of dust.
- Coarse aggregate surfaces and excavations will be watered to limit the generation of dust (but will not be excessively watered so as to prevent generating runoff).
- All equipment will be maintained according to manufacturers' specifications so as to prevent leaks and spills.
- Any contaminated soils resulting from spills will be dug up as quickly as possible, and then removed from the site for proper disposal.

4.2 Inspections

Inspections of the construction site will be conducted prior to anticipated storm events and after actual storm events. This will be accomplished by conducting weekly inspections. In addition, inspections will be made during each 24-hour period during extended storm events. SWPPP inspections may be conducted in conjunction with other facility inspections. For instance, if a regulated amount of petroleum materials is on site and there is a Spill Prevention, Control and Countermeasures Plan (SPCC), the SWPPP inspections may be conducted in conjunction with SPCC inspections.

The goals of these inspections are (1) to identify areas contributing to a storm water discharge; (2) to evaluate whether measures to reduce pollutant loadings identified in the SWPPP are adequate, properly installed and functioning in accordance with the terms of the

General Permit; and (3) whether additional control practices or corrective maintenance activities are needed.

Personnel responsible for inspections before, during and after storm events will receive additional training specific for this purpose. This can take the form of formal classroom training and / or "walk-around" with an experienced individual, who discusses the appropriate conditions and those conditions requiring action. The Project Manager (or designee) will maintain a list of authorized inspection individuals for the SWPPP (Attachment 5).

All required inspections will be recorded on an inspection checklist. Records of SWPPP inspections will be maintained onsite for at least three years. An example checklist is shown in Attachment 6, and contains the following information required by the RWQCB:

- Inspection date.
- Weather information: best estimate of beginning of storm event, duration of event, time elapsed since last storm, and approximate amount of rainfall (inches).
- A description of any inadequate BMPs.
- If it is possible to safely access during inclement weather, list observations of all BMPs: erosion controls, sediment controls, chemical and waste controls, and non-storm water controls. Otherwise, list result of visual inspection at relevant outfall, discharge point, or downstream location and projected required maintenance activities.
- Corrective actions required, including any changes to SWPPP necessary and implementation dates.
- Inspectors name, title, and signature.

Records of all monitoring information, copies of all reports required by the general storm-water permit, and records of all data used to complete the Notice of Intent for the construction activity shall be held, retained, and kept in possession by the facility operator and / or constructor for at least 3 years.

The facility operator and / or constructor will annually certify that its construction activity is in compliance with the requirements of this general permit and its SWPPP. Noncompliance notifications will be submitted within 30 days of identification of noncompliance.

Equipment, materials, and workers will be available for rapid response to failures and emergencies. All corrective maintenance to BMPs will be performed as soon as possible, depending upon worker safety.

Responsible personnel are:

[To be completed in final product]

5.0 Non-Storm-Water Management

5.1 General

Non-storm-water management at the construction site involves prevention of contamination in runoff associated with water sprayed for dust control and irrigation. Non-storm-water discharges from the project site will be minimal due to effective implementation of control practices. These control practices and BMPs were discussed in Section 3, Controls, but are summarized here again.

5.2 Inventory for Pollution Prevention Plan

The following substances listed below are expected to be present on site during construction:

- Concrete
- Paints
- Detergents
- Fertilizers
- Fuels
- Lubricants
- Wood
- Solvents

As required by state and federal law, contractors will be required to have inventories of hazardous materials. If the use of other types of hazardous materials at the site becomes necessary, the SWPPPP will be amended to include them. See Appendix A for a more extensive list of potential pollutants on-site.

5.3 Hazardous Materials Management Plan

Typically, contractors are the generators of waste oil and miscellaneous hazardous waste produced during facility construction and are responsible for compliance with state and federal regulations regarding hazardous waste, including licensing, training, accumulation limits, reporting requirements, and record keeping. Hazardous waste will be collected in hazardous waste accumulation containers near the point of generation.

Potential pollutants used at the facility during construction include paints, petroleum products, and building materials such as asphalt, sealants, and concrete. These may contain small amounts of metals or toxic substances that may be harmful. General BMPs for waste management were cited in Section 3, Controls above, and additional discussion is provided below. Spill prevention and control practices follow the California Stormwater BNT, CA 12.

5.4 Prevention of Non-Stormwater Discharges

There will be specific designated temporary waste storage areas on site. These areas will be contained within earthen berms or an equivalent barrier measure. Non-hazardous construction wastes (trash and construction debris) will be collected and placed into commercial disposal containers as soon as possible.

BMPs that will be implemented to prevent non-storm water discharges include:

- Monitor all vehicle and equipment fueling and maintenance activities; perform fueling offsite wherever possible - CD 19,20
- Secondary containment for hazardous material delivery and storage areas to prevent spills or leakage of liquid material from contaminating soil or soaking into the ground -CD 10
- Train employees on the proper use of materials such as fuel, oil, asphalt and concrete compounds, acids, glues, paints, solvents, etc. (CA 40) (Cli 11, CD 16)
- Regularly remove construction wastes (CD 13)
- Store all liquid wastes in covered containers (CD 10)
- Use portable toilet facilities managed and regularly serviced by a licensed contractor (CD 18)
- Restrict vehicle and equipment washing to designated areas (CD 18)

5.4.1 Good Housekeeping

The following good housekeeping practices will be followed on site during the construction project:

- An effort will be made to store only enough product required to do the job. - CA 11
- All materials stored on site will be stored in a neat, orderly manner in their appropriate containers, and, if possible, under a roof or other enclosure. - CA 10
- Products will be kept in their original containers with the original manufacturer's label. - CA 11
- Substances will not be mixed with one another unless recommended by the manufacturer.
- Whenever possible, all of a product will be used before disposing of the container. -CA 11
- Manufacturers' recommendations for proper use and disposal will be followed. - CA 11, CA 20, CA 21
- Storage areas including equipment storage will be inspected for visible signs of oil or other spillages.

5.4.2 Hazardous Products

Products will be kept in the original containers unless they are not resealable. Original labels and material safety data will be retained. If surplus product must be disposed of, manufacturers' or local and State recommended methods for proper disposal will be followed.

5.4.3 Product Specific Practices

The following product specific practices will be followed onsite:

Petroleum Products: All onsite vehicles will be monitored for leaks and receive regular preventative maintenance to reduce the potential for leakage. Petroleum products will be stored in tightly sealed containers that are clearly labeled. Asphalt substances used on site will be applied according to the manufacturers' recommendations.

Fertilizers: Fertilizers used will be applied only in the minimum amounts recommended by the manufacturer. Once applied, fertilizer will be worked in the soil to limit exposure to storm water. The contents of any partially used bags of fertilizer will be transferred to a sealable plastic bin to avoid spills.

Paints: Containers will be tightly sealed and stored when not required for use. Excess paint will not be discharged to the storm sewer system but will be properly disposed of according to manufacturers' instructions and State and local regulations.

Concrete Trucks: Concrete trucks will not be allowed to wash out or discharge surplus concrete or drum wash water on the site except in designated areas specifically designated for rinse out as indicated in Section 3.2.3. Wash water will be contained in a temporary pit where waste concrete can harden for later removal. Washing of fresh concrete will be avoided unless runoff may be drained to a bermed or level area, away from waterways and storm drain inlets.

5.4.4 Spill Prevention Practices

In addition to the good housekeeping and material management practices discussed in the previous sections of this plan, the following practices will be followed for spill prevention and cleanup:

- Manufacturers' recommended methods for spill cleanup will be clearly posted and personnel will be made aware of the procedures and the location of the information and cleanup supplies.
- Materials and equipment necessary for spill cleanup will be kept in the material storage area onsite. Equipment and materials will include but not be limited to brooms, dustpans, mops, rags, gloves, goggles, absorbents (e.g., kitty litter, sand, sawdust), and plastic and metal trash containers specifically for this purpose.
- Spills will be cleaned up immediately after discovery.
- The spill area will be kept well ventilated and personnel will wear appropriate protective clothing to prevent injury from contact with a hazardous substance.
- The Project Manager (or designee) will be the spill prevention and cleanup coordinator. The names of additional responsible spill personnel and authorized contractors will be posted in various areas.
- Spills of toxic or hazardous material will be reported to the Project Supervisor (or designee), regardless of the size.
- Spills of hazardous materials that exceed their RQ, will be reported to all appropriate local, state and federal government agencies.

Contaminated soil and debris that cannot be recycled, reused or salvaged, will be collected and stored in securely lidded dumpsters rented from a licensed solid waste management company. The dumpsters will meet all local and State of California solid waste management regulations. Potentially hazardous wastes will be separated from known non-hazardous wastes. This includes the segregation of storage areas and proper labeling of containers. All waste will be removed from the site by licensed contractors in accordance with applicable regulatory requirements and disposed of at either local or regional approved facilities. No waste materials will be buried on site. All personnel will be instructed regarding the correct procedures for waste disposal. Notices stating these procedures will be posted in various areas.

The Project Manager (or designee) will be responsible for investigating spills and determining whether the RQ has been exceeded. Regulations defining the reportable quantity levels for oil and hazardous substances are found in 40 CFR Part 110, Part 117 or Part 302. Should a release occur during construction activities which exceeds the RQ, the following steps should be taken:

- Notify Local Emergency Response Agency at 911
- Notify the National Response Center immediately at 800-424-8802
- Notify Governor's office of Emergency Services Warning Center at 805-852-7550

A written description of the release should be submitted to the EPA Regional Office providing the date and circumstances of the release and the preventative measures taken to prevent further releases. Additional information regarding spill prevention will be found in the Spill Prevention, Containment, and Countermeasures (SPCC).

5.4.5 Isolation of Potentially Hazardous Materials

A supply of drums will be available in the event of spills of known materials or if potentially hazardous materials are found during site excavation. The contaminated material will be placed in the drums, sealed and placed in a storage area to await proper characterization and disposal. The sealed drums will be placed in a lined roll-off container with a tarpaulin cover. In either case, the potentially hazardous material will be contained in a non-leaking container and maintained in a marked covered area that has secondary containment. In the event that a larger amount of material needs to be isolated, it will be placed into a lined roll-off box from a licensed hazardous waste transporter. The roll-off box will be placed out of the flow of construction traffic and equipment, in a bermed area to contain and isolate leaks and rainwater. In the unlikely event that even larger volumes of potentially hazardous material must be temporarily held awaiting disposition, a containment area will be constructed. Plastic sheeting will laid on the ground prior to placement of the contaminated material and the material itself will be covered. A berm will surround the covered material to keep any rainwater from leaving the site.

6.0 Waste Management and Disposal

All wastes (including waste oil and other equipment maintenance waste) from the EAEC construction shall be disposed of in compliance with federal, state, and local laws, regulations, and ordinances.

7.0 SWPPP ADMINISTRATION

The Project Manager (or designee) will be identified in this SWPPP as the qualified person(s) assigned responsibility to ensure full compliance with the permit and implementation of all elements of the SWPPP, including the preparation of the annual compliance evaluation and the elimination of all unauthorized discharges.

The following lists required to be maintained as part of the SWPPP, will be maintained by the Project Manager:

List of authorized contractors who have signed certifications that they understand and will comply with the SWPPP will be maintained in Attachment 4, along with normal and emergency telephone number, address, specific area(s) of the contractor's responsibilities and the names of individuals responsible for implementation of the SWPPP.

As required by the SWQCB, the SWPPP will list the name and telephone number of the qualified person(s) who have been assigned responsibility for prestorm, poststom, and storm event inspections (Attachment 5).

The SWPPP and each amendment will be certified by the Project Manager (or authorized representative) (Attachment 7) and a list of Amendments will be maintained during the date first prepared, and the date of each amendment (Attachment 8).

8.0 ANNUAL REVIEW AND CERTIFICATION

Annually, the Project Manager (or authorized individual) will review performance under the SWPPP and certify that construction activities are in compliance with the requirements of the Stormwater General Permit and the SWPPP. This Certification shall be based upon knowledge of construction activities and the site inspections by the General Permit. The certification must be completed by July 1 of each year, and maintained for period of at least three years. If necessary, amendments to the SWPPP will be prepared and submitted at this time.

9.0 Contractors/Subcontractors

The prime construction contractor is [TO BE FILLED IN UPON AWARD OF CONSTRUCTION CONTRACT]Portions of the work may be subcontracted to various specialty contractors. All subcontractors will be required to comply with the requirements of this permit.

10.0 Preparer

I certify under penalty of law that this document and all attachments were prepared under my direction or supervision in accordance with a system designed to ensure that qualified personnel prepared the information submitted. Based on my inquiry of the person or persons who manage the system, or those persons directly responsible for preparing the information, the information submitted is, to the best of my knowledge and belief, true, accurate, and complete. I am aware that there are significant penalties for submitting false information, including the possibility of fine and imprisonment for knowing violations.

_____ _____

Signed Position

_____

Date

11.0 Copy of Notice of Intent

A copy of the Notice of Intent to obtain coverage under the State General Construction Activity Storm Water Permit is included in Appendix B.

12.0 Site Maps

A General Vicinity Map depicting the EAEC site location is presented in Figure 1. A site map including the location of linear facilities is presented in Figure 2

Appendix A to the SWPPP

ENVIRONMENTAL PROTECTION PROCEDURES

PART 1 GENERAL

1.1 SUMMARY

A. Section Includes:

1. Storm water pollution prevention measures on and off site.

B. Related Sections:

1. Section 01500 - Construction Facilities and Temporary Controls
2. Section 02270 - Erosion Control
3. Individual Sections: Equipment and Materials that may contain potential site pollutants.

1.2 REFERENCES

A. Federal Clean Water Act Amendments - 1987 and the National Pollutant Discharge Elimination System (NPDES). General Permit For Storm Water Discharges Associated With Construction Activity.

B. SWPPP - Storm Water Pollution Protection Plan for East Altamont Energy Center, prepared by CH2M HILL, 2485 Natomas Park Drive, Suite 600, Sacramento, California 95833.

C. California Storm Water Best Management Practice Handbook – Construction Activity. 1993. Prepared for the Stormwater Quality Task Force by Camp Dresser and McKee, Larry Walker Associates, Uribe and Associates, and Resources Planning Associates. March.

D. California Storm Water Best Management Practice Handbook – Industrial / Commercial. 1993. Prepared for the Stormwater Quality Task Force by Camp Dresser and McKee, Larry Walker Associates, Uribe and Associates, and Resources Planning Associates. March.

1.3 POTENTIAL POLLUTANT IDENTIFICATION

A. Potential pollutants that may be used at the site and that have the potential to enter the storm water drainage system are included in the list below.

TYPICAL CONSTRUCTION SITE POTENTIAL POLLUTANTS[2]

CATEGORY	PRODUCT	POLLUTANTS
Adhesives	Adhesives, Glues	Phenolics, Formaldehydes
	Resins, Epoxy Synthetics	Phenolics, Formaldehydes
	Calks, Sealers, Putty, Sealing Agents	Asbestos, Phenolics, Formaldehydes
	Coal Tars (Naptha, Pitch)	Benzene, phenols, Naphthalene
Cleaners	Polishes, (Metal, Ceramic, Tile)	Metals
	Etching Agents	Metals
	Cleaners, Ammonia, Lye, Caustic Sodas	Acidity / Alkalinity
	Bleaching Agents	Acidity / Alkalinity
	Chromate Salts	Chromium
Plumbing	Solder (Lead, Tin), Flux (Zinc Chloride)	Lead, Zinc, Tin
	Pipe Fitting (Cut Shavings)	Metals
	Galvanized Metals (Nails, Fences)	Zinc
Painting	Paint Thinner, Acetone, MEK, Stripper	VOCs
	Paints, Lacquers, Varnish, Enamels	Metals, Phenolics, Mineral Spirits
	Turpentine, Gum Spirit, Solvents	VOCs
	Sanding, Stripping	Metals
	Paints (Pigments), Dyes	Metals
Woods	Sawdust	BOD
	Particle Board Dusts (Formaldehyde)	Formaldehyde
	Treated Woods	Copper, Creosote
Masonry & Concrete	Dusts (Brick, Cement)	Acidity, Sediments
	Colored Chalks (Pigments)	Metals
	Concrete Curing Compounds	Metals
	Glazing Compounds	Asbestos
	Cleaning Surfaces	Acidity
Floors & Walls	Flashing	Copper, Aluminum
	Drywall	Dusts
	Tile Cutting (Ceramic Dusts)	Minerals
	Adhesives*	
Remodeling & Demolition*	Insulation	Asbestos
	Venting Systems	Aluminum, Zinc
	Dusts (Brick, Cement, Saw, Drywall)	

[2] This material list is generic and has not been revised for the EAEC project.

CATEGORY	PRODUCT	POLLUTANTS
Air Conditioning & Heating	Insulating	Freon
	Coolant Reservoirs	
	Adhesives*	
Yard O&M	Vehicle and Machinery Maintenance	Oils and grease, Coolants
	Gasoline, Oils, Additives	Benzene & Derivatives, Oils & Grease
	Marking Paints (Sprays)	Vinyl Chloride, Metals
	Grading, Earth Moving	Erosion (Sediments)
	Portable Toilets	BOD, Disinfectants (Spills)
	Fire Hazard Control (Herbicides)	Herbicides
	Health and Safety	Sodium Arsenite, Dinitro Compounds
	Wash Waters* (Herbicides, Concrete, Oils, Greases)	Rodenticides, Insecticides
Landscaping & Earthmoving	Planting, Plant Maintenance	Pesticides, Herbicides, Nutrients
	Excavation, Tilling	Erosion (Sediments)
	Masonry & Concrete*	BOD
	Solid Wastes (Trees, Shrubs)	Acidity / Alkalinity, Metals
	Exposing Natural Lime or Other Mineral Deposits	Aluminum Sulfate, Sulfur
	Soils Additives	Fertilizers
	Revegetation of Graded Areas	Spills, Leaks
Materials Storage	Waste Storage (Used Oils, Solvents, Etc.)	Spills, Leaks
	Hazardous Waste Containment	Dusts, Sediments
	Raw Material Piles	

* See above categories.

Note: VOC = Volatile Organic Compounds.
BOD = Biochemical Oxygen Demand.

References: USEPA, 1973. Processes, Procedures and Methods to Control Pollution Resulting From Construction Activity. Office of Air and Water Programs, EPA 430/9-73-007. October.

Meech, Mark L. and Margaret Lattin Bazany, 1991. Construction Creates Own Set of Hazardous Wastes. Hazmat. World August, 1991. Gosselin, R.E., R.P. Smith, and H.C. Hodge, 1984. Clinical Toxicology of Commercial Products, Fifth Ed. Williams and Wilkins, Baltimore/London.

This is not intended to be a complete list of categories, products and pollutants. It is the Contractor's responsibility to identify the pollutants present during construction and take the necessary measures to restrict their entry into the natural drainage system, based on the NPDES applicable laws, codes and regulations.

1.4 SUBMITTALS

A. Submit under provisions of Division 1.

B. Implementation Drawings

1. Indicate the areas of the construction site for material delivery and storage of pesticides and herbicides, fertilizers, detergents, petroleum products such as fuel, oil and grease and other hazardous chemicals such as acids, lime, glues, paints, solvents, cleaning agents and curing compounds.

C. Quality Control Documentation

1. Hazardous Material Clean Up and Solid Water Management: List the employees trained in emergency spill cleanup procedures and indicate the training procedures for employees and subcontractors in spill prevention and cleanup and solid waste management.
2. Concrete Waste Management Data: Indicate concrete washout areas and the procedures to train employees and subcontractors in proper concrete waste management.
3. Vehicle and Equipment Fueling and Maintenance Data: Indicate fueling and maintenance areas and the procedures to train employees and subcontractors in proper fueling, clean up procedures, maintenance and spill cleanup.

1.5 PRECONSTRUCTION CONFERENCE

A. Attend a conference one week prior to commencing the work of this Section, under provisions of Division 1.

B. Require attendance of parties directly affecting the work of this Section.

C. Review all delivery routes, storage areas, clean up procedures and training procedures.

1.6 DELIVERY, STORAGE, AND HANDLING

A. Keep an accurate, current inventory of materials containing potential pollutants, delivered and stored onsite.

B. Use personnel trained in emergency spill clean up procedures to unload and store materials containing potential pollutants.

C. Store all construction raw materials (including dry materials such as plaster and cement, pesticides and herbicides, paints, petroleum products, treated lumber) in designated areas with proper protection . Cover the materials with plastic tarps when not in used. Store materials such as petroleum products, powders, and paints on skids and not in contact with the ground.

D. Store hazardous chemicals such as acids, lime, glues, solvents, and curing compounds, detergents, fertilizers, pesticides and herbicides in sealed containers in designated areas of the construction site, away from waterways

and drainage paths. Place in areas that will be paved and surround the areas with earth berms. Store reactive, ignitable, or flammable liquids in accordance with fire codes.

E. Store materials in a covered area during wet weather, if required. Store nonreactive materials such as detergents, oil, grease, and paints in secondary containment structures such as earthen dikes. Small amounts of material may be secondarily contained in "bus boy" trays or concrete mixing trays.

F. Store chemicals, drums, or bagged materials directly on pallets or skids away from ground in secondary containment structures. Store chemicals in their original labeled containers. Store hazardous material and wastes in covered containers and protect from vandalism.

G. Remove and dispose residual materials and contaminated soil after construction is complete.

1.7 SEQUENCING AND SCHEDULING

A. Sequence and schedule control maintenance, inspection and repair of controls as noted in Table 1 of the SWPPP.

PART 2 PRODUCTS

Not used.

PART 3 EXECUTION

3.1 NON-STORM WATER MANAGEMENT

A. Minimize the use of water sprayed for dust control and irrigation, to avoid causing runoff and erosion.

B. Remove sediment from dewatering operations using sediment basins. Filter sediment from sediment traps and basins with a sump pit and perforated standpipe, wrapped in filter fabric or a floating suction hose.

C. Discharge water, used for flushing and disinfection, into onsite detention basins or temporary earthen basins.

3.2 CONCRETE WASTE MANAGEMENT

A. Wash out concrete trucks in approved areas only. Do not wash out concrete trucks into storm drains, open ditches, streets, or streams. Locate washout area at least 50 feet from storm drains, open ditches, or water bodies. Prevent runoff from this area by constructing a properly sized temporary pit or bermed area.

B. Wash out wastes into the temporary pit and allow the concrete to harden. Break the hardened concrete into pieces and dispose offsite.

C. Avoid washing recently poured concrete unless runoff will be drained to a bermed or level area, away from water ways and storm drain inlets.

D. Do not allow excess concrete to be dumped on-site, except in approved designated areas.

3.3 VEHICLE AND EQUIPMENT FUELING AND MAINTENANCE

A. Fuel vehicles and equipment at designated areas located away from drainage courses. Do not "top-off" fuel tanks.

B. Install stationary above ground storage tanks and dispense fuel in accordance with all federal, state and local requirements.

C. Install secondary containment devices such as drain pans or drop cloths at all fueling areas and use when removing or changing fluids.

D. Use personnel trained in emergency spill cleanup procedures to dispense fuel.

E. Regularly inspect onsite vehicles and equipment for leaks, and repair immediately. Do not allow leaking vehicles or equipment onsite.

F. Clean oil and grease build up from vehicles and equipment at approved designated areas located away from drainage courses.

G. Segregate and recycle wastes, such as greases, used oil or oil filters, anti-freeze, cleaning solutions, automotive batteries, hydraulic, and transmission fluids.

3.4 SPILL PREVENTION AND CONTROL

A. Place a stockpile of spill cleanup materials where it will be readily accessible.

B. Use personnel trained in emergency spill clean up procedures.

C. Clean up leaks and spills immediately, in accordance with waste management regulations.

D. Clean up spills on paved surfaces with minimal water usage. Clean small spills with cloths and larger spills with absorbent material. Immediately send used hazardous cleanup cloth material to a certified laundry (cloths) or remove and dispose as hazardous waste, in accordance with waste management regulations.

E. Do not hose down or bury dry material spills.

3.5 TEMPORARY CONTAINMENT REMOVAL

A. Remove all temporary containment structures, devices and equipment at completion of work. Clean and repair damage caused by installation and use of temporary containment structures.

Appendix B to the SWPPP

Notice of Intent

Notice of Intent to be filed prior to initiation of project construction.

Appendix C to the SWPPP

The hazardous characteristics of materials being used at the site are summarized in the following table, Table 8.12-5, from the East Altamont Energy Center's Application for Certification.

Draft

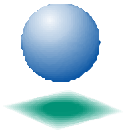
East Altamont Energy Center

Draft Spill Prevention, Containment and Countermeasures Plan

Prepared for

Calpine

August, 2001



2485 Natomas Park Drive
Sacramento, California 95833

SPCC
Emergency Contact List

	Contact	Title	Contact Number
1.	To Be Determined	Plant Manager	To Be Determined
2.	To Be Determined	Operations Supv.	To Be Determined
3.	To Be Determined	Plant Engineer	To Be Determined
4.	Fire Department		911
5.	San Jose/Santa Clara WPCP		(408) 945-5300.
6.	Evergreen Oil & Vacuum Services		(510) 795-4400 (Kevin Kraus) (800) 972-5284

1.0 **PURPOSE**

1.1 The purpose of the Spill Prevention, Containment, and Countermeasure Plan (SPCC) is to establish procedures, methods, equipment, and other requirements for plant equipment to prevent the discharge of oil into or upon the waters of the Delta-Mendota Canal or any other navigable waterways.

2.0 **DEFINITIONS**

2.1 Navigable waters are defined generally under Clean Water Act (CWA) Section 502(7). EPA's regulatory definition can be found at 40 CFR 110.1. For the purposes of 40 CFR Part 112, the term *navigable waters* means the waters of the United States, including the territorial seas, and includes:

- All waters that are currently used, were used in the past, or may be susceptible to use in interstate or foreign commerce, including all waters subject to the ebb and flow of the tide.
- All interstate waters, including interstate wetlands, mudflats, and sandflats;
- All other waters such as intrastate lakes, rivers, streams (including intermittent streams), wetlands, mudflats, sandflats, sloughs, prairie potholes, wet meadows, playa lakes, or natural ponds, the use, degradation, or destruction of which could affect interstate or foreign commerce including any waters that could be used for recreational purposes, or from which fish or shellfish could be taken and sold in interstate or foreign commerce; or that are used or could be used for industrial purposes by industries in interstate commerce.

The CWA has been interpreted to cover all surface waters, including any waterway within the U.S. Also included are normally dry creeks through which water may flow and ultimately end up in public waters, such as a river, stream, tributary to a river or stream, lake reservoir, bay, gulf, sea, or ocean within or adjacent to the U.S. The CWA's jurisdictional reach may also include groundwater if it is directly connected hydrologically with surface waters

3.0 **REFERENCES**

3.1 40 CFR Part 109
3.2 40 CFR Part 110
3.3 40 CFR Part 112
3.4 CCR Title 27
3.5 Calpine Corporation Policy EHSP #8-C

4.0 **APPLICATION**

4.1 The East Altamont Energy Center meets the criteria set by the Environmental Protection Agency for implementation of a SPCC Plan which is:

4.1.1 Any facility that could reasonably be expected to discharge oil into or upon the navigable waters of the United States or adjoining shorelines, and that have (1) a total underground buried storage capacity of more than 42,000 gallons of oil; or (2) a total aboveground storage of more than 1,320 gallons of oil; or (3) an aboveground oil storage capacity of more than 660 gallons in a single container. At this stage, the EAEC is anticipated to meet 2 and 3 above, as estimated below:

4.1.1.1 Steam Turbine Lube Oil Tank: 1,094 gallons
4.1.1.2 Gas Turbine Lube Oil Tank: 150 gallons
4.1.1.3 Gas Turbine Generator Lube Oil Tank: 215 gallons
4.1.1.4 Main Power Transformer: 4,145 gallons
4.1.1.5 Auxiliary Transformer: 185 gallons
4.1.1.6 Hydraulic Starter Skid Oil Tank: 40 gallons
4.1.1.7 Gas Compressor Lube Oil Day Tank: 55 gallons
4.1.1.8 Boiler Feed Pump Lube Oil Tank: 35 gallons X 2
4.1.1.9 Gas Compressor Skid Oil Drainoff Tank: 100 gallons capacity
4.1.1.10 Gas Blowdown Tank: 342 gallons capacity
4.1.1.11 Miscellaneous oil storage: approximately 880 gallons

4.2 This SPCC Plan is prepared in accordance with 40 CFR 112, and is designed to complement existing laws, regulations, rules, standards, policies, and procedures pertaining to safety standards, fire prevention, and pollution prevention rules to minimize the potential for oil discharges.

4.3 Due to the close proximity of the plant to navigable waterways and the potential for discharge of oil in harmful quantities into those waters (as defined by 40 CFR 110), the plant is required to maintain a SPCC Plan.

4.3.1 40 CFR 110 defines harmful quantities as discharges of oil that violate applicable water quality standards; cause a film or “sheen” upon, or discoloration of the surface of the water or adjoining shorelines; or cause a sludge or emulsion to be deposited beneath the surface of the water or upon adjoining shorelines.

4.4 This plan is required to be reviewed and certified by a Registered Professional Engineer. By certifying the plan, the engineer, having examined the facility and becoming familiar with the provisions of this part, affirms that the SPCC Plan has been prepared in accordance with good engineering practices.

4.5 A copy of the SPCC Plan will be maintained on site and should be made available to all applicable regulatory agencies upon their request.

4.6 A copy of the SPCC Plan should be submitted to the State of California Regional Water Quality Control Board, Central Valley office as part of the operational Storm Water Pollution Prevention Plan.

5.0 **REPORTING**

5.1 In a single spill event of more than 1,000 US Gallons, or a discharge of oil in harmful quantities in two reportable spill events within any twelve month period, the Plant Manager or designated representative shall submit to the Regional Administrator of the Environmental Protection Agency, or his designee, in and for the Region in which the facility is located, within 60 days from the date of the incident(s), the following:

- 5.1.1 Plant Name
- 5.1.2 Owner Name
- 5.1.3 Location
- 5.1.4 Date of initial operation of Plant
- 5.1.5 Maximum storage or handling capacity of the facility and normal daily throughput.
- 5.1.6 Description of the facility, including maps, flow diagrams, and topographical maps.
- 5.1.7 A complete copy of the SPCC Plan with any amendments.
- 5.1.8 The cause(s) of such spill, including a failure analysis of system or subsystem in which the failure occurred.
- 5.1.9 The corrective actions and/or countermeasures taken, including an adequate description of equipment repairs and/or replacement.
- 5.1.10 Additional preventive measures taken or contemplated to minimize the possibility of recurrence.
- 5.1.11 Such other information as the Regional Administrator may reasonably require pertinent to the Plan or spill event

5.2 A complete copy of all information provided to the Regional Administrator shall be sent at the same time to the California Department of Fish and Game.

5.3 Contingent upon this report, the Regional Administrator may require the EAEC to amend the SPCC Plan if it is found that the Plan does not meet the requirements of the code or that amendment of the Plan is necessary to prevent and to contain discharges from the plant.

- 5.3.1 If in the event that the Regional Administrator proposes to require an amendment to the Plan, the EAEC plant manager will be notified by certified mail that an amendment to the Plan is required. The letter shall specify the terms of such amendment.

- 5.3.2 EAEC management has 30 days from receipt of such notice to submit written information, views, and arguments on the amendment. EAEC will then be notified either that an amendment is required or that the initial notification has been rescinded.

- 5.3.3 The required amendment shall become part of the SPCC within 30 days after receiving notice, unless the Regional Administrator specifies another effective date.

- 5.3.4 The amendment shall be implemented as soon as possible, but not later than six months after the amendment becomes part of the Plan, unless the Regional Administrator specifies another date.

5.3.5 EAEC may appeal a decision made by the Regional Administrator requiring an amendment to a SPCC Plan. The appeal shall be made to the Administrator of the United States Environmental Protection Agency and must be made in writing within 30 days of receipt of the notice requiring the amendment. A complete copy of the appeal must be sent to the Regional Administrator at the time the appeal is made. The appeal shall contain a clear and concise statement of the issues and points of fact in the case. It may also contain additional information from the owner or operator, or from any other person. The Administrator or his designee may request additional time; a decision shall be rendered within 60 days, the site shall be notified of the decision by the Plan Administrator.

5.4 The SPCC plan shall be amended whenever there is a change in facility design construction, operation or maintenance, which materially affects the facility's potential for the discharge or oil and be fully implemented within six months after such change occurs.

5.4.1 The SPCC Plan shall be reviewed at least once every three years by plant administration and approved by plant management. The Plan shall be amended to include more effective prevention and control technology if:

5.4.1.1 Such technology will significantly reduce the likelihood of a spill event form the facility.

5.4.1.2 Such technology has been field-proven at the time of the review.

5.4.2 No amendment shall satisfy the requirements unless it has been certified by a Professional Engineer.

6.0 **PROCEDURE**

6.1 Federal rules require that during SPCC Implementation or whenever amendments are made to the SPCC, spill events within the prior 12 months should be described. These descriptions should include a written description of each spill, corrective action taken, and plans for preventing reoccurrence.

6.2 Current plant design and management practices make it highly improbable that any amount of oil would escape from the plant property in the event of equipment failure (such as tank overflow, rupture, or leakage).

6.2.1 In the event that the Plant design changes as to pose a threat of discharge of oil outside plant property an amendment will be necessary. This should include a prediction of the direction, rate of flow, and total quantity of oil that could be discharged as a result of each major type of failure.

6.3 Appropriate containment and/or diversionary structures or equipment to prevent discharged oil from reaching a navigable waterway has been provided.

6.3.1 All large oil sumps (>55 gallons) with the exception of the Steam Turbine Lube Oil Tank, Gas Turbine Lube Oil Tank, Gas Compressor Skid Oil Drainoff Tank, and Gas Blowdown Tank have been placed within secondary containment. The containment areas have capacity to hold a majority of the contents of the oil sump. See Table Below. These containment areas are monitored during the course of normal employee duties throughout the day and night.

TABLE 1 – Secondary Containment

Tank Name/ Capacity	Secondary Containment?	Containment Capacity[1]	Comments
Steam Turbine Lube Oil 1094 Gallons	No	NA	Tank surrounded by unpaved gravel-covered soil, has high/low visual and audio alarms
Gas Turbine Lube Oil 150 Gallons	No	NA	Tank surrounded by unpaved gravel-covered soil, has high/low visual and audio alarms
Gas Turbine Generator Lube Oil 215 Gallons	Yes	1140 Gallons	Tank indoors, fully contained
Main Power Transformer 4,145 Gallons	Yes	3400 Gallons	Tank surrounded by unpaved gravel-covered soil
Auxiliary Transformer 185 Gallons	Yes	170 Gallons	Tank outdoors, over 200 feet from storm drain
Hydraulic Starter Skid 40 Gallons	No	NA	Tank surrounded by unpaved gravel covered soil
Gas Compressor Lube Oil Day Tank 55 Gallons	No	NA	Tank on skid with 2-inch lip that would contain any spills from tank disregarding precipitation, skid surrounded by unpaved gravel-covered soil, over 250 feet from storm drain
Boiler Feed Pump Lube Oil (2) Tank 35 Gallons	No	NA	Tanks over 180 feet from storm drain
Gas Compressor Skid Oil Drainoff Tank 100 Gallons	No	NA	Tank surrounded by unpaved gravel-covered soil, over 250 feet from storm drain
Gas Blowdown Tank 342 Gallons	No	NA	Tank surrounded by unpaved gravel-covered soil, over 250 feet from storm drain
Miscellaneous Oil Storage 880 Gallons	Yes	1150 Gallons	Containment covered, drums fully contained

[1]Containment capacity with two inches of rainfall, if containment area is not covered.

6.3.2 All oil reservoirs are monitored during the course of normal employee duties throughout the day and night. Should any of these oil reservoirs develop a leak, the chances of the oil reaching a waterway are virtually zero, due to the viscous nature of the fluids on site (mainly lubricating oil) and porous ground surface that surrounds all tanks. However, the EAEC will be equipped with spill containment kits to further mitigate the potential of any offsite impacts.

6.3.3 All piping systems conveying oil are monitored during the course of normal employee duties. These systems all have scheduled preventive maintenance to ensure that they are kept in good operating condition.

6.3.4 All oil drums are placed in the Oil Storage Area where there are containment sumps capable of handling spills in the event that the drums were to develop leaks. These drums are sheltered from the weather. Plant procedures require that the drums are stored immediately after each use.

6.3.5 The plant has a number of absorbent socks, boom, and pads located in the white connex box on the west side of the plant. Additionally, there is a spill response kit for small spills located in the center of the plant between the auxiliary transformer and the steam turbine lube oil tank.

6.4 All efforts are made to contain any spill within plant boundaries using the above-mentioned structures and equipment. If in the event this becomes impractical an amendment will be necessary in accordance with 40 CFR Part 109.

6.5 Facility drainage

6.5.1 Pumps activated manually with discharge only to the Neutralization Tank empty the major containment areas. These pumps are activated manually by opening the suction valve from the specific containment area, opening the discharge valve to the neutralization tank, and starting the air operated pump. The neutralization tank will be discharged only when the contents are within the pH limits of our discharge permit.

6.5.2 Drain valves are not installed in the containment walls making the drainage of oil, water, or any other liquid directly into the storm drain virtually impossible. The neutralization tank discharges into an oil water separator to assist in preventing oil from discharging into the wastewater stream.

6.6 Bulk Storage

6.6.1 No tank should be used for the storage of oil unless its material and construction are compatible with the material stored and conditions of storage such as pressure and temperature, etc.

6.6.2 All bulk oil storage tank installations are monitored and inspected several times daily for leaks or spills as part of the plant operator's duties. All bulk oil storage tank installations are surrounded by porous material, which would impede the flow of any oil to any waterway. The steam turbine lube oil and gas turbine oil tanks have high/low level alarms that notify the plant operator, who will be on duty 24 hours a day, in the event of leakage or overfill.

6.6.3 Drainage of rainwater from the containment areas into a storm drain will not be authorized. Overflow if unavoidable is acceptable only if the following guidelines are met

- Inspection of the run-off rainwater ensures compliance with applicable water quality standards and will not cause a harmful discharge as defined in CFR 40 part 110.
- Adequate records are kept of such events.

6.6.4 At this stage, we anticipate that the EAEC will have no buried or partially buried metallic storage tanks.

6.6.5 Aboveground tanks are subject to periodic integrity testing. Plant staff conducts regular visual inspections several times daily. Comparison records should be kept where appropriate. Tank supports and foundation integrity are included in these inspections. Additionally, the outside of the tank will be inspected several times daily by operating personnel for signs of deterioration or leaks which might cause a spill or accumulation of oil inside a containment areas.

6.6.6 All internal tank-heating elements are of the electrical type and pose no threat of carrying oil into the watercourse.

6.6.7 New and old tank installations, as far as practical, are engineered to avoid spills. The following installations were made:

6.6.7.1 High and Low liquid level alarms were installed with audible and visual signals in the control room to monitor steam turbine oil level, gas turbine oil level, and the gas turbine generator oil level.

6.6.7.2 Liquid level sensing devices are tested regularly to ensure proper operation.

6.6.7.3 All oil sumps require manual filling and pose a threat of overfilling only in the event of operator error.

6.6.7.4 Direct vision gauges have been installed on all tanks containing oil.

6.6.7.5 Visible oil leaks, which result in a loss of oil from tank seams, gaskets, rivets and bolts sufficiently large to cause the accumulation of oil in containment areas are promptly corrected.

6.7 Facility transfer operations, pumping, and in-plant process

6.7.1 At this stage, we anticipate that the EAEC will have no buried piping installations

6.7.2 Pipe supports should be properly designed to minimize abrasion and corrosion and allow for expansion and contraction.

6.7.2.1 The only area where permanent transfer piping will be installed is on the Gas Compressor Skid where oil is supplied to the gas compressor cylinder lubricators.

6.7.2.2 All of the valves and pipelines are subjected to regular examinations by operating personnel. During these inspections the general condition of items such as flange joints, expansion joints, valve glands and bodies, catch pans, pipeline supports, locking of valves, and metal surfaces are assessed.

6.7.2.3 Vehicular traffic granted entry into the plant are warned of potential dangers they will encounter while driving in the plant via the facilities hazard communication program and a 5 MPH sign.

6.8 Facility tank truck loading/unloading rack.

6.8.1 Tank truck loading/unloading procedures should meet the minimum requirements and regulation established by the Department of Transportation.

6.8.1.1 At this stage, we anticipate that the EAEC will not receive delivery of bulk lubricating oil.

7.0 **INSPECTIONS AND RECORDS**

7.1.1 Semi-annual visual inspections will be conducted using the applicable inspection form Encl. (1). This inspection form is considered part of the SPCC and should be maintained for a period of three years.

7.1.1.1 The inspection shall include the tanks, secondary containment, and response equipment.

7.1.1.2 Records of the inspections of tanks, secondary containment, and response equipment, required by 40 CFR guidelines shall be cross-referenced in the response plan.

7.1.1.3 Plant self-inspection requires two steps: (1) a checklist of things to inspect; and (2) a method of recording the actual inspection and its findings.

7.1.1.4 The date of each inspection shall be noted. These records are required to be maintained for 5 years.

7.1.1.5 Inspections are documented in the facility's computerized maintenance management system.

8.0 **SECURITY**

8.1 The plant will be manned 24 hours a day and will be completely fenced to prevent unauthorized entrance.

8.2 All oil pumps will be locked in the "off" position or located at a site accessible only to authorized personnel when the pumps are in a non-operating or non-standby status.

8.3 Facility lighting will be sufficient to provide discovery of spills during hours of darkness and prevention of spills occurring through acts of vandalism.

9.0 **TRAINING REQUIREMENTS**

The EAEC will conduct training on the SPCC at intervals frequent enough to assure adequate understanding of the SPCC Plan for the facility. This training will include:

9.1.1 Maintenance and operation of equipment to prevent the discharge of oil and applicable pollution control laws, rules, and regulations.

9.1.2 Understanding of SPCC Plan, highlighting and describing known spill events or failures, malfunctioning components, and recently developed precautionary measures.

9.1.3 The plant engineer and/or relief operator will be the designated person who is accountable for oil spill prevention and reports to plant management.

10.0 **ENCLOSURES**

10.1 Oil Spill Prevention Inspection

11.0 **APPENDIX A**

Plant Maintenance Management System preventative maintenance schedule for tank alarms, level instrumentation, and level indication.

APPENDIX B

Storage Area photos.

EAEC
SPCC INSPECTION
CHECKLIST

TANKS

AREA YES/NO	DRIP MARKS	DISCOLORATION	PUDDLES	CORROSION	CRACKS
Steam Turbine					
Gas Turbine					
Hydraulic Starter Skid					
Gas Turbine Generator					
Gas Compressor Day Tank					
Gas Compressor Skid					
Gas Blowdown Tank					
Oil Storage Area					
Auxiliary Transformer					
Boiler Feed Pump A					
Boiler Feed Pump B					
Main Transformer					

Comments:

_____
_____
_____
_____
_____
_____

EAEC
SPCC INSPECTION
CHECK LIST

FOUNDATIONS/CONTAINMENT

AREA YES/NO	SETTLING	DISCOLORATION	PUDDLES	CRACKS
Steam Turbine				
Gas Turbine				
Hydraulic Starter Skid				
Gas Turbine Generator				
Gas Compressor Day Tank				
Gas Compressor Skid				
Gas Blowdown Tank				
Oil Storage Area				
Auxiliary Transformer				
Boiler Feed Pump A				
Boiler Feed Pump B				
Main Transformer				

Comments:

_____
_____
_____
_____
_____
_____

EAEC
SPCC INSPECTION
CHECKLIST

PIPING

AREA YES/NO	DRIP MARKS	DISCOLORATION	BOWING	CORROSION	VALVE LEAKAGE
Steam Turbine					
Gas Turbine					
Hydraulic Starter Skid					
Gas Turbine Generator					
Gas Compressor Day Tank					
Gas Compressor Skid					
Gas Blowdown Tank					
Oil Storage Area					
Auxiliary Transformer					
Boiler Feed Pump A					
Boiler Feed Pump B					
Main Transformer					

Comments:

_____
_____
_____
_____
_____
_____

EAEC

RESPONSE EQUIPMENT INSPECTION

LOCATION	INVENTORY	ACCESSIBLILITY	CONDITION
White Connex Box			
Spill Kit (near STG)			

Comments:

_____
_____
_____
_____
_____
_____

Inspector's Signature: _____
Date: _____

ALARM and LEVEL EQUIPMENT Maintenance Records

1. Attach all completed work orders for oil level indication, oil level alarms and visual indication for the six-month reporting period. Work orders include scheduled and unscheduled maintenance.

Comments:

_____
_____
_____
_____
_____
_____

APPENDIX A

APPENDIX B

EAST ALTAMONT ENERGY CENTER
DATA REQUESTS #2A
(01-AFC-4)

Attachment WR-86

DRAFT

Recycled Water Feasibility Study

Prepared for

Byron-Bethany Irrigation District

July 2001

CH2MHILL

Byron-Bethany Irrigation District Recycled Water Feasibility Study

Introduction

The Byron-Bethany Irrigation District (BBID) provides water supplies for agricultural and industrial uses within its boundaries. In the near future, BBID will provide raw water supplies for potable water uses in the Mountain House development.

As BBID continues to meet the needs of water customers inside district boundaries, the potential will exist for integrating recycled water supplies into the overall water resources supply mix for the district. At least initially, a potential source of recycled water is the planned tertiary-treated effluent to be generated from the Mt. House Community Services District (MHCSD). The integration of recycled water supplies into the BBID water resources mix may yield benefits for both the district and MHCSD.

The purpose of this recycled water feasibility study is to investigate opportunities for utilizing various sources of recycled water as part of BBID's overall water resources mix. This phase of the recycled water feasibility plan focuses on evaluating the ability to use the recycled water from MHCSD; however, the plan will be flexible so future evaluations could consider other sources of recycled water (e.g., from a future Tracy Hills development).

Why Consider Recycled Water Supplies?

As noted, the district maintains an excellent water resources supply for its customers. This water supply is grounded in pre-1914 water rights supplies within the Delta. This water supply is adequate to meet current and projected future needs. The district has a long history of being a good steward of its water resources supply and district facilities. Maintenance of water rights and the continued maintenance and development of district facilities are key policy objectives of the Board of Directors.

With the planned urbanization of portions of the district's lands, and the natural evolution of the district from a purely agricultural/industrial user base to an agricultural/industrial/municipal water supplier, there is the potential to build on the district's long history of wise water use. The integration of potentially available recycled water supplies is a logical extension of the district's water services to its customers. If feasible to implement, the use of recycled water supplies may increase the flexibility and long-term reliability of existing supplies.

Calpine Corporation is evaluating the siting of a power production facility within district boundaries. If implemented, the East Altamont Energy Center (EAEC) will be an additional industrial-based customer and will need water supplies for cooling and process water makeup uses. A potential additional water resource for the EAEC would be a recycled water supply.

As discussed later, the potential to effectively use available recycled water supplies generated from district development may have a secondary benefit for the urban areas. This secondary benefit, which may be significant, would accrue through the reduced discharge of recycled water supplies to area receiving water streams. The potential magnitude of this benefit, and the resulting value attributed to the benefit, will be briefly explored. However, a complete determination of the potential secondary benefit gained from reduced discharges will be accomplished only through negotiations with interested stakeholders.

Background Information

Current District Development

BBID is a multicounty special district established under state law primarily to provide water to lands in Alameda County, Contra Costa County, and San Joaquin County. Currently, the district primarily provides agricultural water supplies in its service area, with one current industrial user. Unimin Corporation uses water supplies for district aggregate mining and processing.

The distribution system is segregated into two divisions: the Byron Division (north of the Banks Intake Channel) and the Bethany Division (south of the Banks Intake Channel). Open canals and pump stations are the primary distribution system infrastructure, but major portions of the system include pipelines to deliver water supplies to district customers (Exhibit 1).

As noted previously, the community of Mountain House is planned for development inside district boundaries. The general limits of the community is shown on Exhibit 1. The district will provide water supplies as the development proceeds through a dedicated pump station on the Intake Channel and conveyance pipeline to the community's water treatment plant. These facilities are also shown on Exhibit 1.

District Water Supplies

BBID maintains pre-1914 water rights for diverting of water supplies from the Delta. Based on the water rights opinion from the district's Special Water Counsel, the district has approximately 60,000 acre-feet of water each year, based on their water rights posting.

The district currently diverts all its water supplies from the intake channel to the Banks Pumping Plant, a major facility of the State Water Project. The two district diversions are located downstream of the Skinner Fish Screen. Drought has never impaired the district's ability to divert water for users inside district boundaries.

The water quality is good for intended uses, both now and in the future. Current agricultural and limited industrial use water quality requirements are well within the historic water quality provided by the district. A significant amount of water quality information is available from data collected by the State Water Project. A summary of that information has been reviewed, focusing on general water quality parameters as they apply to current and potential future agricultural and industrial uses. Other water quality

BYRON - BETHANY IRRIGATION DISTRICT

IRRIGATION AND DRAINAGE SYSTEMS

FEATURES:

- Zone 7 Alameda Co. Flood Control Conservation District
- Mountain House Community Service District
- Discovery Bay Community Srev. Dist.
- Contra Costa Co. Airport
- B.B.I.D. Boundary
- Sphere of Influence Boundary
- Aqueduct
- Canal
- Highway
- Road
- Railroad
- County Boundary
- Section Line
- Subsurface Drain Pipeline
- Delivery Pipeline
- Surface Drain Pipeline
- Drain Channel
- Pump Station
- Manhole

Map Projection: CA State Plane (NAD 27)

0 1000 2000 4000 6000 FEET

DISCOVERY BAY COMMUNITY SERVICES DISTRICT
CONEY ISLAND
CLIFTON COURT FOREBAY
MOUNTAIN HOUSE COMMUNITY SERVICES DISTRICT
SOUTHERN PACIFIC RAILROAD
BYRON TRACY ROAD
POINT OF TIMBER ROAD
BIXLER ROAD
MARSH CREEK ROAD
HWY 4
GAGLIARDO PUMP
SMITH PUMP
BYE PUMP
CROSS PUMP
PUMP STATION 4
PUMP STATION 5
UNIMIN PUMP
UNIMIN
CONTRA COSTA COUNTY AIRPORT
SKINNER FISH PROTECTIVE FACILITY
AIRPORT FIRE POND
AIRPORT PUMP STATION
96" CANAL SIPHON
PUMP STATION I-N
PUMP STATION I-S
B.B.I.D. CONTROL HOUSE
B.B.I.D. SUBSTATION PUMP STATION 2
BUREAU OF RECLAMATION TRACY PUMP STATION
PUMP STATION 3
SUBSURFACE DRAIN LIFT PUMP
70 SPILLWAY
120 SPILLWAY
120 By-Pass
STATE DELTA PUMP STATION
MOUNTAIN HOUSE PARKWAY
GRANTLINE ROAD
MOUNTAIN HOUSE ROAD
ARMSTRONG ROAD
HOLEY ROAD
BYRON HOT SPRINGS ROAD
NORTH BRENNS RD
BRUNS RD
DELTA ROAD
VASCO ROAD
VAN MULT BLVD
INTERSTATE 205
INTERSTATE 5
MENDOTA CANAL
AQUEDUCT
CALIFORNIA
45 CANAL
76 CANAL
120 CANAL
155 CANAL
A-LINE
B-LINE
C-LINE
D-LINE
E-LINE
F-LINE
G-LINE
H-LINE
K-LINE
L-LINE
L-RR
YELLOW LINE
WHITE LINE
GREEN LINE
GREEN LINE A
GREEN LINE B
Kellogg Creek
Fish Creek
Byron Highway
Old River
Italian Slough
Bethany Reservoir
CONTRA COSTA CO
ALAMEDA CO
SAN JOAQUIN CO
ALAMEDA CO

W072001004SAC exhibit01

Exhibit 1
District Facilities
Recycled Water Feasibility Study

CH2MHILL

parameters, such as turbidity and organic chemical information, are available but not relevant to the recycled water feasibility study.

The water quality of the district's supplies is variable, depending on the time of year and background hydrology of the Delta (i.e., dry versus wet years). For purposes of this study, the variability of water quality by month is less important. To demonstrate the potential range of water quality, however, a range of water quality data for the district is summarized in Exhibit 2.

EXHIBIT 2
Approximate BBID Water Quality

Parameter	Range of Water Quality Data (mg/L)
Total dissolved solids	110 to 300
Alkalinity	40 to 95
Arsenic	0.001 to 0.003
Boron	<0.1 to 0.4
Bromide	0.04 to 0.21
Calcium	11 to 25
Total organic carbon	3 to 7
Chloride	18 to 67
Copper	<0.005 to 0.02
Hardness	48 to118
Magnesium	2 to14
Selenium	<0.001 to 0.001
Sodium	17 to 65
Sulfate	14 to 59

Note: Based on monthly grab sample data collected from the Intake Channel during 1995, 1996, and 1997 (through August) (ECO:LOGIC, January 1998). Information is supplemented with grab sample data collected from Intake Channel in July 1999 (Precision Enviro-Tech Samples, July 1999).

mg/L milligrams per liter

Historic Diversions/Distribution of Water Supplies

Historic diversions of district water supplies have varied, depending on a number of factors. These factors include weather patterns, agricultural market conditions, improvements to the efficiency of district-conveyance facilities, improvements of irrigation efficiency for on-farm irrigation systems by district farmers, and development of agricultural lands.

Deliveries to district lands are segregated between the Byron Division and the Bethany Division. Records of this distribution of water deliveries have been maintained by the district since 1998. Exhibit 3 summarizes the average distribution of water deliveries between the Byron and Bethany Divisions.

EXHIBIT 3
Average Distribution of Water Supply Deliveries to Byron and Bethany Division (acre-feet/month)

Month	Byron Division	Bethany Division
January	100	10
February	0	0
March	160	50
April	1,000	700
May	2,700	1,700
June	3,700	3,300
July	3,200	3,600
August	2,100	3,700
September	1,300	1,600
October	400	300
November	0	0
December	0	0
Total	**14,660**	**14,960**

Based on average deliveries for the 1998 to 2000 period. This distribution of water deliveries will change as the Mountain House development proceeds in the Bethany Division.

Future Potential District Development

BBID's central location to the urban centers of Brentwood, Tracy, and the Livermore Valley (and subsequent Bay Area) has made the area a candidate for urban development, such as the planned Mountain House community. At buildout, Mountain House is projected to provide housing and employment opportunities for a population of approximately 44,000. This community is scheduled to develop over 20 to 40 years, depending on market conditions (ECO:LOGIC Engineering, January 1998).

In addition to Mountain House, the district has annexed the lands of the Tracy Hills development. This development, also a planned residential/light industrial community, has a potential build-out of approximately 5,500 residential units (PMC, July 2000). If implemented, the district will provide water supplies for the Tracy Hills area in a manner similar to the Mountain House development.

The district's unique proximity to urban centers also makes it a potential location for future industrial development. Depending on the type of industrial development, varying amounts of water resources will be required.

One example of the potential for future industrial development inside the district is the EAEC. The proposed facility would be located in the northeast corner of Alameda County, northeast of Alamont Pass on Kelso Road. The facility would be built on a 50-acre site adjacent to the Western Area Power Administration's electrical substation on Kelso Road.

The EAEC would use natural gas for fuel and could produce up to 1,100 megawatts of electricity, enough to power 1 million homes.

Potential Available Recycled Water Supplies

Due to the existing urbanization around the district is (Tracy, Brentwood, and Discovery Bay), an assortment of recycled water supplies is in the geographically wide area. However, this study is focused on potentially utilizing recycled water supplies generated within district boundaries. Additional institutional issues and added costs are associated with the use of recycled water supplies from outside the district. These limitations effectively preclude, for the foreseeable future, the logical development of recycled water supplies from outside district boundaries.

Inside district boundaries are three potential sources of future recycled water supplies. They are the Mountain House development, Tracy Hills development, and community of Byron.

The community of Byron uses groundwater to meet its water requirements. Wastewater flows are treated through a centralized sanitary sewer / treatment system consisting of pond treatment. This treatment method does not provide adequate treatment levels for reuse without the addition of significant treatment infrastructure. The lack of any significant wastewater infrastructure, or a plan to develop this infrastructure in the foreseeable future, effectively precludes planning on recycled water flows from the Byron community in this feasibility study.

The Tracy Hills development has a plan to reuse essentially all its available water supplies. In this regard, the use of recycled water will be maximized in these areas of the district. However, due to the distance between the Tracy Hills development and the majority of the district's agricultural lands or industrial customers, the use of Tracy Hills recycled water supplies outside the development is limited.

The Mountain House development is in proximity of a majority of the district's agricultural lands. As shown in Exhibit 1, the planned Mountain House development will be predominately in San Joaquin County in the southeastern portion of the district. Since this development is underway, potential recycled water supplies generated from the community provide the logical source of recycled water for district consideration.

The City of Tracy currently produces 8.5 million gallons per day (mgd) of recycled water. The city projects this recycled water production will increase to approximately 16 mgd during the next 15 years. Currently, the city treats the water to secondary effluent levels and discharges to the Old River pursuant to their National Pollution Discharge Elimination System (NPDES) permit. However, since this water is not generated in the service area of the district, use of recycled water from Tracy would likely require additional institutional arrangements between the city and the district. In addition, the cost of infrastructure necessary to deliver recycled water to the district from the city would be prohibitive.

Available Recycled Water Quantity

Water supplies from BBID will be delivered to MHCSD for treatment and use in the Mountain House development. The MHCSD will also provide the wastewater collection and treatment infrastructure for the community.

MHCSD will treat wastewater from the development to meet stringent standards outlined in Title 22 for unrestricted nonpotable reuse. This procedure requires secondary treatment followed by enhanced coagulation, filtration, and disinfection. Discussions with MHCSD indicate that treatment processes for the initial phase of development will consist of pond treatment with dissolved air floatation (DAF) coagulation, effluent filtration, and chlorine contact for disinfection. As the development proceeds, wastewater treatment processes will convert to a sequencing batch reactor system as the means of accomplishing secondary treatment.

MHCSD estimates that at buildout, the total amount of recycled water will be approximately 5.4 mgd (approximately 5,000 to 7,000 acre-feet a year). The Phase 1 development will begin with Neighborhood F (1 of 12 planned neighborhoods in the community), representing a potential average annual flow of approximately 0.5 mgd (500 to 800 acre-feet a year) (telephone conversation, J. Houser).

MHCSD plans on recycling part of the available recycled water supply. Estimates provided by MHCSD indicate that approximately 300 acres of land in the community will receive recycled water under current plans. These areas are focused on parks in two future neighborhoods and a planned golf course.

To assess the potential availability of recycled water supplies for use in the district, MHCSD provided an estimate of its monthly needs and total monthly supplies. Exhibit 4 summarizes this analysis for buildout conditions.

EXHIBIT 4
Summary of Potential Available Water Supplies From MHCSD (acre-feet)

	Available Supply at Buildout		Community	Potentially Available Supply for BBID at Buildout Conditions	
Month	Minimum	Maximum	Needs	Minimum	Maximum
January[1]	510	700	--	510	700
February[1]	460	650	--	460	650
March	370	610	30	340	580
April	360	590	90	270	500
May	370	560	150	220	410
June	360	500	200	160	300
July	370	515	240	130	275
August	370	515	215	155	300
September	360	500	150	210	350

EXHIBIT 4
Summary of Potential Available Water Supplies From MHCSD (acre-feet)

	Available Supply at Buildout		Community	Potentially Available Supply for BBID at Buildout Conditions	
Month	**Minimum**	**Maximum**	**Needs**	**Minimum**	**Maximum**
October	370	560	80	290	480
November[1]	500	600	--	500	600
December[1]	510	650	--	510	650
Total	**4,910**	**6,950**	**1,155**	**3,755**	**5,795**

Source: Facsimile communication from ECO:LOGIC, October 23, 2000.

[1] Values developed based on professional experience. Not provided by ECO:LOGIC.

Currently, MHCSD plans only limited storage of recycled water supplies. The predominate method of disposing recycled water will be through direct discharge to Old River.

The Mountain House community will develop over time. Accordingly, the production of recycled water will vary as the development occurs. Based on discussions with the Mountain House developer, the community is projected to develop at approximately a linear basis from now through 2020 (which is the projected date of buildout for the community). To approximate the potential availability of recycled water supplies during this 20-year buildout period, flow projections were distributed on a linear basis. Exhibit 5 summarizes results of that analysis. However, the actual availability of recycled water will depend on the development of the community, which will be driven in large part by the market forces affecting residential construction and occupation in the area.

EXHIBIT 5
Projected Development of Recycled Water Availability From MHCSD (all units acre-feet except where noted)

Month	2000	2005	2010	2015	2020 (Buildout)
January	0	151	303	454	605
February	0	139	278	416	555
March	0	123	245	368	490
April	0	119	238	356	475
May	0	116	233	349	465
June	0	108	215	323	430
July	0	111	221	332	443
August	0	111	221	332	443
September	0	108	215	323	430
October	0	116	233	349	465

EXHIBIT 5
Projected Development of Recycled Water Availability From MHCSD (all units acre-feet except where noted)

Month	2000	2005	2010	2015	2020 (Buildout)
November	0	138	275	413	550
December	0	145	290	435	580
Total	**0**	**1,483**	**2,965**	**4,448**	**5,930**
Average Daily Flow (mgd)	0	1.3	2.6	4.0	5.3

No flow currently developed in 2000.
Arithmetic average flows (between minimum and maximum values reported in Exhibit 4) used to represent 2020 conditions, based on discussions with MHCSD.

Available Recycled Water Quality

Since the MHCSD has not started to process recycled water from the Mountain House community (since development is just beginning), no water quality data is available. However, water quality data is available from two wastewater treatment facilities in the City of Tracy and the Delta-Diablo Sanitation District (DDSD) in Pittsburg that draw water supplies predominately from the Delta. This data, along with projections provided by the MHCSD, assess the quality of the recycled water.

DDSD has evaluated the potential recycled water use by industries in its service area and has determined it to be feasible. Many recycled water studies have been prepared by DDSD in the past, and recycled water is currently being utilized within its service area.

Likewise, the City of Tracy has evaluated the feasibility of implementing recycled water projects. Generally, cost tradeoffs do not favor recycling water from Tracy, given the relatively low cost of river discharge and the proximity of the treatment plant from recycled uses within the city. A study is underway for the city that evaluates the potential to reuse water on the surrounding agricultural lands.

Water quality information was collected from both DDSD and the City of Tracy to assist in this study. In addition, limited projections of recycled water quality from the MHCSD were developed as part of the river discharge investigations for the Regional Water Quality Control Board (RWQCB). A summary of the various recycled water quality data is provided in Exhibit 6.

EXHIBIT 6
Summary of Potential Recycled Water Quality Data (mg/l, except where noted)

Parameter	DDSD Data	Tracy Data	MHCSD Estimates
Total dissolved solids	760 to 1040	900 to 1,100	550 to 620 (a)
Specific conductance, umho/cm		1,500 to 1,700	890 to 960
Boron		0.5 to 1.0	

EXHIBIT 6
Summary of Potential Recycled Water Quality Data (mg/l, except where noted)

Parameter	DDSD Data	Tracy Data	MHCSD Estimates
Sodium	230	180 to 230	110
Calcium	35	45 to 60	55
Magnesium	25	15 to 30	25
Sodium adsorption ratio, no units	7	6	3 to 4
Potassium	15	20	
Chloride	270	270 to 300	130
Nitrogen (total N)	5	5 to 8	6
Bicarbonate	150		205
Sulfate	130	160 to 200	
Silica	25	30	
Selenium		<0.001	

Notes:
(a): Estimate developed based on standard conversion factor of TDS ~ EC x 0.64, where TDS is measured in mg/l and EC is measured in umho/cm.

Sources:
DDSD Data—Montgomery Watson, May 1993.
Tracy Data—Analytical laboratory analyses provided by City of Tracy.
MHCSD Data—ECO:LOGIC, July 1997.

For agricultural uses, the recycled water quality projected for the MHCSD falls within a range of "increasing problems" as described in FAO-29 publication *Water Quality for Agriculture*. Due to the increased levels of salts and sodium adsorption ratio, yield reductions would be expected if the recycled water were used directly on sensitive crops (such as vineyards). However, most pasture and forage crops exhibit a higher tolerance to salinity and other constituents (such as sodium, boron, and chloride). With these types of salt-tolerant crops, the recycled water quality projected for the MHCSD would likely be acceptable for agricultural use without blending, assuming that increased management was used to monitor the salt balance in the root zone. An additional way to mitigate the potential water quality effects for agricultural uses would be to blend the recycled water supply with the district's water supply (for example, in the 45 Main South Canal).

The applicability of the projected water quality for industrial uses will depend on the industrial user. Since Unimin uses the district water supply for aggregate mining and processing, the water quality projected for the MHCSD is considered adequate. Discussions with Calpine Corporation also indicate that the water quality projected for the MHCSD could be used for cooling water supplies and further treated for process makeup water.

The applicability of the projected MHCSD water quality for landscape uses is generally acceptable for salt-tolerant plantings. Ornamental plants that are intolerant of increased

salinity, sodium, boron, or chlorides should not be planted. Management of the salt balance in the root zone is an important consideration for use at a golf course. MHCSD may want to consider using potable water supplies for greens and tee boxes, as these grasses can be more susceptible to salt burn if water balance is not optimized.

The recycled water quality reported for the City of Tracy is lower in quality than what is projected for the MHCSD. This increased level of salt, chloride, sodium, and boron is attributed to the use of groundwater supplies as part of the City's overall potable water supply mix. The potable water supplies for Mountain House will consist entirely of district water, which is of significantly better water quality than the groundwater sources for these constituents.

Stakeholder Feedback

A key component of this study has been the assessment of stakeholder perspectives associated with the development of recycled water supplies within the district. This section provides a summary of the feedback received through interviews and telephone conversations with the stakeholders.

District General Manager

The General Manager supports the evaluation of recycled water supply development for the district. Its use for industrial customers may be a significant positive attribute for using recycled water.

Any development of recycled water supplies will need to be accomplished with no financial impacts to district customers. The district's water rights supplies adequately meet the projected needs of the district, both now and in the future (including the projected water supply required for the EAEC, if implemented).

District Board of Directors

Continued evaluation of the recycled water supply should be pursued, assuming its development can be implemented with no impacts to district customers. The Board recognizes the potential benefits that may accrue to the MHCSD associated with the reuse of recycled waters from the community (instead of discharge to Old River in the future).

MHCSD Staff

The concept of developing a recycled water system with the district is supported by MHCSD staff. MHCSD indicated that the required flows for the identified uses within the community would take priority over diverting flows to the district; however, there will clearly be recycled water available in the future as the community develops. The aspects of cost sharing associated with the development of a recycled water system would need to be reviewed with the district, should the recycled water program appear feasible.

Area Water Supply Interests

Discussions were held with Contra Costa Water District's (CCWD) General Manager about the general concepts of developing recycled water supplies within BBID. These concepts were supported by CCWD, as they may have a beneficial impact on Delta water quality.

Key Agricultural Interests within District

Discussions with key agricultural interests within the district about the feasibility of using recycled water yielded the following feedback:

- There was some apprehension regarding the use of recycled water supplies within the district.
- It was recognized that use of recycled water may be appropriate for certain crop types, and inappropriate for others.
- Blending of recycled water supplies with other district water supplies was reviewed. More information on this concept is needed, such as the amount of blending anticipated.
- In general, district members were willing to listen to more information regarding the feasibility of developing recycled water.

Calpine Corporation

As the potential major industrial customer for water supplies in the district, the Calpine Corporation was approached for feedback on the use of recycled water supplies. Calpine indicated that the EAEC process could be developed to utilize recycled water supplies, or some blend of recycled water / district water supply. As a potential future customer of the district, Calpine would work with district staff to evaluate the applicability of recycled water for the EAEC. Calpine will include the future potential to utilize recycled water in its environmental documentation to the California Energy Commission for the EAEC.

RWQCB/Department of Health Services Staff

Discussions with representatives of both the RWQCB and the California Department of Health Services have indicated that there would be no significant issues associated with using recycled water for either irrigation or industrial uses within the district. The appropriate treatment required for the type of use as specified in Title 22 would be necessary to allow recycling within the district.

Alternatives for Using Recycled Water

Description of Potential Alternatives

As a means of assessing the feasibility of developing a recycled water supply for the district, the following alternatives were configured:

- Alternative 1—Agricultural Blending
- Alternative 2—Direct Agricultural Use
- Alternative 3—Direct Industrial Use

A brief description of each alternative is provided in the sections below.

Alternative 1—Agricultural Blending

Blending the recycled water supply from MHCSD on a pattern of use that mirrors the agricultural diversions of the district provides the most implementable means of distributing recycled water to agricultural customers. Since the diversions to both divisions of district customers occurs at the Intake Channel, the maximum amount of blending could be accomplished by delivering recycled water to both the 45 Main South and North canals near the Intake Channel. There may be practical limitations to delivering recycled water to the Byron Division, given the need to cross the Intake Channel with a recycled water pipeline.

A blending option for agricultural reuse is deemed the most implementable because of water quality limitations. Although the projected water quality for the MHCSD recycled water would be acceptable for salt-tolerant crops, a blended supply would have even lower water quality restrictions. Therefore, the blended supply would be more useable within the district (even for less tolerant crops).

As shown in Exhibits 4 and 5, the recycled water supplies are available year-round. However, as evidenced in Exhibit 3, the diversions for agricultural uses essentially halt in the winter months, when there is limited agricultural demand for the water supply. Therefore, delivery to district canals would not be needed. Instead, the recycled water supply would be stored or discharged to the river by MHCSD. Based on typical storage ratios for agricultural reuse systems, approximately 7-to 8-months worth of recycled water would be required to significantly reduce the need to discharge. In this instance, an approximate storage volume of 4,000 to 4,500 acre-feet would be needed at maximum flow conditions (assuming the projected uses within the Mountain House community).

Alternative 2—Direct Agricultural Reuse

One option for using recycled water supplies within the district would be to deliver the available supply to a specific area of the district for direct use (i.e., without any blending). As noted previously, a salt-tolerant cropping mix would be required, along with increased agricultural management to monitor the salt balance within the root zone.

It is believed that unless a specific landowner expresses interest in obtaining the recycled water supply (instead of district supplies), this alternative is not implementable. It is not anticipated that this interest will be expressed by the various landowners within the district, given the availability, affordability, and superior water quality of the district's own supplies.

This alternative could be implemented by MHCSD if it acquired an easement or outright ownership of agricultural lands in proximity to the community for reuse. This approach is in effect what MHCSD is implementing for the initial development of the community. No discharge will be made to the river for the initial development; instead, the recycled water will be used to irrigate adjacent lands owned by the master developer. To fully utilize the available supply from MHCSD, approximately 1,200 to 1,500 acres of land (with forage crops) would be required to use all of the available supplies. In addition, a storage reservoir

in the same capacity as described for Alternative 1 would be needed to fully use the recycled water supply and significantly reduce the need for river discharge.

Alternative 3—Industrial Use

A third option for implementing recycled water use within the district would be to develop a program to deliver recycled water supplies to district industrial users. Since the Unimin Corporation is on the far western boundaries of the district and on the north side of the Intake Channel, it is not practical to develop a system to deliver recycled water to Unimin.

The site for the EAEC is significantly closer to the MHCSD wastewater treatment facility, making it a more logical choice for this alternative (assuming the EAEC is developed). Based on discussions with Calpine, the projected water quality from MHCSD could be conditioned for use within the EAEC. However, the costs of conditioning this water supply would be greater than the costs projected for using the district supply. The projected water requirement for the EAEC is approximately 4,600 acre-feet/year, which is within the projected limits of available supply projected at buildout from MHCSD (refer to Exhibit 3). However, because of the reduced availability of supplies in the summer from MHCSD (due to the use of recycled water within the community), continued use of the district's water supply for the EAEC would be required periodically throughout the year.

Recycled Water Infrastructure Requirements

Alternative 1—Agriculture Blending Infrastructure Requirements

For the purposes of this study, it was assumed that agricultural blending would occur only within the Bethany Division. To maximize the blending of the recycled water, the blending would occur within the Main Canal 45 South near the Bruns Road crossing.

A 24-inch-diameter pipeline would be required to deliver the available flows from the MHCSD to the Main Canal at Bruns Road. Exhibit 7 presents the assumed routing of this recycled water pipeline, based on field reconnaissance of the available routes. This pipeline is approximately 6.8 miles long and traverses within or adjacent to Bethany Road, Byron Highway, and Bruns Road. A pump station with approximately 7,800 gpm capacity would be required at the MHCSD wastewater treatment plant.

For the purposes of this study, the addition of storage at the MHCSD has not been included. This approach was taken because the availability of land for the storage reservoir in the area is uncertain.

Alternative 2—Direct Agricultural Use Infrastructure Requirements

No specific infrastructure requirements were developed at this time for this alternative. Because of the site-specific nature of this alternative (i.e., a specific landowner or group of landowners come forward to use the water exclusively), it is not possible to define the infrastructure requirements. The requirements would include a pump station and transmission pipeline from the MHCSD treatment plant to the reuse site. On-site irrigation system improvements may be necessary to fully utilize the recycled water supply and to effectively manage this application.

EAEC

N

2000 0 2000

Scale is Approximate

Exhibit 7
Agricultural Blending Alternative
Recycled Water Feasibility Study

CH2MHILL

W072001004SAC exhibit08

Alternative 3—Industrial Use Infrastructure Requirements

The infrastructure requirements for this alternative were developed assuming that the EAEC would be developed and would use the maximum amount of available recycled water from MHCSD. As noted previously, there would still be a need to deliver District water supplies to the EAEC with this alternative, as there are times during the year (primarily in the summer) when there is insufficient available supplies from MHCSD to meet the EAEC requirements (even under buildout conditions).

A 24-inch-diameter pipeline would be required to deliver the available flows from the MHCSD to the EAEC along Mountain House Parkway. Exhibit 8 presents the assumed routing of this recycled water pipeline, based on field reconnaissance of the available routes. This pipeline is approximately 4.6 miles long and traverses within or adjacent to Bethany Road, Byron Highway, and Mountain House Parkway. A pump station with approximately 7,800 gpm capacity would be required at the MHCSD wastewater treatment plant.

For the purposes of this initial feasibility study, the addition of storage at the MHCSD has not been included. This approach was taken at this phase of the study since the availability of land for the storage reservoir in the area is uncertain.

Estimated Costs

To develop an approximate range of costs associated with implementing the recycled water alternatives described in this study, an order-of-magnitude construction cost estimate was prepared. This estimate was based on typical cost-curve data and previous experience with conveyance system costs in the general area. The estimate is order-of-magnitude in nature, which would be expected to have a range of +30 to –50 percent of the final construction cost.

In addition to the estimated construction costs for the alternatives, additional costs associated with project implementation were estimated. These costs would include environmental documentation and permitting, land acquisition, preliminary and final design, construction administration and inspection, and legal costs. These costs were added on a percentage basis to the estimated construction costs, to develop a range of expected capital costs for the project.

EAEC

Map Location

N

2000 0 2000

Scale is Approximate

Exhibit 8
Direct Industrial Reuse Alternative
Recycled Water Feasibility Study

CH2MHILL

W072001004SAC exhibit07

Exhibit 9 summarizes the results of this cost analysis for the project alternatives.

EXHIBIT 9
Estimated Capital Costs

Cost Component	Alternative 1	Alternative 3
Pump station	$500,000	$500,000
Pipeline	$5,900,000	$4,030,000
Accessways	$100,000	$100,000
Line valves	$100,000	$100,000
Air release valves	$25,000	$25,000
Electrical system improvements	$300,000	$300,000
Subtotal	$6,925,000	$5,055,000
Construction Contingency (20%)	$1,385,000	$1,010,000
Subtotal Construction Cost	$8,310,000	$6,065,000
Other Project Costs		
Mobilization	$620,000	$450,000
Right-of-way acquisition	$50,000	$50,000
Environmental documentation	$250,000	$250,000
Design, plans, and specifications (10%)	$830,000	$610,000
Administration and inspection (10%)	$830,000	$610,000
Subtotal—Other Costs	$2,580,000	$1,970,000
Total Project Costs	**$10,890,000**	**$8,035,000**

Construction costs based on May 2001 cost conditions.

Institutional Requirements

Water Rights/Instream Flow Requirements

Implementation of recycled water programs is commonplace throughout the state. In general, the use of recycled water is viewed favorably as a means of emphasizing conservation, while also reducing the potential water quality impacts that result to surface water receiving streams due to discharges.

In some instances, however, the State Water Resources Control Board (SWRCB) has implemented restrictions on using recycled water supplies. These restrictions have arose because of the potential reduction in instream flows that would have resulted through the implementation of recycled water programs in instances where the discharge streams were "effluent-dominated." Rulings by the SWRCB in the past 5 years have resulted in an increased allocation to instream flow benefits associated with recycled water discharges, to

the extent that in some instances, the reduction in discharge (and subsequent reuse of the water) was partially limited.

In the instance of the MHCSD/BBID program, should it be developed, it is expected that there would not be an issue with instream flow requirements. This is because there is no discharge of recycled water being made to the receiving waters from MHCSD, because the community is not yet developed. Absent this prior discharge, it is believed very unlikely that the SWRCB would require a discharge to protect a currently non-existent instream flow benefit.

Agricultural Community Perspectives

In recent years, there has been an increased perception in some parts of the statewide agricultural community that the practices of using recycled water are not amenable with good agricultural management. This perspective has been evidenced, in part, in the legislative prohibition of recycled water supply usage within Delta areas. This perspective has also been evidenced in periodic positions taken by various food processing corporations in California and in other states. In some instances, food processors have been reluctant to accept crops that have been grown using recycled water supplies.

At the MHCSD, the treatment processes planned will result in a recycled water quality that is essentially pathogen free and suitable for unrestricted reuse. This water quality is currently being used in many locations for agricultural crops, and, in some instances, for direct-pick produce (e.g., Monterey/Salinas River area, Orange County/Irvine Ranch, and Santa Rosa). It represents the treatment standard for agricultural reuse within the state.

However, the perspectives of the agricultural community will be significant for the successful implementation of recycled water on agricultural crops. If the district wishes to further implement an agricultural option, it is recommended that additional time be spent with the agricultural interests to review the water quality and suitability of the supply for a wide variety of uses.

Contractual Requirements

As the water purveyor in the area, the district has the responsibility to develop and deliver water supplies to its customers. If a recycled water supply were to be integrated into the district's overall water supplies (either to agricultural blending or direct industrial use), a contractual relationship would be required between the district and MHCSD. This contractual relationship would define the mutual requirements of the two parties, including cost sharing of both capital and annual cost components for the system. The contract should also define the respective requirements of the district and MHCSD with regard to requirements placed on the system by the RWQCB and the Department of Health Services (DHS).

Evaluation of Potential Alternatives

Both Alternatives 1 and 3 offer an opportunity to integrate a potentially available recycled water supply from the MHCSD into the district's overall water resources mix. Alternative 1 is more costly to implement than Alternative 3 given the increased transmission pipeline

size and length, but it provides the recycled water supply to the largest customer base within the district. Alternative 3, as configured with the assumed development of the EAEC, provides the district with an opportunity to deliver recycled water to the primary industrial user within the district.

Both alternatives increase the overall flexibility and reliability of the district's water supply, although Alternative 1 would extend this benefit to a broader range of district customers. Institutional limitations (stakeholder concerns) are more likely to be managed with Alternative 3, since the district would be dealing with one customer for the recycled water supply (Calpine Corporation).

Neither Alternative 1 nor 3 were found to have any fatal flaws at this stage of the analysis. It is likely that the environmental documentation of either alternative would be straightforward.

Conclusions and Recommendations

Recommended Alternative

It is recommended that the district continue to develop the direct industrial use alternative (Alternative 3) as the initial alternative for consideration of using recycled water. By focusing the initial development on the EAEC opportunity, the district will be able to start with a single, major customer and potentially build the program in the future.

Implementation Recommendations

Following acceptance of this feasibility by the Board of Directors, the following implementation steps are recommended for the recycled water program.

Review Results of Report with Major Stakeholders

The district should review the results of the recycled feasibility report with the Calpine Corporation and the MHCSD. These meetings should focus on discussing the remaining issues associated with implementation. A memorandum of understanding could be developed to outline the process by which the project would proceed to full implementation.

Review/Revise Board Policies and Rules and Regulations

It is likely that the Board should adopt refinements to district policies, rules, and regulations that would provide guidance on the development and implementation of recycled water projects within the district. These policies should identify the district as the purveyor of recycled water supplies within its boundaries. In addition, rules and regulations that address water use standards for recycling, recycled water pricing, and rate impacts on existing customers will be appropriate.

Refine Cost Estimates and Engineering Issues

The feasibility study is based on a conceptual level of engineering development. As more detailed discussions with Calpine Corporation and MHCSD occur, there will be a need to refine the engineering issues and estimated construction costs associated with the project. This additional refinement of engineering issues (e.g., is there a desire on the part of

MHCSD to include storage in the project components?) will also be necessary to complete a detailed project description for subsequent environmental documentation.

Perform Environmental Documentation of Project

The degree of environmental documentation required for the project is still to be determined. Coordination with Calpine is necessary, since it will also be preparing environmental documentation (through the California Energy Commission) for the EAEC. It is possible that the Calpine environmental documentation would address all of the potential impacts (believed to be limited) associated with using recycled water at the EAEC.

Implement Agreements for Water Service

Following the completion of environmental documentation for the project, the district would then be in a position to negotiate agreements with both Calpine and MHCSD. These agreements would specify the specific terms, including cost allocation provisions, for developing the recycled water project.

Design, Construct, and Startup System

Once the agreements with MHCSD and Calpine have been completed, the district can design, construct, and start up the system.

References

ECO:LOGIC Engineering. October 23, 2000. Facsimile communication from J. DiGurijio.

ECO:LOGIC Engineering. January 1998. Engineering Report for Domestic Water System. Mountain House Community Services District, San Joaquin County, California.

ECO:LOGIC Engineering. July 1997. Analysis of Effluent Discharge to Old River. Mountain House Community Services District, San Joaquin County, California.

Food and Agriculture Organization of the United Nations. Irrigation and Drainage Paper No. 29, Water Quality for Agriculture. 1976

Houser, J. ECO:LOGIC Engineering. Telephone conversation on October 19, 2000.

Montgomery Watson. May 1993. DDSD / CCWD Industrial Water Recycling Project.

PMC (Pacific Municipal Consultants). July 2000. Tracy Hills Technology Park; Draft Environmental Impact Report. SCH No. 2000042095. Prepared for City of Tracy.

EAST ALTAMONT ENERGY CENTER
DATA REQUESTS #2A
(01-AFC-4)

Attachment WR-87

August 15, 2001

Ms. Alicia Torre
Manager - Project Development
Calpine Corporation
6700 Koll Center Parkway, Suite 200
Pleasanton, CA 94566

Subject: California Energy Commision (CEC) Data Request Regarding the Water Rights of Byron-Bethany Irrigation District.

Dear Ms. Torre:

Pursuant to your request, this letter is in response to the CEC's request for documentation regarding Byron-Bethany Irrigation District's (BBID or District) pre-1914 water rights. In the request for information from the CEC it is inferred that BBID's water rights derive from the State Water Resources Control Board (SWRCB) or from the federal Central Valley Project (CVP) and/or the State Water Project (SWP). To better understand the nature and extent of the water rights held by the District, it may be useful to provide a brief overview of California water law.

Before 1914, water rights could be acquired simply by posting and taking water from the source, or exercising control over the water and applying it to reasonable beneficial use. This was known as a "common law appropriation." In 1872, the Legislature recognized the doctrine of prior appropriation and provided for a second method to appropriate water. Under this subsequent method, a person could record a notice of appropriation in the county where the diversion was located. (Civil Code §§ 1410-1422 (1872).) This method is called a "Code appropriation," referring to the old provisions in the Civil Code, which predated the Water Commission Act of 1913.

There was, and is presently, no need to obtain permission to exercise these pre-1914 water rights from any governmental authority, including the State Water Resources Control Board.

P.O. Box 160 • 3944 Main Street • Byron, California 94514-0160
Telephone (925) 634-3534 FAX (925) 516-1239

BBID acquired pre-1914 water rights with a priority date of May 18, 1914 when its predecessor, Byron Bethany Irrigation Company, posted a notice of appropriation for 40,000 miners inches[1] measured under four-inch pressure from Italian Slough, a tributary to Old River. A copy of BBID's notice is attached hereto. Water claimed pursuant to the notice of appropriation is for irrigation and domestic purposes on lands lying within the District in portions of Contra Costa County, Alameda County and San Joaquin County.

Although the pre-1914 water right as posted by BBID is substantial, BBID's actual water right is based upon the District's reasonable beneficial use of water. It has long been held in California that "the diversion of water ripens into an appropriation only where it is utilized by the appropriator for beneficial use." (*Trimble* v. *Hellar* (1913) 23 Cal.App. 436, 444.) An appropriator may complete the appropriation within a reasonable time by the use of reasonable diligence. (*Senior* v. *Anderson* (1896) 115 Calif. 496, 503-504.) There is no set time by which a diversion must be fully put to beneficial use. The question of what is reasonable diligence is a factual determination based on the original intent of the appropriator, the progress being made and the seriousness of the effort being made to overcome obstacles.

> [T]he intention of the appropriator, his object and purpose in making the appropriation, his acts and conduct in regard thereto, the quantity and character of land owned by him, his necessities, ability, and surroundings, must be considered by the courts, in connection with the extent of his actual appropriation and use, in determining and defining his rights. (*Hewitt* v. *Story* (1894) 64 Fed. 510, 514-515.)

The original intent of the District as evidenced by its notice of appropriation and its statutory authorities, the conveyance capacity of its system, types of water use, types of soils being irrigated, the types of crops grown, historic diversions and future requirements are all factors relevant in evaluating the quantity of BBID's water right.

---

[1] Forty thousand miners inches is the equivalent of 730,000 acre-feet annually.

On the basis of those factors, the amount of water BBID maintains under its pre-1914 water right for reasonable beneficial use is 60,000 acre-feet of water.

Today, and since 1914, appropriations of water may be obtained only by applying for and obtaining a permit from the SWRCB, by putting the water to beneficial use as prescribed in the permit. (Wat. Code, § 1225 *et seq.*) The beneficial use is confirmed with a license given by the SWRCB. (Wat. Code, § 1605.) While the SWRCB has authority to enforce permitted water rights, it does not have authority over pre-1914 water rights. Enforcement of those common law water rights is only through the judicial system.

BBID's pre-1914 water rights are senior to and separate from the water rights held by the United States for the CVP and the State of California for the SWP. BBID has no relationship to the CVP. Because the Central Valley Project Improvement Act only pertains to the CVP, it does not affect nor does it have any application to BBID's use of water.

BBID's only connection with the SWP is the 1964 agreement entered into between the Department of Water Resources (DWR) and BBID when the DWR needed to destroy a portion of the BBID's conveyance system in order to construct the Harvey O. Banks Delta Pumping Plant. Pursuant to that agreement BBID was given consent to construct two pumping plants and the permanent and perpetual use by the District without cost of the intake channel of the Banks Pumping Plant. A copy of the 1964 agreement is also attached. BBID is not a CALFED Agency and has no role in the implementation of the CALFED Program.

BBID hopes this information is useful to the CEC. Moreover, BBID is prepared to meet with CEC staff to provide additional information regarding its water rights and its system of delivery.

Sincerely,

Rick Gilmore
General Manager

ORIGINAL

AGREEMENT NUMBER 353311

AGREEMENT BETWEEN
BYRON-BETHANY IRRIGATION DISTRICT
AND THE
STATE OF CALIFORNIA
DEPARTMENT OF WATER RESOURCES

THIS AGREEMENT, made and entered into by and between the BYRON-BETHANY IRRIGATION DISTRICT, hereinafter referred to as the "District," and the STATE OF CALIFORNIA acting by and through its Department of Water Resources, hereinafter referred to as the "State;"

W I T N E S S E T H:

WHEREAS, the State proposes to construct, as a part of state water development operations an intake channel in the vicinity of Byron; and

WHEREAS, said intake channel will cross District's S45 lateral canal and destroy a portion of said canal; and

WHEREAS, the District desires to relocate its pumping facilities to said intake channel in lieu of accepting a flume which the State has proposed to construct, at no cost to the District, to replace the portion of said S45 lateral canal which will be destroyed by the intake channel;

NOW, THEREFORE, it is mutually agreed as follows:

1. In lieu of constructing a flume for District and in exchange for that portion of District's S45 canal which will be destroyed by State's intake channel, State will pay to the District the sum of $120,000. Such payment to District shall be made as soon after execution of this agreement as State's fiscal procedure will permit and shall relieve State of any obligation to provide

any temporary or permanent facilities or permissions relating to District's S45 canal other than the permanent and perpetual easement required for District's pumping plants on the intake channel as provided for herein and permission for the construction and temporary use of a bypass canal and siphon facilities as hereinafter described.

2. Upon execution of this agreement, State grants to District permission to construct, operate and maintain a temporary bypass canal substantially as shown on State's Drawing No. 151-1-H-23, attached hereto, marked Exhibit "A" and by this reference made a part hereof. Said construction, operation and maintenance shall be performed by and at the expense of District and District agrees to terminate use of said temporary canal and make it available to State, at no cost to State, not later than November 1, 1965, so that State may complete excavation and construction of State's intake channel.

3. State will make District's temporary siphon and permanent pump sites, located as shown on Byron-Bethany Irrigation District Drawing No. W26.06-1 attached hereto, marked Exhibit "B" and by this reference made a part hereof, available to District, without cost to District and without any preparation required solely for District's purposes, as soon as reasonably possible, but in no event later than December 1, 1965. Upon the availability of such sites, District may proceed with the construction and operation of District's proposed temporary siphon system. All construction, operation and maintenance of such siphon system shall be performed by and at the expense of District. Additionally, District may proceed with the construction of its contemplated permanent pumping

facilities, such construction to be by and at the expense of District. District shall not, however, undertake any construction until it has submitted its plans and specifications to State and has obtained State's approval thereof. State shall not unreasonably withhold or delay such approval. District will, not later than November 1, 1966, complete any of its work which would interfere with the flow of water in the intake channel, but shall not divert water from said channel prior to March 1, 1968. District will, prior to September 1, 1968, remove its temporary siphon from State's intake channel, such removal to be at District's sole cost and expense.

4. The relocation of District's pumping plants and points of diversion to the location shown on Exhibit "B" is being made pursuant to Section 1706 of the Water Code of the State of California and State hereby consents to said change in points of diversion to said locations, but to no other. It is further understood that District's rights to quantity and quality of water may or may not be undetermined at the present time. Nothing contained in this agreement nor in State's consent to change in District's points of diversion shall either enlarge or restrict District's present water rights. No charge shall hereafter be made by State to District for water pumped by District solely by reason of District's pumping from State's intake channel, irrespective of the source of water in said channel.

5. State and District, their agents, contractors and suppliers, shall cooperate with and shall not unreasonably restrict or interfere with the operations of each other's contractors working in the general area.

6. District, in the performance of its work contemplated herein, is acting on its own behalf and not as the agent, employer or contractor of State. State assumes no liability other than that expressly provided for herein for the actions of District in the performance of such work.

7. State hereby consents to the permanent and perpetual use by District, without cost, of State's facilities and of that portion of its right of way required for the construction, operation and maintenance of District's permanent facilities as provided for herein and located as shown on Exhibit "B" attached hereto, together with the right to use State's operating roads for access purposes.

8. Within 30 days following payment to District by State as provided for in paragraph 1 of this agreement, District will convey to State all of District's right, title and interest in that portion of its present easement, lying within State's intake channel, which will no longer be occupied by District's S45 canal or District's permanent facilities.

9. District reserves the right, at District's sole cost, expense and responsibility and as long as it does not interfere with State's facilities or conflict with any of the provisions of this agreement, to revert back at any time to its original pumping site and points of diversion. Such reversion shall not reconstitute the District's right of way across State's intake channel.

10. The waiver of a breach of any of the provisions of this agreement shall not be deemed to be a waiver of any other provisions hereof, or of a subsequent breach of such provisions.

IN WITNESS WHEREOF, the parties hereto have executed this agreement as of the 4 day of May, 1964.

BYRON-BETHANY IRRIGATION DISTRICT

By M R Turtelot
President, Board of Directors

By Emil Sandoe
Secretary

FORM | POLICY | BUDGET
Department of General Services
APPROVED
JUN 11 1964
BY
By Director

Approved as to legal form and sufficiency:

Chief Counsel for the Department of Water Resources

STATE OF CALIFORNIA
Department of Water Resources

By Ukely Gardner
DEPUTY DIRECTOR ADMINISTRATION

APPROVED BY
For Department of Finance

Exhibit "A"

NOTICE OF APPROPRIATION OF WATER.

NOTICE IS HEREBY GIVEN, that BYRON-BETHANY IRRIGATION COMPANY, a corporation organized and existing under and by virtue of the laws of the State of California, and having its principal place of business in Contra Costa County, State aforesaid, does hereby claim the water flowing in Old River, at the point where the West bank of said Old River intersects the South bank of the branch or channel making South from said Old River and designated as "ITALIAN SLOUGH", and which said point is near to the center of Section Seven (7), Township One (1) South, Range Four (4) East Mount Diablo Base and Meridian in said Contra Costa County.

That said corporation claims and intends to use the water there flowing to the extent of 40,000 inches measured under a four-inch pressure.

That the purpose for which said corporation claims said water is to furnish water to its shareholders for irrigation and domestic purposes, and the place where it is intended to use said water is upon the lands lying in the Easterly portions of Contra Costa and Alameda Counties and the Southwesterly portion of San Joaquin County.

That the means by which it is intended to divert said water and the size of the diverting agency is as follows:

FIRST, through and along Italian Slough Southerly for about two miles to a point on the Southerly Section line of Section 13, in Township One South, Range Three East Mount Diablo Base and Meridian, and distant thereon 1450 feet Westerly from the Southeast corner of said Section 13, and which said Italian Slough is about 200 feet wide and 8 feet deep at its confluence with said Old River.

Thence Westerly through and along an artificial channel 200 feet wide and 8 feet deep, now existing, 3350 feet to a point 480 feet East of the Southwest corner of said Section 13.

SECOND; thence Southeasterly 3600 feet through and along an artificial canal or channel now existing, to the point of intersection of said canal with a creek known as Bruns Creek and the Seggregation line, and which said point is in the Southwest quarter of Section 24, Township One South, Range Three East Mount Diablo Base and Meridian, said artificial channel or canal which is about 25 feet wide and 6 feet deep to be enlarged to 46 feet wide at the top, 30 feet wide at the bottom and 8 feet deep.

THIRD; thence through and by a canal or channel 30 feet wide at the top, 30 feet wide at the bottom and about 10 feet deep to be cut, and following Southwesterly up and along said Bruns Creek 2600 feet to a point near the Southwest corner of the Southwest quarter of said Section 24, and at such last named point by pumps and other apparatus and appliance to lift the water into several ditches or flumes or other conveyors for distribution to the main and other laterals for use on adjacent lands.

IN WITNESS WHEREOF, said corporation has caused its corporate name to be hereunto subscribed by its President, and its corporate seal to be hereunto affixed by its Secretary, the 18th day of May, 1914.

BYRON-BETHANY IRRIGATION COMPANY

By Volney Taylor President

By R. R. Houston Secretary.

EXHIBIT "A" PG 1 OF 7

Exhibit "A"

Exhibit "A"

AFFIDAVIT OF POSTING OF NOTICE OF APPROPRIATION OF WATER.

STATE OF CALIFORNIA,)
) ss
COUNTY OF CONTRA COSTA,)

being duly sworn, deposes and says:

That on May 18th, 1914 he posted a full, true and correct copy of the attached "NOTICE OF APPROPRIATION OF WATER at the point where the West bank of Old River intersects the South bank of the branch or channel making South from said Old River, and designated as "Italian Slough", and which said point where said notice was posted is near to the center of Section 7, Township One South, Range 4 East Mount Diablo Base and Meridian, in Contra Costa County, State of California, by then and there affixing and fastening such copy of said "Notice of Appropriation of Water" to and upon a board firmly fixed in the ground at said above designated point;

That on May 18th, 1914, he posted a full, true and correct copy of the attached "NOTICE OF APPROPRIATION OF WATER" at the point of intersection of the East bank of "Italian Slough" at its terminus with the Eastern extremity of the South embankment of an artificial canal or channel 200 feet wide extending Westerly on the Southerly section line of Section 13 in Township One South, Range 3 East Mount Diablo Base and Meridian, in Contra Costa County, State of California, and which point is distant on such section line 1450 feet Westerly thereon from the Southeast corner of said Section 13, by then and there affixing and fastening such copy of said "Notice of Appropriation of Water" to and upon a board firmly fixed in the ground at said last above designated point;

That on May 18th, 1914, he posted a full, true and correct copy of the attached "NOTICE OF APPROPRIATION OF WATER" at the point of intersection of the South bank of the canal or channel 200 feet wide running East and West on the Southerly section line of Section 13, Township One South, Range 3 East, Mount Diablo Base and Meridian, in Contra Costa County, State of California, with the East bank of the canal or channel 25 feet wide extending Southeasterly, ~~ix~~ the said point of intersection being 480 feet East of the Southwest corner of said Section 13, by then and there affixing and fastening such copy of said "Notice of Appropriation of Water" to and upon a board firmly fixed in the ground at said last above designated point.

R. R. Houston

Subscribed and sworn to before me, this 23rd day of May, 1914.

Notary Public in and for the County of Contra Costa, State of California.

My Commission Expires Sept. 18, 1916

Exhibit "A"

Exhibit "A"

NOTICE OF APPROPRIATION OF WATER

BY

BYRON-BETHANY IRRIGATION COMPANY

Dated, May 18th, 191

Recorded at Requ
Cary Howard
MAY 27 1914
at 8 min past 9 A
Vol 1 of Water
Rights page 262
Records of Contra Costa Co.

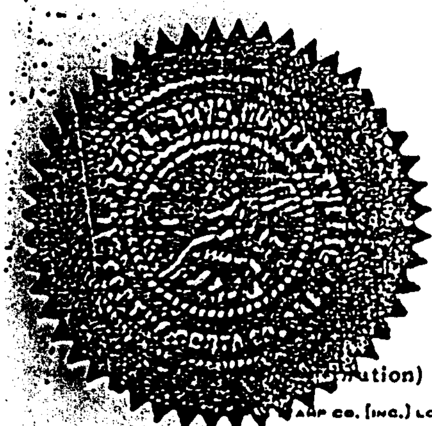
Deputy Re

CARY HOWARD
ATTORNEY AT LAW
BROADWAY OAKLAND CAL.
401 UNION SAVINGS BANK BUILDING

Exhibit "A"

State of California, } ss.
COUNTY OF Contra Costa

On this 19th day of May in the year one thousand, nine hundred and Fourteen A. D, before me Alfred L. Bovo, a Notary Public in and for said County, personally appeared Volney Taylor known to me to be the President, and R. R. Houston known to me to be the Secretary of the Corporation that executed the within instrument, known to me to be the persons who executed the within instrument on behalf of the corporation within named, and acknowledged to me that such Corporation executed the same.



IN WITNESS WHEREOF, I have hereunto set my hand and affixed my official seal in said County, the day and year in this certificate first above written.

My Commission Expires Sept. 18, 1915

Alfred L. Bovo

...tion)

...AMP CO. (INC.) LOS ANGELES

Notary Public in and for the County of Contra Costa State of California

EAST ALTAMONT ENERGY CENTER
DATA REQUESTS #2A
(01-AFC-4)

Attachment WR-90

Monthly Rainfall at Tracy Pump Plant

DWR # B90 9001 00 San Juaquin County Latitude 37.796°
Analysis By DWR DLA Longitude -121.581°
Data From : Climatological Data 1S/4E-31 Elevation 61 Feet

Year	Sum	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep
1954	6.93	0.10	0.54	0.41	1.20	1.71	1.69	0.93	0.13	0.11	0.00	0.11	0.00
1955	8.96	0.00	1.50	1.80	2.60	0.87	0.59	1.24	0.36	0.00	0.00	0.00	0.00
1956	14.62	0.12	1.07	6.33	4.13	0.48	0.00	1.35	0.46	0.00	0.00	0.00	0.68
1957	8.09	0.32	0.04	0.21	1.78	2.38	0.93	0.92	1.32	0.02	0.00	0.00	0.17
1958	19.29	1.62	0.21	1.81	3.19	4.68	3.78	3.03	0.67	0.15	0.00	0.09	0.06
1959	9.03	0.00	0.00	0.59	2.53	3.05	0.11	0.10	0.05	0.00	0.00	0.00	2.60
1960	6.23	0.00	0.00	0.79	2.27	2.39	0.27	0.24	0.25	0.00	0.01	0.00	0.01
1961	9.13	0.07	2.91	0.40	2.21	0.58	1.13	0.69	0.89	0.00	0.00	0.06	0.19
1962	10.69	0.03	2.50	0.55	0.60	5.93	1.02	0.01	0.00	0.00	0.00	0.00	0.05
1963	13.33	2.87	0.18	1.35	1.90	2.45	1.84	2.27	0.30	0.00	0.00	0.00	0.17
1964	8.73	0.68	3.21	0.11	1.48	0.01	0.80	0.17	0.15	1.80	0.02	0.30	0.00
1965	11.88	1.03	1.95	3.74	1.90	0.50	1.19	1.16	0.00	0.00	0.05	0.36	0.00
1966	8.39	0.02	3.14	2.23	0.82	1.19	0.11	0.42	0.15	0.00	0.25	0.00	0.06
1967	17.86	0.00	3.21	2.93	5.27	0.24	3.11	2.53	0.02	0.55	0.00	0.00	0.00
1968	9.00	0.09	0.66	0.92	3.32	1.33	1.64	0.44	0.00	0.00	0.00	0.60	0.00
1969	14.73	0.19	2.22	2.44	5.02	3.88	0.29	0.65	0.00	0.00	0.00	0.00	0.04
1970	11.95	0.95	0.36	1.97	5.40	1.70	1.17	0.21	0.00	0.19	0.00	0.00	0.00
1971	13.23	0.64	4.42	3.62	0.81	0.28	1.11	1.00	1.32	0.00	0.00	0.00	0.03
1972	4.64	0.00	0.36	2.06	0.51	0.62	0.05	0.30	0.03	0.02	0.00	0.00	0.69
1973	18.20	1.77	4.15	1.17	4.38	3.97	2.35	0.41	0.00	0.00	0.00	0.00	0.00
1974	13.00	1.35	3.36	2.80	2.03	0.26	1.82	1.23	0.00	0.05	0.10	0.00	0.00
1975	11.09	0.63	0.31	1.96	0.33	3.04	3.40	0.92	0.00	0.00	0.18	0.32	0.00
1976	5.43	0.98	0.28	0.30	0.25	1.17	0.25	0.55	0.00	0.03	0.00	0.73	0.89
1977	5.20	0.43	0.45	0.69	0.52	0.66	0.74	0.63	0.83	0.00	0.01	0.00	0.24
1978	17.09	0.13	1.71	2.45	5.61	2.87	3.11	1.14	0.00	0.00	0.00	0.00	0.07
1979	11.26	0.00	1.93	0.25	3.68	2.53	2.05	0.62	0.00	0.00	0.20	0.00	0.00
1980	13.95	1.30	0.92	2.24	3.46	3.28	1.02	0.98	0.13	0.00	0.62	0.00	0.00
1981	7.44	0.03	0.17	0.85	3.16	0.75	2.11	0.27	0.02	0.00	0.00	0.00	0.08
1982	21.47	1.29	3.12	2.09	5.46	1.47	4.10	1.45	0.00	0.29	0.00	0.00	2.20
1983	**26.74**	1.64	3.87	1.99	5.12	3.89	5.89	2.91	0.16	0.00	0.00	0.51	0.76
1984	10.94	0.43	4.93	2.88	0.45	1.48	0.45	0.30	0.01	0.01	0.00	0.00	0.00
1985	9.50	1.41	3.80	1.25	0.42	0.81	1.20	0.21	0.00	0.40	0.00	0.00	0.00
1986	17.49	0.48	*1.50*	2.89	1.66	5.10	4.74	0.31	0.07	0.00	0.03	0.00	0.71
1987	8.28	0.00	0.00	0.87	1.48	4.15	1.65	0.13	0.00	0.00	0.00	0.00	0.00
1988	9.69	0.58	1.02	2.11	2.27	0.45	0.83	1.35	0.32	0.76	0.00	0.00	0.00
1989	8.30	0.24	1.02	1.63	0.83	0.92	1.67	0.30	0.10	0.02	0.00	0.01	1.56
1990	7.80	0.64	0.85	0.05	1.04	2.11	0.57	0.47	2.00	0.00	0.00	0.00	0.07
1991	8.11	0.15	0.20	1.08	0.22	1.98	3.60	0.37	0.26	0.00	0.10	0.15	0.00
1992	9.32	1.01	0.25	0.70	1.43	3.73	1.46	0.60	0.00	0.14	0.00	0.00	0.00
1993	18.60	0.71	0.29	4.42	5.86	2.89	2.83	0.53	0.93	0.14	0.00	0.00	0.00
1994	10.05	0.30	2.11	1.39	1.02	2.71	0.07	1.01	1.39	0.00	0.00	0.00	0.05
1995	15.93	0.33	2.55	0.67	5.13	0.16	5.19	0.71	0.48	0.71	0.00	0.00	0.00
1996	17.21	0.00	0.00	4.67	4.02	3.79	2.45	1.09	1.19	0.00	0.00	0.00	0.00
1997	12.96	1.11	1.99	3.58	5.22	0.17	0.11	0.03	0.55	0.15	0.00	0.05	0.00

Monthly Rainfall at Tracy Pump Plant

DWR # B90 9001 00 San Juaquin County Latitude 37.796°
Analysis By DWR DLA Longitude -121.581°
Data From : Climatological Data 1S/4E-31 Elevation 61 Feet

Year	Sum	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep
1998	22.76	0.22	3.22	1.59	4.57	7.27	1.43	1.08	3.15	0.10	0.00	0.00	0.13
1999	11.06	0.52	1.81	0.44	3.08	2.38	1.99	0.71	0.06	0.00	0.00	0.00	0.07
2000													
2001													
Average	12.08	0.57	1.61	1.77	2.60	2.14	1.69	0.83	0.39	0.12	0.03	0.07	0.25
Max	26.74	2.87	4.93	6.33	5.86	7.27	5.89	3.03	3.15	1.80	0.62	0.73	2.60
Min	4.64	0.00	0.00	0.05	0.22	0.01	0.00	0.01	0.00	0.00	0.00	0.00	0.00
Count	45	45	45	45	45	45	45	45	45	45	45	45	45
Stdev	4.94	0.63	1.43	1.36	1.79	1.69	1.44	0.70	0.63	0.31	0.10	0.17	0.56
CV	0.409	1.095	0.883	0.768	0.690	0.790	0.853	0.854	1.640	2.528	3.056	2.366	2.226
Reg CV	0.339	1.261	0.873	0.762	0.707	0.787	0.702	0.993	1.388	1.975	3.789	3.112	2.439
Reg Skew	0.5	1.5	1.3	1.3	1.0	1.0	1.0	1.4	1.8	2.7	4.4	4.1	3.3
Dry Years													
RP 1000	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00
RP 200	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00
RP 100	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00
RP 50	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00
RP 40	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00
RP 25	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00
RP 20	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00
RP 10	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00
RP 5	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00
RP2	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00
Wet Years													
RP 5	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00
RP 10	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00
RP 20	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00
RP 25	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00
RP 40	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00
RP 50	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00
RP 100	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00
RP 200	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00
RP 1000	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00

EAST ALTAMONT ENERGY CENTER
DATA REQUESTS #2A
(01-AFC-4)

Attachment WR-93

California Regional Water Quality Control Board

Central Valley Region

Robert Schneider, Chair

Winston H. Hickox
Secretary for Environmental Protection

Gray Davis
Governor

Sacramento Main Office
Internet Address: http://www.swrcb.ca.gov/rwqcb5
3443 Routier Road, Suite A, Sacramento, California 95827-3003
Phone (916) 255-3000 • FAX (916) 255-3015

19 June 2001

Mr. Jim McLucas
Calpine Corporation, Western Regional Office
6700 Koll Center Parkway, Suite 200
Pleasanton, California 94566

REPORT OF WASTE DISCHARGE FOR THE EAST ALTAMONT ENERGY CENTER CALPINE CORPORATION, ALAMEDA COUNTY, CALIFORNIA

We have reviewed the Report of Waste Discharge (ROWD) dated 14 June 2001 and the amended slope stability analysis dated 19 June 2001 that were submitted on your behalf by CH2MHILL. The ROWD describes the anticipated discharge of concentrated process wastewater (brine) from an electrical generation facility to two 5-acre wastewater evaporation ponds and a wastewater recycle pond. The proposed facility will be constructed at the East Altamont Energy Center in Alameda County. Board staff understands that the California Energy Commission requires submittal to the Regional Board of all information in a ROWD necessary to prepare Waste Discharge Requirements (WDRs). The following two issues must be resolved before any wastewater may be discharged to the ponds:

1. According to Title 27, the establishment of background groundwater quality and detection monitoring system must be completed, and the Water Quality Protection Standards finalized before wastewater is discharged to a Class II surface impoundment. Staff understands that the discharger has agreed to install background monitoring wells, collect at least one year of background monitoring data, and submit an acceptable Water Quality Protection Standard report prior to discharging any wastes to any onsite pond. This issue may be resolved by establishing an enforceable time schedule as a requirement in the WDRs. Calpine Corporation should submit a time schedule by **20 July 2001** outlining the steps necessary to complete the above tasks.

2. Completed CEQA documentation has not been submitted. The Board cannot adopt WDRs until the CEQA process for your facility is complete. The Energy Commission is the lead in the CEQA process or its equivalent.

The report of waste discharge is complete except for the groundwater monitoring and finalizing of Water Quality Protection Standards in issue one discussed above. WDRs may be written and adopted by the Board if the monitoring and establishment of Water Quality Protection Standards is incomplete. However, without CEQA the Board cannot adopt WDRs. We look forward to working with Calpine Corporation and the Energy Commission to complete this process as quickly as possible.

If you have any questions, please telephone me at (916) 255-3814.

Ross D. Atkinson
Associate Engineering Geologist

cc. Ms. Cheri Davis, California Energy Commission, Sacramento, CA.
Ms. Lorraine White, California Energy Commission, Sacramento CA
Mr. Steve DeYoung, Calpine Corporation, Pleasanton CA
Mr. David Jones, CH2M HILL, Sacramento CA.

CALPINE

WESTERN REGION OFFICE
6700 KOLL CENTER PARKWAY
SUITE 200
PLEASANTON, CALIFORNIA 94566
925.600.2000
925.600.8924 (FAX)

July 24, 2001

Mr. Ross Atkinson
Associate Engineering Geologist
California Regional Water Quality Control Board
Central Valley Region
3443 Routier Road, Suite A
Sacramento, CA 95827-3003

Subject: East Altamont Energy Center – Time Schedule for Background Water Quality Monitoring

Dear Mr. Atkinson:

Per your request made in your June 19, 2001 letter, Calpine has prepared a tentative schedule for groundwater monitoring at the East Altamont Energy Center (EAEC) pursuant to California Regional Water Quality Board – Central Valley Region (RWQCB) requirements. This schedule is based on the Report of Waste Discharge (ROWD) submitted on June 14, 2001.

The ROWD proposes that eleven (11) groundwater monitoring wells be installed. Construction of the EAEC is anticipated to begin in the summer of 2002 with operation commencing in the summer of 2004. Calpine proposes to install the monitoring wells and sample the groundwater during the first year of the two-year construction period. The attached schedule provides a detailed breakdown of the activities for completing the background groundwater quality monitoring program.

We are looking forward to receipt of the draft Waste Discharge Requirement for the EAEC. In the mean time. if you have any questions or require additional information, please contact me at (925)931-1428, extension 32 or Steve DeYoung at (925)600-2030.

Sincerely,

CALPINE CORPORATION

Jim McLucas
Regional Engineer

cc: Alicia Torre/Calpine
Steve DeYoung/Calpine
Susan Strachan/Calpine
Dave Jones/CH2M HILL
Jerry Salamy/CH2M HILL

East Altamont Energy Center Proposed Schedule for Background Groundwater Monitoring		
Item	**Duration**	**Completion Date**
Prepare draft Site Assessment Work Plan (SAWP)	3 weeks	July 1, 2002
Review, revise, and submit final SAWP	2 weeks	July 15, 2002
RWQCB approval of SAWP	4 weeks	August 15, 2002
Install groundwater monitoring wells and conduct initial sampling	3 weeks	September 15, 2002
Initial lab results	2 weeks	October 1, 2002
Prepare draft Well Installation Report (WIR)	3 weeks	October 15, 2002
Review, revise and submit final WIR	2 weeks	November 1, 2002
RWQCB approval of WIR	4 weeks	November 30, 2002
First quarter sampling	1 week	December 1, 2002
First quarter lab results	2 weeks	December 15, 2002
Second quarter sampling	1 week	March 1, 2003
Second quarter lab results	2 weeks	March 15, 2003
Third quarter sampling	1 week	June 1, 2003
Third quarter lab results	2 weeks	June 15, 2003
Fourth quarter sampling	1 week	September 1, 2003
Fourth quarter lab results	2 weeks	September 15, 2003
Prepare draft Water Quality Protection Standards Report (WQPSR)	4 weeks	November 7, 2003
Review, revise and submit final WQPSR	3 weeks	December 1, 2003
Receive Water Quality Protection Standards from RWQCB	4 weeks	December 31, 2003