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DOCKET	
08-AFC-3	
DATE	FEB 11 2010
RECD.	FEB 16 2010

February 11, 2010

Dockets Unit
California Energy Commission
1516 Ninth Street, MS 4
Sacramento, CA 95814

RE: Marsh Landing Generating Station
Application for Certification 08-AFC-03

On behalf of Mirant Marsh Landing, LLC, the applicant for the Marsh Landing Generating Station (MLGS), we are pleased to submit the *Responses to Data Request Set 3 (#70-98)*. The air quality modeling files to support the response to Data Request 74 will be sent separately via overnight mail.

Please include this document in the AFC record.

URS Corporation

Anne Connell
Project Manager

Enclosure

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Responses to Data Request Set 3: (#70–98)

Application for Certification (08-AFC-03)

for

MARSH LANDING GENERATING STATION

Contra Costa County, California

February 2010

Prepared for:

MIRANT℠
MARSH LANDING, LLC

Prepared by:

URS

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LIST OF ACRONYMS AND ABBREVIATIONS USED IN RESPONSES

AFC	Application for Certification
AFY	acre-feet per year
BAAQMD	Bay Area Air Quality Management District
BMP	best management practice
CCPP	Contra Costa Power Plant
CCCWP	Contra Costa Clean Water Program
CEC	California Energy Commission
CEMS	continuous emissions monitoring systems
CFR	Code of Federal Regulations
CO	carbon monoxide
DESCP	Drainage, Erosion, and Sediment Control Plan
^{o}F	degrees Fahrenheit
fps	feet per second
fsnl	full speed no load
GGS	Gateway Generating Station
GT	gas turbine
HHRA	Human Health Risk Assessment
HHV	higher heating value
lb NO_x/hr	pounds of nitrogen oxides per hour
lb CO/hr	pounds of carbon monoxide per hour
MACFM	million actual cubic feet per minute
mg/L	milligrams per liter
µg/m^3	micrograms per cubic meter
MLGS	Marsh Landing Generating Station
MMBtu/hr	million British thermal units per hour
NAAQS	National Ambient Air Quality Standards
NO_X	nitrogen oxides
NO_2	nitrogen dioxide
NPDES	National Pollutant Discharge Elimination System
PG&E	Pacific Gas and Electric Company
PM_{10}	particulate matter less than or equal to 10 microns in diameter
$PM_{2.5}$	particulate matter less than or equal to 2.5 microns in diameter
ppb	parts per billion
PPP	Pittsburg Power Plant
PSD	Prevention of Significant Deterioration
QA/QC	quality assurance/quality control
SO_2	sulfur dioxide
SWPPP	Stormwater Pollution Prevention Plan
TDS	total dissolved solids
tpy	tons per year
U.S. EPA	U.S. Environmental Protection Agency
VOC	volatile organic compounds

Technical Area: Air Quality
Author: Brewster Birdsall

BACKGROUND

Applicability of Federal Nonattainment New Source Review

The proposed MLGS and existing Contra Costa Power Plant (CCPP) would be within a common property boundary, and they appear to be under common ownership of Mirant California. The Bay Area Air Quality Management District (BAAQMD) will implement New Source Review (NSR) procedures for all criteria pollutants including particulate matter less than 2.5 microns (PM2.5). The PM2.5 attainment status of the Bay Area is changing with the final designation as nonattainment being announced by U.S. EPA on October 8, 2009, which introduces the potential that NSR provisions need to be implemented for PM2.5 and PM2.5 precursors. The effective date of the PM2.5 nonattainment designation may occur in November. The original AFC identifies potential requirements of the Prevention of Significant Deterioration (PSD) program, but it does not describe the applicability of federal nonattainment NSR for PM2.5.

DATA REQUEST

70. Please confirm whether the federal nonattainment NSR requirements of Title 40, Code of Federal Register Part 51 (40 CFR 51, Appendix S) apply to the existing CCPP as a "major source" and the proposed MLGS as a "major modification" for PM2.5.

RESPONSE

The proposed Marsh Landing Generating Station (MLGS), as configured in the amendment to the Application for Certification (AFC), will be neither a "major source" as defined by 40 Code of Federal Regulations (CFR) 52.21(b)(1)(i)(a), nor a "major modification" of a major source. It therefore does not require a Prevention of Significant Deterioration (PSD) permit and the federal nonattainment New Source Review requirements of 40 CFR 51, Appendix S, do not apply. Mirant Marsh Landing has confirmed this conclusion because the amendment was filed based on a number of source-specific factors and relevant guidance of the U.S. Environmental Protection Agency (U.S. EPA). Based on these factors and relevant U.S. EPA precedent and guidance, MLGS is being permitted by the BAAQMD as a new facility separate from the Contra Costa Power Plant (CCPP).

The MLGS will be located on a site that will be adjacent to the site of the existing CCPP, which is owned and operated by Mirant Delta, LLC (Mirant Delta). Mirant Marsh Landing and Mirant Delta are owned, directly and indirectly, respectively, by Mirant Americas, Inc., and then by the ultimate parent company, Mirant Corporation. However, Mirant Marsh Landing and Mirant Delta each have independent finances, independent contractual obligations, and independent operations. CCPP and MLGS will at all times be operated separately from each other. MLGS will have its own gas supply line and metering station, its own electrical interconnection, its own control room, its own water supply and wastewater discharge connection, and its own independent contractual arrangements covering the sale of its power output.

The MLGS will be a new stationary source separate from the CCPP. As a new stationary source, MLGS is subject to the default 250-ton-per-year (tpy) PSD major source threshold because it consists of four gas-fired simple cycle gas turbines without an accompanying steam cycle, and therefore is not a "fossil-fuel–fired steam electric plant." MLGS' emissions will not exceed 250 tpy of any regulated air pollutant and will be less than 100 tpy during commercial operation.

Therefore, MLGS will not be a "major source" as defined by 40 CFR 52.21(b)(1)(i)(a), and does not need a PSD permit.

The original AFC had assumed that PSD requirements would be applicable to the project because it included combined cycle turbines that use a steam cycle and therefore fall within the definition of "fossil-fuel–fired steam electric plant" noted above and defined in 40 CFR 52.21(b)(1)(i)(a). As discussed in the AFC Amendment, the project was modified to meet the specific needs of one of the state's investor-owned utilities and to better align with the expected needs of the electricity system by providing fast-start, peaking and ramping capabilities that will be necessary to facilitate increasing reliance on renewable resources and displacement of older, less efficient conventional facilities. One result of this modification is that the project no longer triggers PSD review.

Consistent with the PSD analysis above, MLGS will not be a major source under Appendix S because its emissions of particulate matter less than or equal to 2.5 microns in diameter ($PM_{2.5}$) will be under 100 tpy. Therefore, MLGS will not require a permit pursuant to Appendix S. This conclusion applies regardless of MLGS' major source status for other nonattainment pollutants.

DATA REQUEST

71. Please describe how compliance would be achieved, if MLGS is classified as a federal major modification for PM2.5 under 40 CFR 51, Appendix S.

RESPONSE

As explained in the Response to Data Request 70, MLGS is a separate new non-major stationary source and is not classified as a federal major modification for $PM_{2.5}$ under 40 CFR 51, Appendix S.

BACKGROUND

Annual Capacity Factor

The proposed MLGS described in the September 2009 AFC Amendment (p. 2-2) would have a maximum "requested" annual hours of operation that corresponds with a 20 percent annual capacity factor. Staff would like information on what types of enforceable operating limitations would be acceptable to MLGS, other than limits on annual emission rates.

DATA REQUEST

72. Please describe the conditions of certification that would be acceptable to MLGS for agencies tracking compliance with the 20 percent annual capacity factor, for example by limiting the combustion turbines in terms of annual heat input rates, annual operating hours, or energy output.

RESPONSE

The statement in the amendment requires some clarification. The maximum 20 percent annual capacity factor is based on annual emissions limits that Mirant Marsh Landing expects to be imposed through the BAAQMD permit. Based on recent conversations with BAAQMD, the air permit for the MLGS will specify an annual heat input rate (in million British thermal units) per plant and an annual emissions limit (in tpy) for each pollutant. Compliance with these limits will result in the MLGS operating at a maximum 20 percent annual capacity factor. As such, conditions of certification that mirror the BAAQMD limits would be appropriate and acceptable. The other potential conditions mentioned in the Data Request, such as limiting the annual operating hours or energy output, would not be acceptable conditions of certification because they would not allow the MLGS sufficient flexibility to operate in accordance with its executed power purchase agreement.

BACKGROUND

Commissioning Screening

The September 2009 AFC Amendment says that commissioning would occur as described in the original AFC. Staff assumes that AFC Table 7.1-18 (July 2008) remains applicable, and consistent with that information the dispersion modeling (on DVD, September 2009) indicates a single-hour maximum emission rate of nitrogen dioxide (NO_2) at 188.4 pounds per hour (lb/hr). However, it is not clear if this emission rate and its low-velocity stack condition represents the results of a screening analysis for the worst-case commissioning activity. The expected commissioning emissions seem low compared to those being requested by other applicants. For example, the proposal made for Lodi Energy Center (in 08-AFC-10 Supplement D, July 2009) includes a similar Siemens 5000F-type combustion turbine emitting at 0.3 pounds of NOx per million British thermal units of heat input (0.3 lb NOx/MMBtu) during commissioning, which would be over 220 lb/hr NOx per turbine for MLGS.

DATA REQUEST

73. Please provide or identify the data that shows the various turbine heat input rates, stack exit velocities, exit temperatures, and short-term emission rates corresponding to each commissioning activity identified in AFC Table 7.1-18.

RESPONSE

Lodi Energy Center plans to run the Siemens 5000F-type combustion turbines in combined cycle mode, whereas MLGS will operate similar turbines in simple cycle mode. Therefore, the commissioning activities for MLGS will be different than for the Lodi Energy Center.

AFC Table 7.1-18 remains applicable and is reproduced and expanded as Table 73-1. The two columns on the right side of this table have been added to present the average hourly emission rate for oxides of nitrogen oxides (NO_x) and carbon monoxide (CO) for each day of the commissioning period. Note that the highest average hourly emission rate for CO occurs during the first day of the commissioning period (full speed no load testing). The highest average hourly emission rate for NO_x occurs during the second day with the turbine at 40 percent load. The turbine manufacturer recently provided heat input rates, stack exit velocities, and stack exit temperatures for the load point corresponding to each of these two emission maxima. These are shown in Table 73-2.

Table 73-1
Emission Rates for Commissioning of a Single SGT-5000F
Simple Cycle – on Natural Gas at 59 ºF Ambient Temperature

Day	Duration (hour)	GT Load (%)	Pounds NO_x per Event	Pounds CO per Event	Average lb NO_x/hr	Average lb CO/hr
1	8	0	339	19,240	42	**2,405**
2	8	0-40	1,507	11,662	**188**	1,458
3	16	50	1,911	8,854	119	553
4	16	50	1,911	8,854	119	553
5	12	75	805	2,621	67	218
6	12	100	994	2,672	83	223
7	12	100	994	2,672	83	223
8	0	0	0	0		
9	0	0	0	0		
10	12	50-100	994	2,672	83	223
11	12	50-100	994	2,672	83	223
12	12	100	994	2,672	83	223
13	12	100	994	2,672	83	223
14	12	100	994	2,672	83	223
15	12	100	994	2,672	83	223
16	12	100	994	2,672	83	223
17	0	0	0	0		
18	0	0	0	0		
19	0	0	0	0		
20	0	0	0	0		
21	24	100	1,779	2,885	74	120
22	16	100	1,256	2,743	79	171
23	12	50-100	994	2,672	83	223
24	12	100	994	2,672	83	223
Total	**232**		**20,442**	**86,251**		

Notes:

CO = carbon monoxide
GT = gas turbine
lb NO_x/hr = pounds of nitrogen oxides per hour
lb CO/hr = pounds of carbon monoxide per hour
NO_x = nitrogen oxides

Table 73-2
Exhaust Properties of a Single SGT-5000F
Simple Cycle – on Natural Gas at 59 °F at Specific Load

GT Load (%)	Heat Input MMBtu/hr (HHV)	Exhaust Flow (MACFM)	Exhaust Temp (°F)	Exhaust Flow (fps)
fsnl (0%)[1]	374	1.027	698	22.20
40%[2]	1,034	1.642	1,082	35.49

Notes:

°F = degrees Fahrenheit
fsnl = full speed no load
fps = feet per second
HHV = higher heating value
MACFM = million actual cubic feet per minute
MMBtu/hr = million British thermal units per hour

[1] Exhaust flow rate for fsnl (0% load) does not include dilution air, , because catalytic emission controls will not be operational at this early stage of commissioning.

[2] Exhaust flow rate for 40% load operation does not include dilution air, because catalytic emission controls will not be operational at this early stage of commissioning.

DATA REQUEST

74. Please provide a screening analysis showing how the worst-case combination of stack parameters and emission rates was used to arrive at the ambient air quality impacts of the various commissioning activities reported in AFC Amendment Revised Table 7.1-29 (September 2009).

RESPONSE

Based on the data in Table 73-1, the NO_x emission rate of 188 pounds per hour is the maximum hourly value during the entire commissioning sequence. This emission rate occurs within a turbine load range between zero and 40 percent that corresponds to a turbine exhaust flow rate of 1.642 million actual cubic feet per minute (35.49 feet per second [fps]) and a turbine exhaust temperature of 1,082 degrees Fahrenheit (^oF). In the absence of detailed stack parameters for commissioning, the dispersion modeling for NO_x described in the AFC used a turbine exit velocity of 37.2 fps and an exhaust temperature of 750 ^oF to estimate the maximum short-term nitrogen dioxide (NO_2) impacts from turbine commissioning. Therefore, the NO_2 modeling has been redone to reflect the refined stack parameters for the worst-case commissioning condition.

With respect to CO, the maximum hourly emission rate during the entire commissioning period occurs at a condition called Full Speed No Load (0 percent load). The CO emission rate for this condition corresponds to an exhaust flow of 1.027 million actual cubic feet per minute (22.20 fps) and an exhaust temperature of 698 ^oF (see Table 73-2). Because CO emissions from commissioning were originally modeled at an exhaust exit velocity of 37.20 fps and an exhaust temperature of 750 ^oF, the original commissioning air modeling for this pollutant has been revised to incorporate the more refined information on appropriate stack parameters

The revised modeling results in Table 74-1 reflect the assumption that all four turbines are simultaneously operating under the worst-case commissioning conditions that were defined in the response to Data Request 73 for NO_x and CO, respectively. Based on the revised commissioning modeling results, the combined maximum impacts from all four turbines added to maximum background concentrations yield 1-hour and 8-hour concentrations that are below existing state and national ambient standards for each pollutant.

Table 74-1
Revised Project Commissioning Modeling Results
Compared with Current Ambient Standards

Modeling Scenario	Pollutant	Averaging Period	Maximum Estimated Impact[1] ($\mu g/m^3$)	Background[2] ($\mu g/m^3$)	Total Predicted Concentration ($\mu g/m^3$)	Most Stringent Standard ($\mu g/m^3$)
Simple Cycle Four Turbines commissioning	CO	1 hour	3,053	4,715	7,768	23,000
		8 hours	1,248	2,222	3,470	10,000
	NO_2	1 hour	170.02	122.1	292	339

Notes:

CO = carbon monoxide
$\mu g/m^3$ = micrograms per cubic meter
NO_2 = nitrogen dioxide

[1] Indicated impacts are for all four turbines simultaneously operating in the worst-case commissioning condition.
[2] Background represents the maximum values measured at the monitoring stations presented in AFC Section 7.1.1.2.

U.S. EPA promulgated a new 1-hour NO_2 National Ambient Air Quality Standard (NAAQS) on January 22, 2010. The numerical NO_2 concentration in this standard is 100 parts per billion (ppb) (191 micrograms per cubic meter [µg/m^3]), and compliance will be determined based on the 3-year average of the 98th percentile of the yearly distribution of 1-hour daily maximum concentrations. U.S. EPA has already published 3-year average values of the 98th percentile concentrations as an initial attempt to determine the attainment status for each county in the United States (see footnotes to Table 74-2). The 3-year averages for 2005-2007 and 2006-2008 for Contra Costa County are 48 ppb (91.7 µg/m^3) and 44 ppb (84.0 µg/m^3), respectively. These results define background NO_2 levels for the purpose of evaluating compliance with the new 1-hour NO_2 NAAQS, which is obviously lower than the maximum monitored background value of 122.1 µg/m^3 presented in Table 74-1. However, because concentrations are limited by the new NAAQS to 191 µg/m^3 under the new standard, compliance is not demonstrated for the case with all four turbines operating with maximum commissioning emissions concurrently. As described below, the revised commissioning modeling shows that only two turbines may operate in the peak emissions mode at the same time within the constraint of the new federal 1-hour NO_2 standard.

Table 74-2
Revised Project Commissioning Modeling Results
Compared with New 1-Hour NO_2 NAAQS

Modeling Scenario	Pollutant	Averaging Period	Maximum Estimated Impact[1] (µg/m^3)	Background[2] (µg/m^3)	Total Predicted Concentration (µg/m^3)	New NAAQS (µg/m^3)
Simple Cycle Two Turbines Commissioning	NO_2	1 hour	86	91.7	177.7	191

Notes:

CO = carbon monoxide
µg/m^3 = micrograms per cubic meter
NAAQS = National Ambient Air Quality Standards
NO_2 = nitrogen dioxide

1 Indicated impacts are for two turbines simultaneously operating in the worst-case commissioning condition.

2 Background represents the maximum values determined from "Design Values (Average 1-Hour 98th Percentiles over 3 Years) by County for Nitrogen Dioxide for:
2005-2007: http://www.epa.gov/air/nitrogenoxides/pdfs/2005-2007NO2levels.pdf
2006-2008: http://www.epa.gov/air/nitrogenoxides/pdfs/NO2_final_designvalues_0608_Jan22.pdf

Table 74-2 presents the modeling results for this limited commissioning scenario. From the new modeling, each turbine contributes a maximum predicted 1-hour NO_2 concentration of just under 43 µg/m^3. Adding individual maximum predicted impacts for two turbines results in a conservative maximum concentration of 86 µg/m^3. If the published 98th percentile concentration of 91.7 µg/m^3 for the 3-year period between 2005-2007 is applied as the background concentration, the maximum predicted total NO_2 concentration for two turbines operating concurrently in the worst-case commissioning mode is 177.7 µg/m^3. Thus, compliance with the new NAAQS NO_2 1-hour of 191 µg/m^3 is demonstrated. Note that an additional degree of conservatism is provided in this approach by using the highest turbine impacts predicted by the model, rather than applying an average 98th percentile value.

Electronic input and output files for the revised CO and NO_2 commissioning modeling have been provided to California Energy Commission (CEC) Staff on a separate CD.

Mirant Marsh Landing will agree to a condition specifying that no more than two turbines will operate concurrently in the worst-case commissioning mode.

BACKGROUND

Cumulative Modeling Analysis

The AFC Amendment includes a Revised Data Request Table 9-2 that shows the results of a Cumulative Impact Modeling analysis. The sources modeled in the September 2009 assessment were identified in a December 2008 response to Energy Commission staff Data Request 9, and the emission rates that were assumed for the cumulative sources in December 2008 were carried forward into the September 2009 analysis. Staff needs to confirm that recent operating data from Contra Costa Power Plant and Pittsburg Power Plant do not contradict the emissions assumed in the newer analysis. Gateway Generating Station was included at the proposed amended emissions as of June 2008.

DATA REQUEST

75. Please provide the existing (most-recent year available) emissions for the existing Contra Costa Power Plant Units 6 and 7, Gateway Generating Station, and the Pittsburg Power Plant.

RESPONSE

The September 2009 cumulative modeling analysis used emissions averaged over the period 2005 through 2007 for the CCPP Units 6 and 7 and the Pittsburg Power Plant (PPP). Emissions for the Gateway Generating Station (GGS) were represented using permit limits, even though the plant did not go on line until early 2009. To ensure that the previous modeling did not understate the cumulative emissions of these facilities, emissions data reported by Mirant Delta for 2008 and 2009 for the CCPP and PPP were collected. A full year of operational data for GGS are not yet available, but as noted above, the previous cumulative modeling used maximum allowable emissions, which by definition, would not be exceeded in any future year.

Table 75-1 lists the emissions data for the CCPP and PPP for 2005 through 2007 that were used in the previous cumulative modeling and for calendar years 2008 and 2009. The 2008 and 2009 data for NO_x and sulfur dioxide were compiled from the records of the continuous emissions monitoring systems (CEMS) at the respective plants, as submitted annually to the U.S. EPA. Emissions of volatile organic compounds, particulate matter less than or equal to 10 microns in diameter, and CO were calculated from total annual fuel energy input records using AP-42 emission factors in units of pounds per million British thermal unit.

With one exception, the 2008 and 2009 emissions for every boiler and every pollutant are lower than the corresponding 2005-2007 values. NO_x emissions reported in 2008 for CCPP Units 6 and 7 are slightly higher than those for 2005-2007. The probable cause for this discrepancy is the fact that, during a prolonged period of CEMS certification during the First Quarter of 2008, conservative default NO_x hourly emission rates were substituted for the measured values, as required by the CEMS protocol. This explanation is consistent with the fact that the emissions for pollutants that are estimated by emission factors were lower in 2008 than in 2005-2007, which would only be the case if less fuel were burned during that year.

Table 75-1
Annual Pollutant Emissions Data for 2005-2007, 2008 and 2009 for Pittsburg and Contra Costa Power Plants

Source Name	Address	Type of Source	Emissions (tons/year)														
			VOC			NO_x			PM_{10}			SO_2			CO		
			2005-2007 Average Data	2008 Inventory Data	2009 Inventory Data	2005-2007 Average Data	2008 Inventory Data	2009 Inventory Data	2005-2007 Average Data	2008 Inventory Data	2009 Inventory Data	2005-2007 Average Data	2008 Inventory Data	2009 Inventory Data	2005-2007 Average Data	2008 Inventory Data	2009 Inventory Data
Pittsburg Power Plant	696 West 10th Street, Pittsburg, CA 94565	PPP Natural Gas Boiler 5	20.438	2.015	3.466	17.558	5.264	7.779	14.121	2.784	4.790	1.171	0.2	0.389	156.070	30.8	52.941
Pittsburg Power Plant	696 West 10th Street, Pittsburg, CA 94565	PPP Natural Gas Boiler 6	11.803	2.074	2.748	11.266	6.873	6.683	8.155	2.866	3.797	0.676	0.2	0.308	90.129	31.7	41.963
Pittsburg Power Plant	696 West 10th Street, Pittsburg, CA 94565	PPP Natural Gas Boiler 7	7.394	1.924	1.191	11.292	8.861	10.885	5.108	2.659	1.646	0.423	0.2	0.133	56.460	29.4	18.188
Contra Costa Power Plant	3201 Wilbur Avenue Antioch, CA 94509	CCPP Natural Gas Boilers 9 and 10 stack units 6 and 7	18.97	4.91	6.04	21.0	25.76	12.687	13.104	6.787	8.339	1.086	0.57	0.676	144.834	75.010	92.170

Notes:

CO = carbon monoxide
NO_x = nitrogen oxides
PM_{10} = particulate matter less than or equal to 10 microns in diameter
PPP = Pittsburg Power Plant
SO_2 = sulfur dioxide
VOC = volatile organic compounds

DATA REQUEST

76. Please confirm that the emission rates assumed in the September 2009 cumulative impact assessment reflect the most-conservative emissions data available.

RESPONSE

As demonstrated by the response to Data Request 75, Mirant Marsh Landing has confirmed that the cumulative modeling analysis referenced in the September 2009 AFC Amendment used emissions for the CCPP and PPP that are higher than those of the two subsequent years, as well as maximum allowable emissions for the GGS. Accordingly, the 2009 AFC Amendment impact assessment reflects the most conservative emissions data available. Re-modeling using 2008 or 2009 emissions data would result in lower predicted cumulative impacts than have been previously reported.

As described in the response to Data Request 74, a new 1-hour NAAQS for NO_2 has been introduced since the modeling for the AFC was performed. As also explained in the response to Data Request 74, U.S. EPA has developed statistics on 1-hour NO_2 concentrations for counties in the United States; these may be used as a background values for the purpose of evaluating compliance with respect to this standard. Revised Data Request Table 9-2 showed that the highest modeled 1-hour NO_2 impact from cumulative sources was 94.7 $\mu g/m^3$. If the U.S. EPA published 98th percentile concentration of 91.7 $\mu g/m^3$ is applied as the background concentration for Contra Costa County, the maximum predicted total concentration is 186.4 $\mu g/m^3$, which is below the limit in the new NAAQS.

Technical Area: Water Resources
Author: Vince Geronimo, PE and Rachel Cancienne, EIT

BACKGROUND

Stormwater

The applicant has not proposed treatment for surface water runoff collected at the site. The Antioch, CA Code of Ordinances, Title 6: Sanitation And Health, Chapter 9. Storm Water Management and Discharge Control, § 6-9.09 Best Management Practices and Standards, Paragraph G: Development Runoff Requirements, states that "for each new development and redevelopment project subject to the development runoff requirements, every applicant will submit a stormwater control plan and implement conditions of approval that reduce stormwater pollutant discharges through the construction, operation and maintenance of treatment measures and other appropriate source control and site design measures. Similarly, increases in runoff volume and flows shall be managed in accordance with the development runoff requirements."

DATA REQUEST

77. Provide a description of the stormwater treatment process or BMP method for discharges to the San Joaquin River.

RESPONSE

The City of Antioch Code of Ordinances, Title 6: Sanitation and Health, Chapter 9. Storm Water Management and Discharge Control, is designed to ensure the City's compliance with their National Pollutant Discharge Elimination System (NPDES) requirements for the municipal stormwater conveyance system. The specific guidelines contained in the City's ordinance reference compliance with the Contra Costa Clean Water Program (CCCWP), Stormwater C.3 Guidebook. The project would not discharge to, nor affect, the municipal stormwater drainage system of Antioch or any other city, and therefore the requirements of the City of Antioch's ordinance are not applicable to the MLGS project.

Mirant Marsh Landing has nonetheless previously demonstrated compliance with the CCCWP by submitting the Stormwater Control Plan in Response to Data Request 36, submitted to the CEC in December 2008. In addition, a revised Stormwater Control Plan to reflect the current MLGS configuration will be provided in response to Data Request 82.

Regardless, the MLGS will include permanent controls to minimize potential runoff pollution and runoff flows for the life of the project. As described in the response to Data Request 79, the MLGS will reduce the amount of impervious surfaces on the site. The proposed plan is to construct four natural-gas–fired combustion turbine units on the western portion of the site now occupied by the tank farm. The eastern portion of the site occupied by the construction yard will be used for construction laydown, office, and parking areas. No new facilities will be constructed within this eastern portion of the MLGS site. If needed, excess soil from the western portion of the site may be placed on the eastern portion of the site. With the exception of the power blocks and associated infrastructure, buildings, tanks, and limited pavement, the majority of the site will be unpaved or gravel covered.

Based on the CCCWP's guidance (CCCWP, 2008), the MLGS will comply with Option 1, No Increase in Impervious Area; therefore, no flow control requirements are needed.

As described and summarized in Table 1 of the Revised MLGS Stormwater Control Plan, Mirant Marsh Landing also proposes to include best management practices (BMPs) by implementing both permanent (i.e., structural) source control and operational (i.e., nonstructural) controls. All stormwater generated at the site is either discharged to the San Joaquin River through existing CCPP Outfall 001 (which is normally valved shut) or to the offsite sanitary sewer after treatment through the MLGS oil-water separator. The following controls will be employed at the site to minimize the potential discharge of pollutants:

Permanent Controls (Structural)

- Storing hazardous materials and wastes indoors, in double-walled containers, and/or in areas having secondary containment;
- Covering all outdoor trash receptacles;
- In areas of the power block that contain oils or chemicals, diverting stormwater runoff generated to the oil-water separator, which is ultimately discharged to the offsite sanitary sewer;
- Closing the valve at CCPP Outfall 001 to prevent the release of pollutants potentially generated at the site;
- Installing filter drain inserts in selected storm drains to filter stormwater prior to its entrance in the drainage conveyance system;
- Installing erosion control devices (e.g., straw wattles or rock barriers) around site features that may be contributing sediment loads to the stormwater;
- Maintaining vegetation and physical controls such as curbs, gutters, drainage trenches, and earthen dikes to minimize soil erosion; and
- Evaluating the feasibility of the use of pervious pavement in portions of the administration building parking area to ensure functionality, given the use of heavy equipment during plant operations.

Operational Controls (Nonstructural)

- Performing annual maintenance activities with periodic inspections on the stormwater system, including removal of the accumulated sediment in the storm drains;
- Performing sweeping or similar forms of sediment removal in the immediate drainage areas of all storm drains prior to the start of each year's rainy season and periodically throughout the rainy season, based on visual inspections;
- Ensuring that all equipment and vehicle washes are conducted within contained areas or locations draining to the oil-water separator;
- Servicing company vehicles at offsite locations;
- Implementing good housekeeping practices to maintain a neat and orderly workplace;

- Performing and documenting preventative maintenance on equipment;
- Training personnel on equipment and material handling/storage procedures and the implementation of the Stormwater Pollution Prevention Plan (SWPPP) and Spill Prevention, Control, and Countermeasures Plan.

Reference

CCCWP (Contra Costa Clean Water Program), 2008. Stormwater C.3 Guidebook, Stormwater Quality Requirements for Development Applications. Fourth Edition, September 10.

DATA REQUEST

78. Provide applicable details for each proposed source control, or site design measure.

RESPONSE

The proposed source control BMPs are described in the response to Data Request 77, with additional details to be provided in the revised Stormwater Control Plan (see the response to Data Request 82). The purpose of the source control BMPs is to minimize or even prevent potential pollutants from being discharged into stormwater runoff. Applicable details for each BMP are summarized in Table 78-1.

Table 78-1
Source Control BMP Details

Source Control BMP	Design Criteria
Ammonia Tank Containment[1]	Containment and underground sump designed to contain entire content of tank plus the 25-year, 24-hour rainfall (see AFC Section 2.6.9).
Trash Enclosure	Masonry structure with roof. Interior plumbed to the sanitary sewer.
Hazardous Material and Waste Storage Building[1]	Material and waste to be stored in enclosed building or covered outside.
Curbs around oil-containing equipment within power block[1]	Curbs to be designed to contain 125 percent of the contents (oil) plus an allowance for a 25-year storm event, plus an additional 6 inches of free board.
Parking Lot vacuuming and sweeping	Parking lot to be swept or vacuumed at the start of each year's rainy season and periodically throughout the rainy season, based on visual inspections.
Pervious Pavement	The use of pervious pavement will be evaluated during design with respect to its durability (e.g., heavy trucks).

Notes:

[1] Location of hazardous materials to be stored on MLGS site are shown on AFC Amendment Revised Figure 7.12-1.

BACKGROUND

According to the Contra Costa Clean Water Program, Stormwater C.3 Guidebook, Fourth Edition, September 10, 2008 there are several Options for compliance with flow-control requirements, the applicant has adopted "Option 1" for projects on previously developed sites. The Applicant is proposing to develop the MLGS site with less impervious area than the existing quantity of impervious area (82 percent) at the site today. The proposed project imperviousness was estimated at 50 percent (CH2M Hill 2008). The applicant has not demonstrated the change the proposed project will have on the efficiency of drainage collection and conveyance system. This is a requirement of the Contra Costa County, Storm Water Control Plan submittal requirements.

DATA REQUEST

79. Provide an estimate of the final project site imperviousness, related to the project as proposed in the September 15, 2009 Addendum to the AFC.

RESPONSE

The MLGS project site is the same 27-acre site originally proposed in the AFC. Because the current configuration will have less infrastructure than originally proposed and the facility will be located within the western portion of the site, the MLGS will have less impervious surfaces than originally estimated. In addition, as shown on the September 2009 AFC Amendment Revised Figure 2.5-1, General Plot Plan, the eastern portion of the MLGS site will remain undeveloped. The estimated amount of impervious area for the current MLGS configuration is approximately 33 percent.

Therefore, the proposed MLGS will not increase the existing quantity of impervious area and satisfies Option 1 as defined in the Stormwater C.3 Guidebook (CCCWP, 2008).

Reference

CCCWP (Contra Costa Clean Water Program), 2008. Stormwater C.3 Guidebook, Stormwater Quality Requirements for Development Applications. Fourth Edition, September 10.

DATA REQUEST

80. Provide a qualitative comparison of pre- and post-project drainage efficiency.

RESPONSE

The 27-acre MLGS site will be located within the northwestern portion of the 114-acre CCPP site. The CCPP has an existing stormwater drainage system that complies with the State Water Resources Control Board's Water Quality Order No. 97-03-DWQ, NPDES No. CAS000001, Industrial Stormwater General Industrial Permit (General Industrial Permit). AFC Figure 7.14-3, Existing CCPP Drainage, which is based on Figure 2 of the CCPP Stormwater Management Plan (Mirant Delta, 2007), shows the existing stormwater drainage system on the CCPP, and is included here as Figure 80-1.

The pre-project drainage system consists of storm drains that collect and convey stormwater runoff to the San Joaquin River. Stormwater runoff from the western portion of the MLGS site currently contains five aboveground storage tanks surrounded by earthen berms. Stormwater runoff that collects within the berms is collected and conveyed by the existing storm drain system to the existing CCPP oil-water separator for treatment prior to discharge to the San Joaquin River via existing CCPP Outfall 001. Stormwater runoff from the eastern portion of the MLGS site currently is collected and conveyed via the existing stormdrain system to existing CCPP Outfall 001.

The post-project drainage system will be similar to the existing drainage system. The proposed site drainage plan is shown on AFC Amendment Revised Figure 2.6-2. To accommodate the proposed MLGS, the five existing storage tanks and associated berms and pavement will be replaced with structures, pavement, or gravel. The amount of impervious area created by the project will be approximately 33 percent, which is less than the amount of impervious area currently present at the site. While compacting the soil to support the proposed facility would reduce the amount of infiltration, it is anticipated that, overall, there will be more pervious area and therefore less runoff due to the project. Portions of the site with the potential for stormwater contamination will be curbed and runoff from these areas will be contained and then conveyed to the project's new oil-water separator, with ultimate discharge to an offsite sanitary sewer system. Stormwater runoff from the majority of the project site will continue to be collected by a surface drainage system and then discharged to the San Joaquin River via existing CCPP Outfall 001.

Therefore, the proposed MLGS will not increase the efficiency of drainage collection and conveyance of stormwater runoff discharge to the San Joaquin River. As such, the MLGS conforms with Option 1 as defined by the Stormwater C.3 Guidebook (CCCWP, 2008).

References

CCCWP (Contra Costa Clean Water Program), 2008. Stormwater C.3 Guidebook, Stormwater Quality Requirements for Development Applications. Fourth Edition, September 10.

Mirant Delta, 2007. Stormwater Management Plan, Contra Costa Power Plant. November 30.

BACKGROUND

Clean Water Act Section 402(p) and U.S. EPA regulations (40 CFR 122.26) specify a municipal program of "management practices" to control stormwater pollutants and sets the standard for stormwater controls to a "maximum extent practicable" (MEP). The applicant has not provided evidence in the draft Storm Water Control Plan (SWCP) that Best Management Practices (BMP) will be used to treat stormwater effluent to the San Joaquin River to MEP levels. BMP refers to any kind of procedure or device designed to minimize the quantity of pollutants that enter the storm drain system.

Staff reviewed the permanent BMPs and Integrated Maintenance Practices (IMPs) proposed for MLGS in the SWCP. These BMPs and IMPs do meet the standards in the California Stormwater Quality Association (CASQA 2003b) Stormwater Best Management Practice Handbook: Industrial and Commercial, and the Contra Costa County Clean Water Program Stormwater C.3 Guidebook (CCCWP 2008). No permanent BMPs were proposed to manage the effluent quality of the stormwater conveyance system in Table 1 of the SWCP.

DATA REQUEST

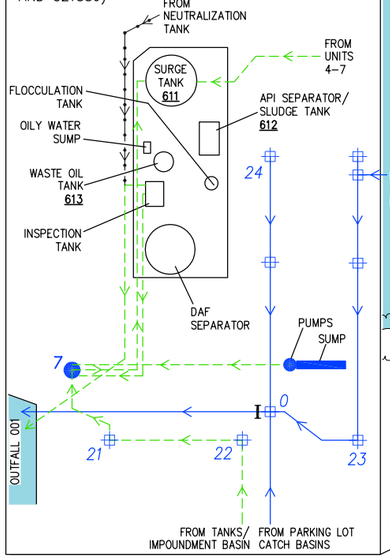
81. Please provide a detailed description of the proposed permanent BMPs or IMPs to treat stormwater prior to discharge to the San Joaquin River.

RESPONSE

The "maximum extent practicable" standard and other requirements of Clean Water Act, Section 402(p), and 40 CFR 122.26 that are cited in Data Request 81 apply to municipal separate storm sewer systems. Because the MLGS will not discharge any stormwater to a municipal stormwater system, these requirements are not applicable to the MLGS. MLGS stormwater discharges will comply with the statewide General Industrial Stormwater Permit (State Water Resources Control Board Order No. 97-03-DWQ, NPDES General Permit No. CAS000001). Though not required, the MGLS' Stormwater Control Plan is nonetheless consistent with the requirements of the CCCWP. See Response to Data Request 77 regarding specific BMPs to be implemented at the MLGS.

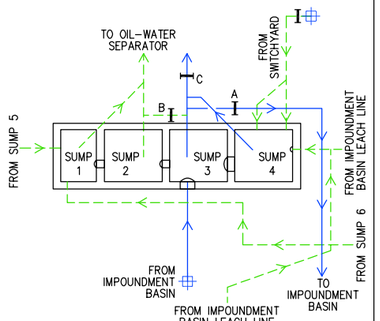
SCHEMATIC DETAIL OF OIL-WATER SEPARATOR

(FROM PG&E DRAWINGS 474580, 521884, AND 521886)



SCHEMATIC DETAIL OF SUMPS 1-4

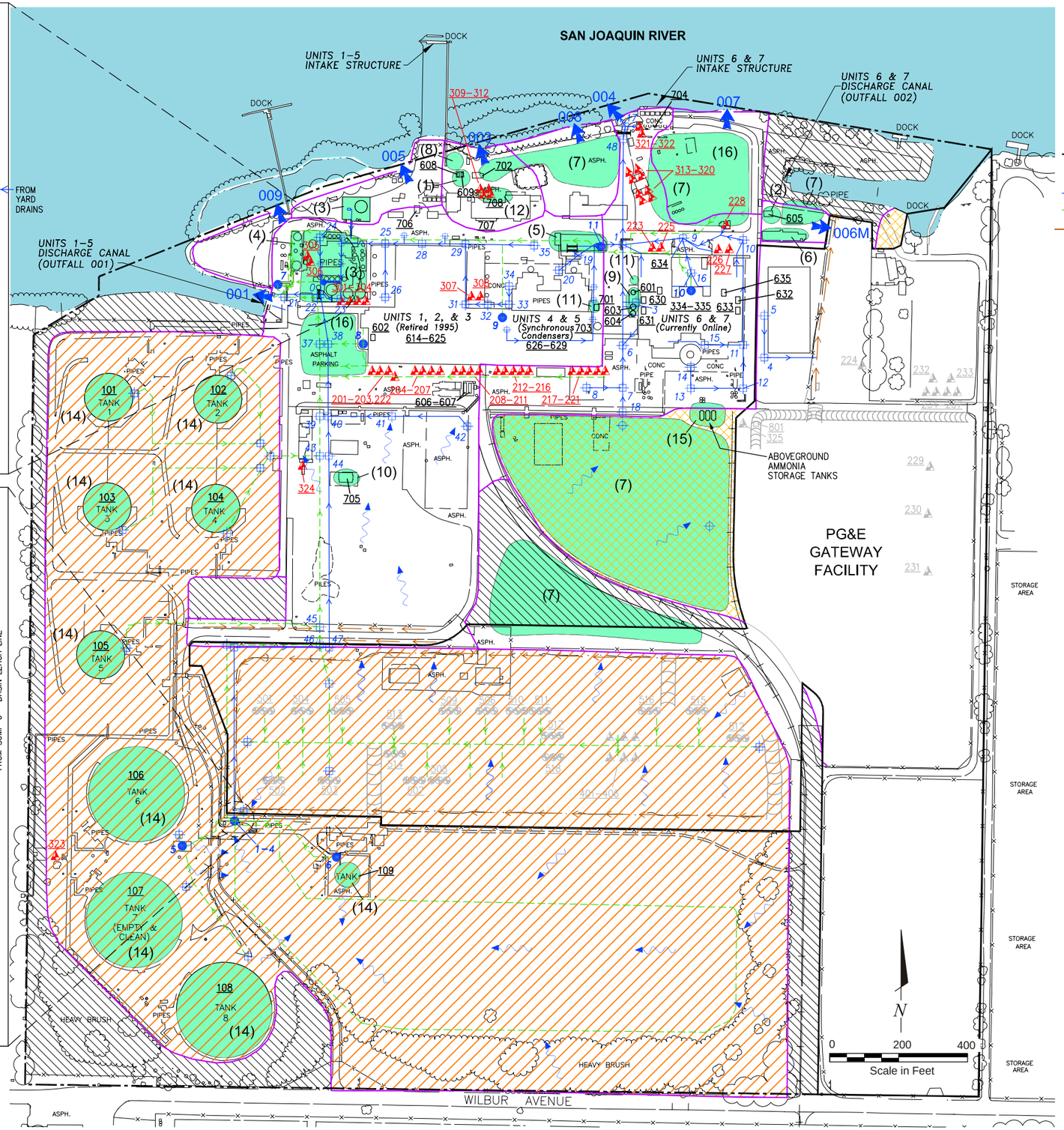
(FROM PG&E DRAWINGS 474583 AND 502639)



GENERAL NOTES

1. NORMAL PUMP, VALVE, AND SLIDE GATE SETTINGS:
   a) ALL SUMP PUMPS SET TO AUTOMATIC.
   b) VALVE A OPEN
      VALVE B CLOSED
      VALVE C LOCKED CLOSED (PERMANENTLY)
      ALL REMAINING VALVES OPEN IF PUMPS OPERATIONAL, IF PUMP IS OFF CLOSE RESPECTIVE VALVE.
   c) SLIDE GATES BETWEEN SUMPS #1 AND #2 AND BETWEEN SUMPS #3 AND #4 OPEN;
      SLIDE GATE FROM IMPOUND TO SUMP #3 CLOSED
   NORMAL SETTINGS WILL SEND OILY WATER TO OIL–WATER SEPARATOR AND STORM RUNOFF TO IMPOUND BASIN.
2. TO DRAIN IMPOUND BASIN WATER:
   a) CLOSE VALVE A
   b) OPEN VALVE B
   c) OPEN SLIDE GATE AT SUMP #3 FROM IMPOUND BASIN

Source:
Mirant, 2007; Storm Water Management Plan, Contra Costa Power Plant, November 30.



LEGEND

- 001 — STORM WATER OUTFALL AND CORRESPONDING DRAINAGE AREA (APPROXIMATE)
- STORM WATER TYPICALLY ROUTED TO OIL/WATER SEPARATOR (AND EVENTUALLY OUTFALL 001)
- AREA IN WHICH STORM WATER DOES NOT GENERALLY DISCHARGE TO ANY OUTFALL
- AREA IN WHICH STORM WATER DISCHARGES TO PG&E PROPERTY
- MIRANT PARCEL BOUNDARY
- PACIFIC GAS & ELECTRIC COMPANY PROPERTY
- STORM WATER DRAINAGE SYSTEM
- OIL-WATER SEPARATOR PIPELINE
- DRAINAGE TRENCH
- RUNOFF FLOW DIRECTION
- 10 — CATCH BASIN OR MANHOLE
- DRAINAGE VALVE
- 1 — SUMP
- TEMPORARY SUMP
- SWALE (CONVEX IN DIRECTION OF FLOW)
- 323 — INVENTORY IDENTIFICATION NUMBER
- OIL CIRCUIT BREAKER

APPROXIMATE DRAINAGE ACREAGES

OUTFALL	TOTAL	TO OIL/WATER SEPARATOR
001	90.9	70.8
003	1.4	0
004	8.0	0
005	1.1	0
006M	0.5	0
007	2.1	0
008	1.4	0
009	0.8	0
NONE	18.5	0
OTHER	7.4	0
TOTAL	**132.1**	**70.8**

NOTE: MIRANT PARCEL ACREAGE LISTED IN 2006 LOT LINE ADJUSTMENT IS 113.63 ACRES. PG&E SWITCHYARD IS 18.5 ACRES RESULTING IN A TOTAL DRAINAGE AREA OF 132.1 ACRES.

(1) POTENTIAL POLLUTANT SOURCE

1. VEHICLE FUELING AREA
2. FIRE PUMP BUILDING DIESEL AST
3. WATER TREATMENT AREA
4. WASTEWATER TREATMENT AREA
5. BOILER WASHWATER MANAGEMENT SYSTEM
6. SANDBLAST BUILDING
7. EQUIPMENT LAYDOWN AREAS
8. DRY-WASTE DUMPSTERS
9. LUBE OIL STORAGE AREA
10. ASBESTOS-CONTAINING-WASTE DUMPSTER
11. BOILER CHEMICAL STORAGE AREAS
12. HAZARDOUS-WASTE STORAGE AREA
13. TRANSFORMERS
14. FUEL OIL AND CUTTER STOCK ASTs
15. AMMONIA STORAGE FACILITY
16. PARKING AREAS

NOTE: LOCATIONS OF DRAINAGE FEATURES AND UNDERGROUND UTILITIES ARE APPROXIMATE. FOR MORE DETAILED AND ACCURATE SPECIFICATIONS, SEE CONTRA COSTA POWER PLANT DRAWINGS 404110, 404115, 404325, 406290, 406291, 406301, 406371, 426901, 426902, 426904, 426931, 426937, 435975, 474580, 474583, 478030, 502637, 502638, 502639, 521884, AND 521886.

CONTRA COSTA POWER PLANT
STORM WATER SYSTEM

Marsh Landing Generating Station
Mirant Marsh Landing, LLC
Contra Costa County, California

February 2010
28067344

URS

FIGURE 80-1

SITE1107a.DWG

2/11/10 vsa ..\T:\Mirant Contra Costa-Marsh Landing\Graphics\DATA REQUESTS\DR_80-1_ccpp swp.ai

BACKGROUND

During construction, approximately 41 acres associated with the MLGS project would be disturbed for proposed project laydown, temporary parking, and the proposed MLGS site. To minimize the potential impacts to water and soil resources from construction activities on the MLGS site and linears, the applicant provided a draft Construction Stormwater Pollution Prevention Plan (SWPPP) in the AFC that corresponds to guidance in the California Stormwater Best Management Practices Construction Handbook (CASQA 2003). The applicant also provided for Staff review the Storm Water Control Plan (SWCP) required by the Contra Costa Clean Water Program. The draft SWPPP and SWCP were not updated to reflect changes identified in the AFC Amendment.

DATA REQUEST

82. Please revise the draft Construction SWPPP and the Stormwater Control Plan to reflect changes in the AFC Amendment for the proposed MLGS site design. Modify runoff calculations as needed for changes to the proposed site impervious. Include any BMPs or IMPs proposed in response to the previous Data Request.

RESPONSE

Mirant Marsh Landing is in the process of revising the draft SWPPP and Stormwater Control Plan, which will be provided to CEC Staff in a separate submittal. It is anticipated that they will be available for submittal by February 23, 2010.

BACKGROUND

California Energy Commission will require a Drainage, Erosion, and Sediment Control Plan (DESCP) as a condition of certification. The DESCP is a complement to the Stormwater Pollution Prevention Plans (SWPPP) required for construction and operation. The DESCP would address all adjacent areas that currently drain toward the MLGS site.

DATA REQUEST

83. Please provide a draft DESCP containing elements A through I below outlining site management activities and erosion/sediment control BMPs to be implemented during site mobilization, excavation/demolition, construction, and post-construction activities. The level of detail in the draft DESCP should be commensurate with the current level of planning for site grading and drainage.

a. **Vicinity Map** – Provided map(s) at a minimum scale 1" = 100' indicating the location of all project elements (project site, lay down areas, transmission corridors, and pipeline corridors) with depictions of all significant geographic features including swales, storm drains, outfalls and sensitive areas.

b. **Site Delineation** –All MLGS construction areas subject to soil disturbance (project site, lay down areas, recycled water pipeline) shall be delineated showing boundary lines of all construction areas and the location of all existing and proposed structures, pipelines, roads, and drainage facilities.

c. **Watercourses and Critical Areas** – The draft DESCP shall contain water pollution control drawings (WPCD) at a minimum scale of 1" = 100' showing the location of all nearby watercourses including swales, storm drains, and drainage ditches. On the WPCDs indicate the proximity of those features to the project construction, laydown, and pipeline construction corridor.

d. **Drainage Map** – The draft DESCP shall provide a topographic site map(s) at a minimum scale 1" = 100' showing existing, interim and proposed drainage systems and drainage area boundaries. On the map(s), spot elevations are required where relatively flat conditions exist. The spot elevations and contours shall be extended from the project site a minimum distance of 100 feet in flat terrain or sufficiently to identify all offsite areas draining onto the site.

e. **Drainage Narrative** – The draft DESCP shall include a narrative of the storm water control measures to be implemented to protect the site and downstream facilities. The narrative shall state the watershed size in acres that is used to calculate storm water flows and volume. The narrative is to include the summary pages from the hydrology and hydraulic analyses to support the selection of BMPs and structural controls to divert onsite drainage around or through the project construction and laydown areas. The drainage narrative shall address surface water from offsite areas that drain onto the site.

f. **Clearing and Grading Plans** – The draft DESCP shall provide a delineation of the proposed recycled water and brine return pipeline indicating all areas to be cleared of vegetation and areas to be preserved. The draft DESCP shall provide elevations, slopes, locations, and extent of all proposed grading as shown by contours, cross sections or other means. The locations of all soil stockpile areas, fills, or other special features will also be shown. Illustrate existing and proposed topography tying in proposed contours with existing topography.

g. **Clearing and Grading Narrative** – The draft DESCP shall include a mass balance diagram showing the volume of soil that is to be cut and filled to bring the site to its design elevation and a discussion of the types of soil to be used, the placement method, and the location of the borrow site where the fill will be obtained.

h. **Best Management Practices Plan** – The draft DESCP shall identify on the WPCDs the location of the BMPs to be employed during site mobilization, site cleanup and grading, and the foundation and pipeline installation phases of MLGS construction. BMPs shall include measures designed to prevent wind and water erosion in areas with existing soil contamination. Construction and permanent treatment control BMPs should enable testing of storm water runoff prior to discharge to the San Joaquin River.

i. **Best Management Practices Narrative** – On the WPCDs, the location (as identified in H above), timing, and maintenance schedule of all erosion and sediment control BMPs to be used during the site mobilization, site grading, and foundation and pipeline installation phases are to be shown.

RESPONSE

Mirant Marsh Landing is in the process of preparing the draft Drainage, Erosion, and Sediment Control Plan (DESCP), which will be provided to CEC Staff in a separate submittal. It is anticipated that the draft DESCP will be available for submittal before February 23, 2010.

DATA REQUEST

84. For offsite areas that currently allow surface water to drain toward the MLGS site, please describe the expected quality of the surface water runoff. Also describe MLGS efforts to treat impaired stormwater draining onto the site and into the stormwater conveyance system that ultimately drains to the San Joaquin River.

RESPONSE

There are no offsite areas that currently drain or will drain onto the MLGS site as surface water runoff. As such, there is no need for MLGS to treat stormwater runoff from offsite areas.

The 27-acre MLGS site will be located within the northwestern portion of the 114-acre CCPP site. The CCPP has an existing stormwater drainage system that complies with the State Water Resources Control Board's Water Quality Order No. 97-03-DWQ, NPDES No. CAS000001, General Industrial Permit. No stormwater flows onto the MLGS site from offsite sources, including the Pacific Gas and Electric Company (PG&E) switchyard area. Figure 80-1 (which is Figure 2 of the CCPP Stormwater Management Plan [Mirant Delta, 2007]) shows the existing stormwater drainage system on the CCPP.

Stormwater runoff from the CCPP site southwest of the MLSG currently contains three aboveground storage tanks surrounded by berms. Stormwater runoff that collects within the berms can be diverted to the existing CCPP oil-water separator for treatment prior to discharge to the San Joaquin River via existing CCPP Outfall 001, but normal practice is to allow in situ evaporation and infiltration. Therefore, stormwater runoff currently does not and will not flow onto the MLGS site.

Stormwater runoff from the PG&E switchyard south of the MLGS site drains to a stormwater collection system that conveys the flow to the existing CCPP oil-water separator for treatment prior to discharge to the San Joaquin River via existing CCPP Outfall 001 or to the impoundment basin for in situ evaporation and infiltration. Stormwater runoff from the switchyard does not flow onto the MLGS site as surface sheet flow.

Stormwater runoff from the property to the west of the MLGS flows toward the San Joaquin River and does not flow onto the MLGS site. Stormwater runoff from the CCPP property east of the MLGS site flows toward the northeast and into a separate storm drain system and does not flow onto the MLGS site. Stormwater runoff from the CCPP property north of the MLGS site borders the San Joaquin River and drains directly north into the River.

Reference

Mirant Delta, 2007. Stormwater Management Plan, Contra Costa Power Plant. November 30.

BACKGROUND

Water Supply and Use

Modifications to the proposed MLGS facility in the AFC Amendment include a change to the process water supply source. Mirant proposes the use of brackish groundwater rather than recycled water from the Bridgehead Lift Station (BLS) that was to be built by Delta Diablo Sanitation District (DDSD). This project alteration was suggested due to the significant decrease in process water consumption compared to the previously-submitted MLGS plans. Mirant proposes that while operating at 20 percent annual capacity, required process supply water would total 50 acre-ft per year (AFY) on average, which is significantly less than the 736 AFY proposed for MLGS in Mirant's AFC.

Table 7 in the Aquifer Characterization Report (Revised Appendix I) shows concentrations of TSS ranging from 1,130 to 1,670 and chloride ranging from 250 to 540 mg/L in groundwater samples taken during the aquifer test. Staff is concerned that water quality could change due to project use and other users or uses may be impacted.

DATA REQUEST

85. Please identify whether there are any other users that obtain their water supply from the brackish aquifer.

RESPONSE

As presented in the *Aquifer Characterization and Groundwater Modeling Report for Marsh Landing Generating Station* (Groundwater Modeling Report) (see Appendix I in the September 2009 AFC Amendment), there are no municipal users that obtain their water supply from this brackish aquifer. Public water supply wells in and around Antioch were identified by reviewing a regional water supply investigation and various water management plans for surrounding communities (cited in the Groundwater Modeling Report). The nearest public supply well that was identified is in Oakley, about 3.5 miles from the MLGS.

Our ability to identify other users of the shallow brackish aquifer in Antioch is limited by confidentiality provisions in the California Water Code. Anyone who installs a water well in California must submit a report to the Department of Water Resources that includes the general construction characteristics of the well. However, under California Water Code Section 13752, Well Completion Reports are confidential. Distribution of the reports to anyone but the landowner or a government agency is prohibited without the written consent of the landowner. Without access to these reports, little is known about the existence of domestic, agricultural, and industrial wells within 0.5 mile of the MLGS.

Because of this limitation, the analysis presented in the Groundwater Modeling Report evaluated potential impacts within 0.5 mile of the proposed MLGS pumping wells. Results demonstrated that potential impacts to a well, if present, within 0.5 mile radius of the proposed MLGS wells due to project-specific pumping from the brackish aquifer would be less than significant.

Please also note that the City of Antioch has stated that it will provide water to the project as an alternative, primary water source for process uses. The water would be supplied through the potable water connection that is already contemplated in the AFC. This alternative water supply source is discussed further in the response to Data Request 88.

DATA REQUEST

86. Please discuss whether the future projections of the groundwater supply source (source well) quality are expected to remain within the concentration range for TSS and chloride during pumping for the life of the project.

RESPONSE

The quality of the source water from the proposed well is expected to remain brackish for the life of the project. This conclusion is based on the results of a literature review, a field investigation at the site including an aquifer test and water quality sampling, and groundwater flow modeling analysis, which was summarized and presented in the *Aquifer Characterization and Groundwater Modeling Report for Marsh Landing Generating Station* (see Appendix I in the September 2009 AFC Amendment).

The modeling indicates that, for the life of the project, the source of water for the well will be inland groundwater, including water recharged near the site and water moving from the Coast Range foothills through the alluvial plain and delta dune regions to the San Joaquin River. The Groundwater Modeling Report describes the use of a transient MODFLOW model to evaluate the potential net impacts of the proposed pumping well on regional aquifer water levels. The model incorporates the forecasted operational cycle of pumping and seasonal changes in river stage. The maximum predicted drawdown is low. Maximum simulated drawdown of about 2 feet occurs at the pumping well. Drawdown decreases radially outward from the pumping well so that the maximum drawdown 0.5 mile from the proposed site is estimated to be approximately 2 to 3 inches. The results indicate that the capture zone for the well will be limited to the local area and will not include the river.

A transport model, MT3D, was coupled with the MODFLOW model to evaluate the potential for the proposed well to capture infiltrated water from the river. The principal sources of groundwater recharge in the region are infiltration of precipitation and runoff from the northeastern slope of the Diablo Range. Near the MLGS, the natural gradient is north-northeast toward the river. The transport model demonstrates that during peak months when the well is pumped consistently, drawdown in the aquifer causes surface water to infiltrate the aquifer and migrate toward the proposed well. During off-peak months when the well is pumped sporadically, the natural gradient toward the river returns and the infiltrated surface water moves back toward the river. Because the natural gradient is smaller than the pumping-induced gradient, the net movement of the surface water front is toward the proposed well. However, the transport model demonstrates that no infiltrated river water would reach the pumping well within the 30-year lifespan of the project.

Based on a literature review and the water quality data collected at the site, the inland groundwater that the proposed well would pump, both at the site and in the general Antioch area, is brackish. Groundwater has not been developed for municipal supply in the Antioch area and some parts of east Contra Costa County due to elevated concentrations of chloride and total dissolved solids (TDS). In the Groundwater Modeling Report, water quality results were presented from six monitoring wells and the test production well pumped during the aquifer test. The wells are located throughout the CCPP property, including near the river and near the west, south, and east property boundaries. The water quality results demonstrate that groundwater at the site meets the CEC definition for brackish water. All of the groundwater samples collected from the monitoring wells and the test well had TDS values greater than 1,000 milligrams per liter (mg/L) and associated chloride values at or above 250 mg/L.

DATA REQUEST

87. Please discuss what groundwater quality monitoring is proposed for the project.

RESPONSE

Mirant Marsh Landing will integrate groundwater monitoring efforts as part of routine plant operations and will be included as part of the facility's Standard Operation Procedures. As an integral part of the facility's feed system, groundwater will be continuously monitored by an automated unit. The constituents to be monitored include select parameters such as alkalinity, carbon dioxide, chlorides, conductivity, calcium hardness, TDS, dissolved oxygen, pH, silica, and certain metals of interest. The generated data will be reviewed and documented as part of daily operations. Based on the characterization of the groundwater feed, limits indicating upset conditions will be set. Calibration of all equipment will be tested and validated on a regular maintenance schedule to ensure the reliability of data.

In addition, Mirant Marsh Landing will periodically conduct groundwater monitoring at the source groundwater well to ensure the integrity of the groundwater resources, assess system performance, and confirm adequate well maintenance. A groundwater sampling procedure will be developed to meet the objectives of monitoring and testing and will require the documentation of findings for follow-up action. Parameters for analytical testing will be determined based on the nature of the resource and needs of the facility, and may include not only the analytes listed above but potential reverse osmosis foulants such as oil and grease, oxygen demand, bacteria, and total organic carbon, along with some metals.

Prior to any sampling at the well, field personnel will record observations made concerning unusual conditions (e.g., casing condition and pump operation). Samples will be collected in containers suitable for the test methods used for analysis. Sample containers will be pre-cleaned and provided by the contract laboratory, and preservation of samples will follow the requirements outlined in U.S. EPA standards. Following sample collection, a chain-of-custody document will be used for tracking. Copies of the chain-of-custody documents will be maintained in the facility records. Laboratory analyses will be performed in accordance with approved state and federal procedures. The contract laboratory will be a State of California Certified Lab. The analytical methods will be specified on the chain-of-custody record. All laboratory data will be reviewed to determine whether the proper method has been performed and whether the recommended holding times have been exceeded. Quality assurance/quality control (QA/QC) procedures and samples will be used during each sampling event to validate the analytical data and the sampling procedures. As appropriate, the following QA/QC samples will be generated: trip blanks, equipment blanks (if required), and matrix spikes and matrix duplicates. Analytical data will be reviewed and analyzed for changes in parameter values that could indicate change in the groundwater resource. Appropriate follow-up will be carried out to make the necessary modifications to current operating conditions or to investigate the need for further study of the aquifer conditions.

All groundwater monitoring procedures will be reviewed and updated as necessary during startup and at least every 5 years during operation. Procedures will be amended if any changes in facility equipment or operation practices occur and if changes in groundwater production or quality indicate cause for modification.

BACKGROUND

Mirant proposes reducing the capacity of the Raw Water Storage Tank to 300,000 gallons from 1.8 million gallons due to the decreased process water demand. Recycled water in the 1.8 million-gallon process water storage tank was to have had "sufficient capacity for 24 hours of plant operation at full load peak demand" (Section 7.14.1.4, AFC).

DATA REQUEST

88. How many hours of plant operation can the new capacity of the process water storage tank support should there be an interruption in water supply service (i.e. multiple pump failure)?

RESPONSE

The MLGS will have two 100 percent redundant well systems (i.e., pump and well). In the unlikely event that both well systems fail, backup water supply would be provided from the MLGS water storage tanks. The MLGS will have the following process water storage tanks:

- 0.3 million gallon raw water storage tank
- 0.3 million gallon service water storage tank
- 0.2 million gallon secondary evaporative cooler blend water storage tank

During periods of peak demand for electricity, the MLGS would most likely operate for up to 18 hours per day with online combustion turbine wash and evaporative cooling for the entire 18 hours. However, the service water system will most likely operate for up to 24 hours per day. The onsite water storage system would provide sufficient storage at full load peak demand for the MLGS to operate for 1.7 consecutive days assuming no flow from the wells, as shown in Table 88-1.

Table 88-1
Backup Water Supply

Operating Case	Days of Plant Operation with No Flow from Wells
Normalized Flow (annual average)	19.1
Peak Flow (process design basis)	1.7
Daily Average Flow (when dry bulb temperature is $\geq$ 79°F)	3.7

This analysis is based on synchronized tank draw-down of all water storage tanks. It is assumed that the tanks are 80 percent full at the start of the simulation when water supply is lost. Therefore, the relative total capacity of the process water storage tanks is 640,000 gallons at the start of the simulation.

The City of Antioch (City) has stated that it will supply water to the project as an alternative, primary source of water that could be used for all project purposes in lieu of onsite groundwater. The water would be supplied through the potable water connection that is already contemplated in the AFC. The change to the project design that is reflected in the amendment reduces the project's water use to a maximum of 50 acre-feet per year (AFY). This relatively small

maximum annual requirement could be supplied with City water without any adverse impacts to City water supplies or other users of City water. The source of City-supplied water is surface water of the Sacramento-San Joaquin Delta. As reported in the City's Urban Water Management Plan Update Report (City of Antioch, 2006), the City provides water service to approximately 100,000 customers whose collective water requirements amount to 7.1 billion gallons per year. With a maximum requirement of only 50 AFY, the MLGS would comprise less than 0.5 percent of the total annual water consumption by City users. Supplying the MLGS with City water would have a negligible increase in the City's total water service demand and would not result in any significant depletion or degradation of local water supplies.

Mirant Delta also recently announced that it has conditionally agreed to shut down and retire the CCPP at around the same time that the MLGS is scheduled to commence operations. The CCPP historically has used City water for various purposes. When the CCPP is retired, its use of City water will be eliminated. This reduction in water use can be expected to roughly offset the MLGS's use of City water, assuming that MLGS uses City water for all project purposes. Supplying the MLGS with City water therefore will have virtually no impact on the City's annual water service obligations. Mirant Marsh Landing requests that the use of City water as an alternative, primary supply of process water be authorized in a condition of certification.

If necessary, Mirant Marsh Landing may increase the storage capacity of the raw water storage tank to provide for firewater supply. This additional 0.2 million gallon reserved for firewater use would not affect the backup water supply storage.

Reference

City of Antioch, 2006. Urban Water Management Plan Update. Prepared by Brown and Caldwell, http://www.ci.antioch.ca.us/Environment/Water/UWMP.pdf (accessed on February 11, 2010). January.

BACKGROUND

Wastewater

Due to a modification of the process water supply source, Mirant proposes the use of a trailer-type treatment system to provide high quality water to the plant's Simple Cycle units. The treatment system would consist of a filtration trailer and an ion exchange (IX) trailer. The filtration trailer would remove suspended solids from the groundwater prior to treatment through the IX trailer, where the dissolved impurities would be removed. Once each trailer is considered "spent," it would be towed to a service center backwashing and rinse-down or regeneration, for the filtration or IX trailer, respectively. Fresh trailers would be brought onto the site with the removal of each "spent" trailer. Mirant suggests in the AFC Amendment that each of the trailers can provide treatment for approximately 24 hours of operation of one Simple Cycle unit, and that during peak operating times, the trailers would need to be exchanged after approximately one day.

DATA REQUEST

89. Provide an estimate for the number of days per year MLGS is expected to replace the treatment trailers.

RESPONSE

Based on maximum dispatch during the year, and assuming that all four units operate together, treatment trailers would be replaced 71 days per year.

DATA REQUEST

90. Identify the licensed company that will be supplying and operating the trailers on-site and the facility location for backwashing and preparing the treatment trailers.

RESPONSE

There are several licensed companies that can supply the water treatment trailers. Representative companies providing these services include:

- GE Infrastructure Water and Process Technologies (www.gewater.com)
  Mobile Trailer Facility Location – Milpitas (North of San Jose)
- Water and Power Technologies
  Mobile Trailer Facility Location(s) – Salt Lake City, UT
- Siemens Water Technologies Group (www.water.siemens.com)
  Mobile Trailer Facility Location(s) – San Jose and Fontana (East of Los Angeles)
- AVANTech Incorporated **(**www.avantechinc.com/wtmobile.php)
  Mobile Trailer Facility Location – Los Angeles County

Mirant Marsh Landing will select the company based on competitive bidding during the procurement for the MLGS. Mirant Marsh Landing will operate the MLGS water treatment system, which includes the treatment trailers.

BACKGROUND

The modification to the process water supply source also alters the previous wastewater discharge plans for the MLGS site. Wastewater will now discharge directly to a City of Antioch sanitary sewer line along Wilbur Avenue.

DATA REQUEST

91. Please provide a will-serve letter from the City of Antioch providing confirmation that they will allow the discharge of MLGS process wastewater into their sanitary sewer system.

RESPONSE

In a November 30, 2009 letter from the City of Antioch to CEC, the City stated that it would provide potable water and sewer collection services to the MLGS. Mirant Marsh Landing has requested a will-serve letter from the City of Antioch and will provide to Staff as soon as possible when it becomes available.

BACKGROUND

Construction

Arsenic, chromium, and nickel were found at the MLGS site via groundwater sampling in 2007 (WHPA, 2009). The depth to the groundwater table at the MLGS site ranges from 6 to 10 feet below ground surface (bgs) and dewatering would likely be required during the construction process.

DATA REQUEST

92. Please provide a detailed discussion of construction dewatering procedures.

RESPONSE

As described in Section 7.14.2.1 of the AFC, dewatering during construction may be required where excavation is below the groundwater table. To ensure proper disposal of dewatered groundwater, a dewatering procedure will be developed prior to excavation.

The procedure will focus on selecting and specifying dewatering and groundwater control systems appropriate for the scope of the task, taking into consideration all construction site water discharge constraints and environmental concerns, as well as safety. Uncontrolled or improperly controlled groundwater can, by hydrostatic pressure and seepage, cause heaving, or reduce the stability of excavation slopes or foundation soils, making them unsuitable to support construction activities. For these reasons, subsurface construction will not be attempted or permitted without appropriate control of the source. The procedure will also include maintenance and oversight requirements for the dewatering system that will include supervision by personnel skilled in the operation, maintenance, and replacement of system components, and any other work required to maintain the excavation in a dewatered condition. Any dewatering operations will be designed for continuous operation and sufficient in size and capacity as required to control ground and surface water flow into the excavation, allowing all work to be accomplished in the “dry” without interruption.

Prior to the start of any dewatering activity, the source of seepage, geological features of the area, existence of adjacent streams or bodies of water, perviousness of the soil, and recharge will be considered. The proximity to contaminated soils will be measured and the potential for any existing contamination at the site to reach the excavation will be evaluated.

Given the results of the evaluation, an appropriate method of dewatering will be determined (i.e., pumping, bailing, or well-pointing) to keep the trenches or pits entirely clear from water. All water removed from the trench will be conveyed in a proper manner to a suitable point of discharge and shall comply with applicable erosion and sediment control laws.

The quality of the groundwater dewatered from excavations, including requirements for water sampling, analysis, and analytical review, will also be addressed in the procedure. If there is any cause to believe that the groundwater dewatered from the excavation is contaminated or exceeds discharge standards set by permit conditions, analytical sampling will be required.

The dewatering plan will define discharge or collection and disposal options and the limitations due to volume, chemical analysis, and permit discharge limits. Such alternatives could include discharge to the existing retention basin on the CCPP property, use for dust control, infiltration, and/or evaporation in designated areas of the site. Prior to any surface discharge, Mirant Marsh Landing will obtain a Waste Discharge Requirement permit from the Central Valley Regional

Water Quality Control Board. Alternatively, water may be contained in temporary tanks and transported to a licensed facility for disposal. Prior to proceeding with any discharge, all appropriate regulatory agencies will be consulted and/or notified and all required special conditions or permit variance conditions will be met.

DATA REQUEST

93. Identify licensed facilities which will handle and dispose of hazardous substances.

RESPONSE

Licensed facilities that handle and dispose of hazardous substances were identified in AFC Section 7.13, Waste Management. Hazardous liquid waste (e.g., contaminated groundwater generated during dewatering activities during construction) could be disposed of at a Clean Harbors facility.

Technical Area: Waste Management
Author: Alvin Greenberg, Ph.D.

BACKGROUND

A Phase I Environmental Site Assessment (ESA) for the MLGS was prepared and submitted in the AFC and a Phase II ESA was prepared for the entire Contra Costa Power Plant (CCPP) property in 1998. Several areas on the project site and along the water pipeline route were identified in the Phase II ESA as areas with "remedial issues" due to total petroleum hydrocarbons (TPH) or arsenic in soil or groundwater at concentrations exceeding regulatory thresholds. The Phase II also included groundwater samples in locations to the north of the tank farm area of the project site across a channel of the river and above the northwest corner above the tank farm property, however, these samples were taken over ten years ago and none of the samples were located on the stretch of property directly between the river and Tanks 1 and 2. The PG&E Switchyard directly south and east of the project site is reported to have had two circuit breaker explosions in the late 1970s and the dielectric fluid released in the explosions may have contained polychlorinated biphenyls (PCBs) and possibly impacted soil and groundwater. The property is identified as an offsite REC because the proposed project site is adjacent to the switchyard and site soil and/or groundwater may have been impacted by the releases or by migration of impacted ground water. Also, while the Phase I ESA indicated that signs of contamination were not observed at the stormwater drains observed near the tank farm berms and in the construction yard, information was not provided regarding stormwater run-on/run-off routes and possible signs of contamination coming from offsite stormwater run-on. Additional investigation of the site is necessary to check for signs of contamination coming from offsite locations via stormwater run-on traversing or pooling on the project site.

Upon review of this data, both Energy Commission staff and DTSC agree that additional review and assessment of these areas is necessary to determine the level of impact and any remediation that may be required and to determine if contaminants are present and moving toward the river from the Fuel Tank Farm. Furthermore, the 1998 Health Risk Assessment is out-dated and inaccurate and cannot be used as a basis for determining site cleanup strategies, goals, or impacts to on-site or off-site receptors. Staff needs the results of additional sampling and analysis and a revised abbreviated HRA in order to properly assess the impacts on worker health and the off-site public posed by hazardous wastes present on this site.

DATA REQUEST

94. Please provide groundwater sampling and analysis on the property directly between the river and Tanks 1 and 2.

RESPONSE

Mirant Marsh Landing, LLC prepared a work plan that includes the requested groundwater sampling and analysis between the river and Tanks 1 and 2. The work plan was submitted to CEC on November 20, 2009. The summary report that includes the results of the sampling and analysis was submitted to CEC on January 15, 2010.

DATA REQUEST

95. Please provide a Sampling and Analysis Workplan (SAP Workplan), in abbreviated outline format, for PCBs in soil and groundwater in the areas of the project site nearest to and/or down-gradient from the locations of the switchyard circuit breaker explosions and associated releases of dielectric fluid.

Also, please provide the results of the sampling and analysis in tabular format showing all values and reporting non-detects in "less-than" values using the Method Detection Limit (MDL), the Reporting Limit (RL) or the Practical Quantitation Limit (PQL).

RESPONSE

Mirant Marsh Landing, LLC prepared a work plan that includes the requested sampling and analysis for polychlorinated biphenyls in soil and groundwater on the MLGS in the vicinity of the switchyard circuit breaker explosion locations. The work plan was submitted to CEC on November 20, 2009. The summary report that includes the results of the sampling and analysis was submitted to CEC on January 15, 2010.

DATA REQUEST

96. Please provide sampling and analysis of soils near the storm water drains that are located near the tank farm berms and in the construction yard.

RESPONSE

Mirant Marsh Landing, LLC prepared a work plan that address sampling an analysis of soils near the storm drains. The work plan was submitted to CEC on November 20, 2009. The summary report that includes the results of the sampling and analysis was submitted to CEC on January 15, 2010.

DATA REQUEST

97. Please provide an outline Human Health Risk Assessment (HRA) Workplan and a revised short-format HRA based upon data from samples obtained solely from the MLGS site footprint. Both existing data and new data should be used. The revised short-format HRA may be limited to tables showing calculation of the exposure point concentrations (EPCs) of all Chemicals of concern (COCs) using the Upper-Bound Confidence Limit (UCL) of the arithmetic mean as suggested by the U.S. EPA ProUCL program, exposure assumptions for all receptors, cancer risk, and Hazard Indices for acute and chronic non-cancer impacts. Receptors to assess include:

- ***the trenching and excavation worker during construction,***
- ***the off-site public during construction,***
- ***the on-site worker during operations,***
- ***the off-site commercial/industrial worker during operations, and***
- ***the off-site public during operations.***

RESPONSE

Mirant Marsh Landing, LLC prepared a work plan that addressed the Human Health Risk Assessment (HHRA) approach. The work plan was submitted to CEC on November 20, 2009. The summary report that includes the results of the HHRA was submitted to CEC on January 15, 2010.

DATA REQUEST

98. Please provide a revised abbreviated HRA that includes the following information:

a. The EPCs for all COCs found on the MLGS site;
b. A list of all exposure pathways and receptors assessed;
c. A table that provides all exposure input values for each receptor assessed;
d. A table that includes all physical parameters and toxicity values for all COCs assessed; and
e. A table showing the results for cancer risk, acute HI, and chronic HI by COC and by exposure pathway.

RESPONSE

Mirant Marsh Landing, LLC submitted the summary report that includes the results of the abbreviated HHRA in the requested format to CEC on January 15, 2010.

BEFORE THE ENERGY RESOURCES CONSERVATION AND DEVELOPMENT COMMISSION OF THE STATE OF CALIFORNIA
1516 NINTH STREET, SACRAMENTO, CA 95814
1-800-822-6228 – WWW.ENERGY.CA.GOV

APPLICATION FOR CERTIFICATION FOR THE MARSH LANDING GENERATING STATION

DOCKET NO. 08-AFC-3

PROOF OF SERVICE
(REVISED 11/30/2009)

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DECLARATION OF SERVICE

I, _Anne Connell, declare that on _February 11, 2010, I served and filed copies of the attached _Responses to Data Request Set 3. The original document, filed with the Docket Unit, is accompanied by a copy of the most recent Proof of Service list, located on the web page for this project at:
[http://www.energy.ca.gov/sitingcases/marshlanding/index.html]. The document has been sent to both the other parties in this proceeding (as shown on the Proof of Service list) and to the Commission's Docket Unit, in the following manner:

(*Check all that Apply*)

For service to all other parties:

__X__ sent electronically to all email addresses on the Proof of Service list;

__X__ by personal delivery or by depositing in the United States mail at San Francisco, California with first-class postage thereon fully prepaid and addressed as provided on the Proof of Service list above to those addresses **NOT** marked "email preferred."

AND

For filing with the Energy Commission:

_X___ sending an original paper copy and one electronic copy, mailed and emailed respectively, to the address below (***preferred method***);

OR

_____ depositing in the mail an original and 12 paper copies, as follows:

CALIFORNIA ENERGY COMMISSION

Attn: Docket No. 08-AFC-3
1516 Ninth Street, MS-4
Sacramento, CA 95814-5512

docket@energy.state.ca.us

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

ORIGINAL SIGNED