Petition for License Amendment

GWF Henrietta Combined-Cycle Power Plant

Data Responses Set 2

(Responses to Data Requests 12 through 22)

GWF Henrietta Peaker Plant (01-AFC-18C)

Submitted by

GWF®

With Technical Assistance by

CH2MHILL

February 2009

EY072008002SAC

GWF Henrietta Combined Cycle Power Plant

(01-AFC-18C)

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(Responses to Data Requests 12 through 22)

Submitted to

California Energy Commission

Submitted by

GWF Energy, LLC

February 2009

With Assistance from

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Introduction

Attached are GWF Energy LLC's responses to the California Energy Commission (CEC) staff's Data Requests numbered 12 through 22 – Air Quality for the GWF Henrietta Combined Cycle Power Plant Project (GWF Henrietta). The CEC staff served these data requests on January 20, 2009, as part of the discovery process for GWF Henrietta's License Amendment Application (01-AFC-18C). The responses are presented in the same order as the CEC staff presented them and numbered (12 through 22). New or revised graphics or tables are numbered in reference to the Data Request number. For example, the first table used in response to Data Request 13 would be numbered Table DR13-1. The first figure used in response to Data Request 13 would be Figure DR13-1, and so on.

Additional documents submitted in response to a data request (i.e., stand-alone documents) are found at the end of this Data Response submittal and are not sequentially page-numbered with the remainder of the document, though they may have their own internal page numbering system.

The Applicant looks forward to working cooperatively with CEC staff as GWF Henrietta proceeds through the License Amendment process. We trust that these responses address the staff's questions and remain available to have any additional dialogue the staff may require.

Air Quality (12–22)

Background: Emission Reduction Credits

In order to evaluate the air quality impacts from this project staff need to confirm the emission reduction credits (ERCs) that were surrendered for the Henrietta Peaker Project (HPP).

Data Request

12. Please confirm that the ERCs as listed in the May 5, 2001, HPP Staff Assessment plus May 7, 2001, Errata pages 75 through 81 were surrendered in 2001/2002, or if not please provide a modified ERC list that shows the ERCs that were surrendered along with information on:

    a. the location of reduction(s);

    b. the method of reduction; and,

    c. the date of reduction for each of the ERCs not evaluated in the 2001 staff assessment.

Response: The ERC certificates surrendered to the San Joaquin Valley Air Pollution Control District (SJVAPCD) for the HPP consisted of certificates that were part of the original Staff Assessment and certificates that were used as substitutes. Table DR12-1 identifies the final certificates that were surrendered for the HPP.

Detailed information regarding the ERCs used to offset emissions from the HPP is included in Attachment DR12-1.

TABLE DR12-1
ERC Certificates Surrendered for the HPP

Certificate #	2001 Staff Assessment	Location of Reduction	Method of Reduction	Date of Reduction
C-410-2	Yes	525 W. Third St. Hanford	Shutdown – NOx	5/7/2001
C-411-2	Yes	525 W. Third St. Hanford	Shutdown – NOx	5/7/2001
C-412-2	Yes	525 W. Third St. Hanford	Shutdown – NOx	5/7/2001
S-1615-2	Yes	Elk Hills , Section: 35 Township: 30S Range: 23E	Retrofit – NOx	9/13/2001
S-1673-1	Yes	20807 Stockdale Hwy, Bakersfield	Shutdown – VOC	11/7/2001
C-445-5	Yes	525 W. Third St. Hanford	Shutdown – SOx	11/7/2001
C-413-5	Yes	525 W. Third St. Hanford	Shutdown – SOx	5/7/2001
C-392-5	Yes	525 W. Third St. Hanford	Shutdown – SOx	11/21/2000

Background: Offset Proposal – Interpollutant Offset Ratios

The applicant has proposed the use of interpollutant offsets to show that the emission reduction credits already surrendered for the peaker project are sufficient to offset the amended combined cycle project's annual emissions. Staff needs more information on the proposed interpollutant offset ratios (NOx for VOC and NOx for PM10/PM2.5) to complete the project's mitigation proposal assessment.

Data Request

13. Please provide documentation from the SJVAPCD regarding interpollutant offset ratios they would currently recommended for the project area, as follows:

    a. NOx for VOC

    b. NOx for PM10/PM2.5

Response: Refer to Attachment DR-13-1 for documentation from Sierra Research regarding interpollutant offset ratios recommended for the project.

Background: Construction Emissions Calculation – Vehicle Class

The onsite and offsite emissions calculations for on-road vehicles appear to have used incorrect vehicle classes and the offsite emissions do not include paved road dust calculations. Staff needs the applicant to correct any emission calculation errors.

Data Request

14. a. Please verify the classification of offsite delivery trucks, onsite water truck and concrete pump truck as a Heavy Heavy Duty Truck (HHDT) vehicle class, and

    b. Update the emission calculations using the correct vehicle emission factors where applicable.

Response: Specific vehicle classifications for trucks used during construction are unknown at this time. Therefore, vehicle classifications for offsite delivery trucks, onsite water trucks, and concrete pump truck were assumed to range from Light Heavy Duty Trucks (LHDT) to HHDT. These classifications include vehicle weights ranging from 8,500 pounds to 60,000 pounds.

Emission factors used to estimate the offsite delivery trucks, onsite water truck, and concrete pump truck emissions in the October 2008 License Amendment were based on the EMFAC2007 emission factors for medium duty trucks (MDT). Since specific vehicle classifications for trucks used during construction are unknown at this time and emission factors for HHDT are higher than MDT, a revised calculation has been prepared using HHDT EMFAC2007 emission factors. The revised calculation results are presented in Table DR14-1. Based on a comparison of the Petition for License Amendment emissions to the revised annual emissions, the use of HHDT emission factors would result in a minimal

increase in NOx, CO, VOC, SOx, PM_{10}, and $PM_{2.5}$ emissions as compared to the use of MDT emission factors (Note: offsite PM_{10} and $PM_{2.5}$ emissions also include paved road dust as provided in response to DR-15 below.) Detailed emission calculations are provided in Attachment DR14-1.

TABLE DR14-1
Range of Annual Construction Emission Estimates for GWF Henrietta [a]

Construction Emission Source	Emissions (tons/yr)					
	NO_x	CO	VOC [b]	SO_x	PM_{10}	$PM_{2.5}$
AFC Amendment Table 3.1-2 - Onsite Emissions [c, d]	10.5	6.1	1.7	0.012	2.8	0.9
AFC Amendment Table 3.1-2 - Offsite Vehicle Emissions	0.10	0.42	0.014	0.00067	0.0055	0.0027
Maximum Total (tons/yr)	**10.6**	**6.5**	**1.8**	**0.012**	**2.8**	**0.9**
Revised (HHDT) Onsite Emissions c, d	10.7	6.2	1.8	0.012	2.8	0.9
Revised (HDDT) Offsite Vehicle Emissions e	1.3	0.51	0.071	0.0018	0.76	0.13
Revised Maximum Total (tons/yr)	**12.0**	**6.7**	**1.9**	**0.014**	**3.6**	**1.0**

[a] Emission factors used to estimate offsite delivery trucks, onsite water truck, and concrete pump truck emissions in the October 2008 License Amendment were based on the EMFAC2007 emission factors for MDT. A revised calculation was prepared using the EMFAC2007 MDT and HHDT emission factors to evaluate the potential range of emissions from GWF Henrietta.

[b] Emission factors in URBEMIS and EMFAC are listed as reactive organic gases (ROG). For this analysis, it is assumed ROGs are equivalent to VOCs.

[c] Fugitive dust and construction equipment exhaust emissions were estimated using URBEMIS2007 v. 9.2.4 emission factors.

[d] Onroad exhaust emissions were estimated using EMFAC2007 v. 2.3 emission factors. Onroad emissions include emissions from re-entrained road dust. Re-entrained road dust emissions were estimated using AP-42, Ch. 13.2.1 (EPA, 2006).

[e] Offsite vehicle emissions include emissions from paved road dust. Paved road dust emissions were estimated using AP-42, Ch. 13.2.1 (EPA, 2006).

Data Request

15. Please include an estimate of the paved road dust PM10 and PM2.5 emissions in the offsite emission totals.

Response: Emission calculations for offsite delivery trucks and construction worker commutes were revised to include paved road dust emissions. Paved road dust emission factors were estimated using AP-42, Section 13.2.1. Paved road dust PM_{10} and $PM_{2.5}$ emissions are included in Table DR14-1. Detailed emission calculations are included in Attachment DR14-1.

Background: Construction Greenhouse Gas Emissions

The Amendment Petition does not include an estimate for construction related greenhouse gas emissions (GHG.) Staff needs this estimate to complete the greenhouse gas analysis for the project.

Data Request

16. Please provide calculations for the project construction greenhouse gas emissions in CO2-equivalent tons for the entire construction period, and include estimates of total fuel use by type of fuel.

Response: GHG emissions from construction activities are presented in Table DR16-1. Construction equipment emissions were estimated using emission factors from the California Climate Action Registry (CCAR) General Reporting Protocol (GRP) (version 3.0) and fuel consumption rates from the OFFROAD model. Vehicle emissions (trucks and worker commutes) were estimated using emission factors from the CCAR GRP (version 3.0) and United States Environmental Protection Agency (EPA) fuel economy values. Detailed calculations are included in Attachment DR16-1.

The estimated total fuel use during construction would be 195,082 gallons of diesel and 4,297 gallons of gasoline. Fuel use was estimated assuming all construction equipment, onsite trucks, and delivery trucks would be diesel fueled and all the construction worker vehicles would be gasoline fueled. Construction equipment fuel consumption rates were obtained from the OFFROAD model. Vehicle fuel use was estimated using the EPA fuel economy values.

TABLE DR16-1
GHG Emissions Estimates for GWF Henrietta Construction Activities

	GHG Emissions (metric tons)			
	CO_2	CH_4	N_2O	CO_2 Equivalent
Total (metric tons)	2,025	0.2	0.03	2,040

Background: Operating Emissions – Modeling Assumptions

The derivation of the modeled emission values presented in Table C3-5 is not clear and there appear to be errors in the values. Staff needs additional information to assess the applicant's operations modeling analysis.

Data Request

17. a. Please provide the specific operating assumptions, in particular the number of startups and shutdowns assumed.

    b. Provide the explicit calculations used to derive the hourly and annual emissions values provided in Table C3-5.

Response: The dispersion modeling emission rates presented in Table C3-5 of the Petition for License Amendment were based on the most conservative emission rates for each averaging period, which may or may not have included a startup or shutdown. For example, the hourly SO_2 and $PM_{10/2.5}$ emission rates would be greater during steady state operations than during a startup or shutdown. Therefore, the SO_2 and $PM_{10/2.5}$ emission rates represent the maximum hourly steady state emissions provided by the turbine vendor. The maximum 1-hour emission rate was also used to conservatively estimate the 3-, 8-, and

24-hour concentrations regardless of whether or not the maximum 1-hour emission rate would be maintained for 3, 8, or 24 hours. For example, the maximum 1-hour emission rate for CO was assumed to occur for eight consecutive hours even though the facility is not expected to include a start-up for 8 consecutive hours.

Table DR17-1 presents the operating assumptions, including the startup and shutdown assumptions, for each pollutant and averaging period.

TABLE DR17-1
Assumptions Used to Estimate the Maximum Modeled Emission Rates, GWF Henrietta

	Simple Cycle	Combined Cycle
1-Hour NOx emission rate	Based on one simple-cycle startup event (i.e., 10 minutes) plus 50 minutes of steady-state operation	Based on one simple-cycle startup (i.e., 10 minutes) plus 50 minutes of a 1-hour combined-cycle startup event
1-Hour and 8-Hour CO emission rate	Based on one simple-cycle startup event (i.e., 10 minutes) plus 50 minutes of steady-state operation	Based on one simple-cycle startup (i.e., 10 minutes) plus 50 minutes of a 1-hour combined-cycle startup event
1, 3, and 24-Hour SO_2 emission rate	Based on 1 hour of normal operation (i.e., the startup and shutdown emission rates were less than the steady state operating condition)	Based on 1 hour of normal operation (i.e., the startup and shutdown emission rates were less than the steady state operating condition)
24-Hour $PM_{10/2.5}$ emission rate	Based on 1 hour of normal operation (i.e., the startup and shutdown emission rates were less than the steady state operating condition)	Based on 1 hour of normal operation (i.e., the startup and shutdown emission rates were less than the steady state operating condition)
Annual NOx, $PM_{10/2.5}$, and SO_2 emission rate	Based on 325 simple- and combined-cycle startups, 325 simple- and combined-cycle shutdowns, and 8,000 hours of steady-state operation	Based on 325 simple- and combined-cycle startups, 325 simple- and combined-cycle shutdowns, and 8,000 hours of steady-state operation

Notes: The elapsed time for a simple cycle and/or combined cycle startup event is 10 minutes and 60 minutes, respectively.

Table DR17-2 provides a summary of the calculations used to estimate the hourly and annual emission rates presented in Table C3-5 of the Petition for License Amendment.

TABLE DR17-2
Example Calculations Used to Estimate Maximum Modeled Emission Rates, GWF Henrietta

	Simple Cycle	Combined Cycle
1-hour NOx emission rate	(7.7 lbs NOx per event) + (50 min/60 min * 6.1 lb/hr NOx simple cycle steady state ops) = **12.78 lb/hr**	(7.7 lbs NOx per simple cycle event) + (50 min/60 min * 6.1 lb/ NOx combined cycle startup event) = **12.78 lb/hr**
1-hour and 8-hour CO emission rate	(7.7 lbs CO per event) + (50 min/60 min * 3.1 lb/hr NOx simple cycle steady state ops) = **10.28 lb/hr**	(7.7 lbs CO per simple cycle event) + (50 min/60 min * 1.8 lb/ CO combined cycle startup event) = **9.20 lb/hr**
1-, 3-, and 24-hour SO_2 emission rate	NA	NA
24-hour $PM_{10/2.5}$ emission rate	NA	NA
Annual NOx, $PM_{10/2.5}$, and SO_2 emission rate	Sample Calculation for NOx: 2,503 lbs (simple cycle startup) + 2502 lbs (simple cycle shutdown) + 8,235 lbs (simple cycle steady state) + 1,525 lbs (combined cycle hot startup) + 305 lbs (combined cycle warm start) + 153 lbs (combined cycle cold start) + 676 lbs (combined cycle shutdown) + 22,610 lbs (combined cycle steady state) = 38,508 lbs/year divided by 8,760 hours = **4.396 lb/hr**	Sample Calculation for NOx: 2,503 lbs (simple cycle startup) + 2502 lbs (simple cycle shutdown) + 8,235 lbs (simple cycle steady state) + 1,525 lbs (combined cycle hot startup) + 305 lbs (combined cycle warm start) + 153 lbs (combined cycle cold start) + 676 lbs (combined cycle shutdown) + 22,610 lbs (combined cycle steady state) = 38,508 lbs/year divided by 8,760 hours = **4.396 lb/hr**

Notes:
The elapsed time for a simple cycle and/or combined cycle startup event is 10 minutes and 60 minutes, respectively.
NA = emission rates were based on the maximum one hour turbine emission rate.

Data Request

18. Please identify why the short-term NOx emissions values for simple-cycle and combined-cycle operation shown in Table C3-5 are identical even though the normal operating and startup/shutdown emissions are lower for combined cycle operation, and please identify if similar issues occur for other pollutants and averaging times.

Response: Short-term NOx emission rates for simple-cycle and combined-cycle operation shown in Table C3-5 of the Petition for License Amendment are identical because of the similarity in the values of two different variables used to calculate the emission rates. Specifically, inclusion of 50 minutes of the steady state NOx emission rate at 6.1 lbs/hr in the worst case 1-hour simple cycle NOx emission rate, matches the inclusion of 50 minutes of the 6.1 lb/60 minute combined cycle startup event emission rate for the worst case 1-hour combined cycle NOx emission rate. The similarity is unique to NOx because NOx is the only pollutant where the resulting value of 50 minutes of simple cycle steady state operation matches the value of 50 minutes of combined cycle startup event data. For example, the modeled CO emission rates in Table C3-5 from the Petition for License Amendment are different because the simple cycle steady state emission rate of 3.1 lbs/hr does not match the combined cycle startup event emission rate of 1298.8 lbs/event (See Table DR17-2).

It should also be noted that the simple cycle turbine performance guarantees for NOx were revised after the dispersion modeling had been conducted. Therefore, the results of the modeling presented in the Petition for License Amendment conservatively estimate the predicted concentrations based on a simple cycle NOx BACT level of 3.6 ppm (or 6.1 lb/hr/turbine) compared to the revised performance guarantee of 2.5 ppm (or 3.4 lb/hr/turbine).

Background: Cumulative Impacts

The Amendment Petition mentions that the Kings County Planning Department was contacted about proposed or foreseeable developments in the site area. However, the SJVAPCD should also have been contacted to determine whether any new stationary sources were recently built or are proposed to be built. Staff requests that the applicant make this request to confirm that either no cumulative modeling analysis is necessary or that additional cumulative impact assessment may be necessary for this project.

Data Request

19. Please provide a list of recently built or proposed stationary source projects, within a six mile radius of the project site, from the SJVAPCD for the project area.

Response: A list of stationary emission sources within a six-mile radius of GWF Henrietta is provided in Attachment DR19-1A.

GWF Energy contacted SJVAPCD to identify potential cumulative air quality impact sources (both stationary sources and Environmental Impact Report sources). The SJVAPCD list of stationary sources, dated January 15, 2009, and provided in Attachment DR19-1, includes 25 facilities that have requested or received approximately 40 Authority to Construct permits within 6 miles of GWF Henrietta.

The list was reviewed and it was determined that many of the sources would be excluded from a cumulative impact modeling analysis because they are either: VOC sources (there are no VOC ambient air quality standards), equipment shutdowns (emission decreases), or other permitting actions resulting in no net increase in air emissions (e.g., rule compliance, permit renewals, or replacement/upgrading of existing systems).

The list of proposed exclusions was submitted to SJVAPCD for review. SJVAPCD confirmed on January 26, 2009 that the list of excluded sources was appropriate and that the remaining sources listed in Attachment DR19-1B either had no emission increase or the annual emission increases would be less than 2 tons per year of NOx, CO, SOx, PM_{10}, and $PM_{2.5}$. In addition, a data request received for the GWF Hanford Petition for License Amendment indicated that cumulative sources with an increase less than 5 tons per year could be omitted from the cumulative dispersion modeling analysis. Therefore, since the annual increases for all sources listed by the SJVAPCD within 6 miles would be less than 2 tons per year, the cumulative impacts from the sources listed in Attachment DR19-1B are expected to be less than significant, and a cumulative dispersion modeling analysis would not be required.

TABLE DR19-1
GWF Henrietta – SJVAPCD Sources Within a 6 Mile Radius

Facility ID	Facility Name	Date Received	Permit Type	Description	Information Received from SJVAPCD
249	Central Valley Cabinet Mfg.	4/21/2006	ATC	new dust collector	Increase ≤ 0.5 tons-PM10/year
657	Island Cooperative Gin Inc	3/15/2006	ATC	modify gin emission limits	No Emissions Increase
1163	SK Foods Inc	6/9/2008	ATC	install a seasonal 99.9 MMBtu/hr boiler	Increase < 0.8 tons/year for: NOX, CO, PM10 and SOX
1163	SK Foods Inc	6/1/2006	ATC	modify boiler and engine	Increase < 1.5 tons/year for: NOX, CO, PM10 and SOX
2794	City of LeMoore	2/8/2006	ATC	internal combustion engine (ICE)	No Emissions Increase, modification of 2 emergency IC engines to comply with Rule 4702
3346	Verizon Wireless - Lemoore	5/27/2008	ATC	tier 3 diesel ICE	Increase < 10 lb/year increase in NOX and CO emissions
3955	Leprino Foods Company	9/5/2008	ATC	install lactose permeate dryer system	Increase ≤ 2.0 tons-PM10/year
3955	Leprino Foods Company	11/13/2008	ATC	expansion of cheese manufacturing operations	Emissions Undefined (Project in progress, not yet finalized)
3955	Leprino Foods Company	1/25/2008	ATC	modify boiler units 1,2 and 3, for common heat exch.	No Emissions Increase
3955	Leprino Foods Company	10/16/2006	ATC	reinstate LPG as backup for boilers 1,2,3, dryer 4	Increase < 0.2 tons/year SOX
4130	HG Foods LCC	1/14/2008	ATC	charbroiler	Increase < 0.3 tons/year for: NOX and PM10
4148	BK Sydran Ventures	9/4/2007	ATC	charbroiler	No emissions increase, replaced by next project below.
4148	BK Sydran Ventures	1/30/2008	ATC	increase throughput	Increase < 0.1 tons/year for: NOX and PM10
7106	Associated Soils Analysis, Inc	10/10/06	ATC	soil remediation w/ elec. cat oxidizer	VOC Source

Background: Air Quality Permit/Determination of Compliance

A Determination of Compliance (DOC) analysis from the SJVAPCD will be needed for staff's analysis. Staff will need to coordinate with the applicant and District to keep apprised of any air quality issues determined by the District during their permit review.

Data Request

20. Please provide copies of any official submittals and correspondence to or from the District within 5 days of their submittal to or their receipt from the District.

Response: An SJVAPCD letter dated 9/5/08 regarding the determination that the application was deemed complete is provided as Attachment DR20-1A. An SJVAPCD letter dated 9/5/08 regarding potential federal PSD applicability is provided as Attachment DR20-1B.

Background: Ammonia Slip Concentration

Staff is unclear on what the applicant is proposing for an ammonia slip concentration limit during simple cycle operation versus what they are proposing during combined cycle operation. A review of this project's amendment request versus the similar Hanford project amendment request shows different assumptions.

Data Request

21. Please provide the proposed ammonia slip concentration limit for simple cycle operation, and the corresponding ammonia mass emission rate in lbs/hour.

Response: The ammonia slip concentration expected for the simple cycle operation is 10 ppm and the corresponding ammonia mass emission rate is 6.2 lbs/hour.

22. Please provide the proposed ammonia slip concentration limit for combined cycle operation, and the corresponding ammonia mass emission rate in lbs/hour.

Response: The proposed ammonia slip concentration limit for combined cycle operation is 5 ppm and the corresponding ammonia mass emission rate is 3.1 lbs/hour.

ATTACHMENT DR12-1

ERCs Used to Offset Emissions from the HPP

Henrietta Peaker Plant (HPP)

Project Emissions (2xLM-6000)	**Qtr 1** (lbs/qtr)	**Qtr 2** (lbs/qtr)	**Qtr 3** (lbs/qtr)	**Qtr 4** (lbs/qtr)	**Total** (lbs/yr)
NOx	24,370	25,140	25,140	24,370	99,020
VOC	1,388	1,456	1,456	1,388	5,688
PM-10	13,200	13,200	13,200	13,200	52,800
Corrected Project Emissions from Source Test Results (Cond. 16)	8,000	8,000	8,000	8,000	32,000
SO2	1,320	1,320	1,320	1,320	5,280
CO	10,530	11,300	11,300	10,530	43,660

(2) Project Emissions include 300 startup/shutdown events

Emission Reduction Credits

Nox	**Location of Reduction**					
	SJVUAPCD NSR ERC Offset Threshold	**5,000.0**	**5,000.0**	**5,000.0**	**5,000.0**	**20,000**
C-410-2	525 W. Third St., Hanford	22,510.0	0.0	0.0	5,708.0	
C-411-2	525 W. Third St., Hanford	5,205.0	4,562.0	4,562.0	7,991.0	
C-412-2	525 W. Third St., Hanford	0.0	0.0	0.0	1,915.0	
S-1615-2	Elk Hills , Section:35 Township: 30S Range: 23E	20,012.0	39,890.0	40,329.0	40,329.0	
C-410-2	Distance Ratio 1.5	15,006.7	0.0	0.0	3,805.3	
C-411-2	Distance Ratio 1.5	3,470.0	3,041.3	3,041.3	5,327.3	
C-412-2	Distance Ratio 1.5	0.0	0.0	0.0	1,276.7	
S-1615-2	Distance Ratio 1.5	893.3	17,098.7	17,098.7	8,960.7	
	Total	**19,370.0**	**20,140.0**	**20,140.0**	**19,370.0**	**79,020.0**
S-1615-2	ERC's remaining on Certificate	18,672.1	14,242.0	14,681.0	26,888.0	

VOC	**Location of Reduction**					
S-1673-1	20807 Stockdale Hwy, Bakersfield	2,728.0	2,626.0	2,626.0	2,728.0	
S-1673-1	Distance Ratio 1.5 (Balance issued as S-2027-1)	1,388.0	1,456.0	1,456.0	1,388.0	
	Total	**1,388.0**	**1,456.0**	**1,456.0**	**1,388.0**	**5,688.0**
S-2027-1	ERC's remaining from Certificate S-1673-1	1,340.0	1,170.0	1,170.0	1,340.0	

PM-10**	**Location of Reduction**					
C-445-5	525 W. Third St., Hanford	21,101.0	10,814.0	6,298.0	14,572.0	
C-413-5	525 W. Third St., Hanford	10000.0	10,000.0	10000.0	10,000.0	
C-445-5	Distance Ratio 1.5/Interpollutant Ratio 1.4 = 1.9	8,000.0	5,691.6	3,314.7	7,669.5	
C-413-5	Distance Ratio 1.5/Interpollutant Ratio 1.4 = 1.9	0.0	2,308.4	4,685.3	330.5	
	Total	**8,000.0**	**8,000.0**	**8,000.0**	**8,000.0**	**52,800**
C-445-5	ERC's remaining on Certificate	5901.0	0.0	0.0	0.0	
C-413-5	ERC's remaining on Certificate	10,000.0	4,386.0	1097.9	9,372.1	

SO2	**Location of Reduction**					
C-413-5	525 W. Third St.,Hanford	10000.0	4386.0	1097.9	9372.1	
C-392-5	525 W. Third St.,Hanford	2500.0	2500.0	2500.0	2500.0	
C-413-5	Distance Ratio 1.5	1320.0	1320.0	731.9	1320.0	
C-392-5	Distance Ratio 1.5	0.0	0.0	882.2	0.0	
	Total	**1,320.0**	**1,320.0**	**1,320.0**	**1,320.0**	**5,280.0**
C-413-5	ERC's remaining on Certificate	8020.0	2406.0	0.0	7392.1	
C-392-5	ERC's remaining on Certificate	2500.0	2500.0	1176.8	2500.0	

** PM-10 offset with SO2 at ratio of 1.4:1 (see analysis attached in Appendix)

ATTACHMENT DR13-1

HPP Emission Reduction Credits

March 7, 2008

sierra research

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Memo to: Doug Wheeler
GWF Power Systems

From: Gary Rubenstein

Subject: Interpollutant Offset Ratio (NOx:PM_{10}) for Tracy, CA

This is in response to your request for calculation of an appropriate interpollutant offset ratio (NOx for PM_{10}) for the proposed combined cycle upgrade of the Tracy Peaker Project. The San Joaquin Valley Air Pollution Control District (District) has used a methodology based on Chemical Mass Balance (CMB) and rollback modeling to determine appropriate interpollutant offset ratios in past permit reviews. Using the District's methodology, we have calculated an interpollutant offset ratio of 2.38:1. Under the District's rules, this offset ratio would be multiplied by the appropriate distance adjustment ratio to obtain an overall offset ratio.

The analysis that leads us to the conclusion is attached to this memorandum.

Calculation of Interpollutant Offset Ratio

The interpollutant offset ratio is the number of tons of nitrogen oxide (NOx) emission reductions that would result in the same reduction in ambient PM_{10} concentration as one ton of direct PM_{10} emissions.

The methodology used to develop an interpollutant offset ratio for NOx and PM_{10} uses Chemical Mass Balance (CMB) and rollback modeling from the San Joaquin Valley Air Pollution Control District (SJVAPCD) draft 2007 PM_{10} plan. This methodology was provided by Jim Sweet of the SJVAPCD's Planning Division for use in previous applications.

The data used in this analysis were taken from the District's modeling results for the Modesto 14th Street monitoring station and emission inventories for Stanislaus County. The Modesto station, located 30 miles from Tracy, is the closest station for which all necessary data are available.

The analysis calculates the contribution from subregional industrial combustion-related PM_{10} emissions to PM_{10} concentrations on a PM_{10} episode day, and compares that to the contribution from subregional NOx emissions to ammonium nitrate concentrations. The analysis determines the increase in episode PM_{10} concentration (in ug/cu m) that results from a ton of direct industrial combustion-related PM_{10} emissions, and the increase in episode PM_{10} concentration (in ug/cu m) that results from a ton of NOx emissions. The ratio of NOx impact to direct PM_{10} impact is the interpollutant offset ratio.

The analysis begins by calculating the ambient concentration of PM_{10} attributed to industrial combustion. The contribution from industrial combustion makes up part of the "vegetative burning" category in the CMB modeling. The industrial component of this category has been estimated to be 30% based on the literature, including the EPA Criteria Document for PM_{10}. Because we are trying to determine the relative benefits of local emission reductions, the contribution from natural sources and transport from outside the region is subtracted from this result. The SJVAPCD estimates that these sources contribute 20% of the measured concentration. According to the rollback modeling, local sources within the smallest area of influence contribute 50% of the measured PM_{10}, after excluding transport and natural sources. The balance is contributed by regional and subregional sources.

The emission inventory associated with the rollback analysis has been provided by the SJVAPCD in the PM_{10} plan. The inventory includes the local component (L1), a broader local component (L2), the subregional component (Sr = County), and the regional component (R = San Joaquin Valley). The concentration calculated by the methodology described in the previous paragraph corresponds to the local component (L1) of the emission inventory.

The local impact is obtained by dividing local concentration by local emissions.
The relative impact (NOx: PM_{10}) is obtained by dividing the local impact for direct PM_{10} by the local impact for NOx). This relative impact is the interpollutant offset ratio.

PM10 Interpollutant Offset Ratio Analysis
Tracy

PM10

	Notes	Units	Estimate
"Vegetative Burning" Total	1	$\mu g/m^3$	30.16
Industry Component (30%)	2	$\mu g/m^3$	9.05
Transport/Background (20%)	3	$\mu g/m^3$	1.81
Industry minus Background		$\mu g/m^3$	7.24
Local Contribution	4	$\mu g/m^3$	3.62
Organic Carbon PM10 Inventory - Modesto Local (L1)	5	ton/day	4.28
Local Impact		$\mu g/m^3$ per ton	0.85

Nitrate

Ammonium Nitrate	6	$\mu g/m^3$	83.88
Transport/Background (20%)	7	$\mu g/m^3$	4.20
Ammonium Nitrate minus Background		$\mu g/m^3$	79.68
Local Contribution	8	$\mu g/m^3$	39.84
NOx Inventory - Modesto Local (L1)	9	ton/day	112.18
Local Impact		$\mu g/m^3$ per ton	0.36
Tons of NOx to Equal Effect of 1 ton PM10	10		2.38

1. Per SJVAPCD and CARB, PM10 emissions from stationary industrial combustion sources are included in the Vegetative Burning category from Chemical Mass Balance modeling performed for the SJVAPCD 2007 PM10 Attainment Plan (Modesto 14th Street station)
2. Per SJVAPCD, 30% of Vegetative Burning category is attributed to stationary industrial combustion sources.
3. Per SJVAPCD, contribution from transport and natural sources is estimated to be 20% of net concentration after previous adjustment
4. Per SJVAPCD, contribution from sources within the local area (L1) is 50% of net concentration after previous adjustments
5. Organic carbon PM10 inventory for portion of Stanislaus County that contributes to this monitoring location (L1); from 2007 PM10 Planning inventory
6. Ammonium nitrate category from Chemical Mass Balance modeling performed for the SJVAPCD; from 2007 PM10 Planning inventory
7. Per SJVAPCD, regional background of ammonium nitrate is estimated to be 4.2 mg/m3.
8. Per SJVAPCD, contribution from sources within the local area (L1) is 50% of net concentration after previous adjustments
9. NOx inventory for Stanislaus County that contributes to this monitoring location (L1); from 2007 PM10 Planning inventory
10. PM10 Local Impact divided by Ammonium Nitrate Local Impact.

ATTACHMENT DR14-1

Construction Emission Calculations

Table C1.1g: Onsite Power Plant Construction Motor Vehicle CO Emissions

Vehicle Type	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15
Onsite Flatbed Truck	0.044	0.044	0.089	0.089	0.089	0.089	0.133	0.133	0.133	0.133	0.133	0.133	0.089	0.044	0.044
Onsite Fuel/Lube Truck	0.089	0.089	0.089	0.089	0.089	0.133	0.133	0.133	0.133	0.133	0.133	0.133	0.133	0.089	0
Onsite Water Truck	0.444	0.444	0.444	0.444	0.444	0.444	0.444	0.444	0.444	0.444	0.444	0.444	0.444	0.444	0
Onsite Concrete Pump Truck	0	0.089	0.133	0.133	0.089	0.044	0.044	0	0	0	0	0	0	0	0
Total (lbs/day)	**0.58**	**0.67**	**0.75**	**0.75**	**0.71**	**0.71**	**0.75**	**0.71**	**0.71**	**0.71**	**0.71**	**0.71**	**0.67**	**0.58**	**0.311**
Onsite Flatbed Truck	1.15	1.15	2.31	2.31	2.31	2.31	3.46	3.46	3.46	3.46	3.46	3.46	2.31	1.15	1.15
Onsite Fuel/Lube Truck	2.31	2.31	2.31	2.31	2.31	3.46	3.46	3.46	3.46	3.46	3.46	3.46	3.46	2.31	1
Onsite Water Truck	11.54	11.54	11.54	11.54	11.54	11.54	11.54	11.54	11.54	11.54	11.54	11.54	11.54	11.54	6
Onsite Concrete Pump Truck	0	2.31	3.46	3.46	2.31	1.15	1.15	0	0	0	0	0	0	0	0
Total (lbs/month)	**15.00**	**17.31**	**19.62**	**19.62**	**18.47**	**18.47**	**19.62**	**18.47**	**18.47**	**18.47**	**18.47**	**18.47**	**17.31**	**15.00**	**8.08**

Table C1.1h: Onsite Power Plant Construction Motor Vehicle VOC Emissions

Vehicle Type	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15
Onsite Flatbed Truck	0.0224	0.0224	0.0448	0.0448	0.0448	0.0448	0.0672	0.0672	0.0672	0.0672	0.0672	0.0672	0.0448	0.0224	0.0224
Onsite Fuel/Lube Truck	0.0448	0.0448	0.0448	0.0448	0.0448	0.0672	0.0672	0.0672	0.0672	0.0672	0.0672	0.0672	0.0672	0.0448	0
Onsite Water Truck	0.2239	0.2239	0.2239	0.2239	0.2239	0.2239	0.2239	0.2239	0.2239	0.2239	0.2239	0.2239	0.2239	0.2239	0
Onsite Concrete Pump Truck	0	0.0448	0.0672	0.0672	0.0448	0.0224	0.0224	0	0	0	0	0	0	0	0
Total (lbs/day)	**0**	**0.336**	**0.381**	**0.381**	**0.358**	**0.358**	**0.381**	**0.358**	**0.358**	**0.358**	**0.358**	**0.358**	**0.336**	**0.291**	**0.1567**
Onsite Flatbed Truck	0.582	0.582	1.164	1.164	1.164	1.164	1.746	1.746	1.746	1.746	1.746	1.746	1.164	0.582	0.582
Onsite Fuel/Lube Truck	1.164	1.164	1.164	1.164	1.164	1.746	1.746	1.746	1.746	1.746	1.746	1.746	1.746	1.164	1
Onsite Water Truck	5.820	5.820	5.820	5.820	5.820	5.820	5.820	5.820	5.820	5.820	5.820	5.820	5.820	5.820	3
Onsite Concrete Pump Truck	0	1.164	1.746	1.746	1.164	0.582	0.582	0	0	0	0	0	0	0	0
Total (lbs/month)	**7.57**	**8.73**	**9.89**	**9.89**	**9.31**	**9.31**	**9.89**	**9.31**	**9.31**	**9.31**	**9.31**	**9.31**	**8.73**	**7.57**	**4.074**

Table C1.1i: Onsite Power Plant Construction Motor Vehicle SOx Emissions

Vehicle Type	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15
Onsite Flatbed Truck	0.000077	0.000077	0.000154	0.000154	0.000154	0.000154	0.000231	0.000231	0.000231	0.000231	0.000231	0.000231	0.000154	0.000077	0.000077
Onsite Fuel/Lube Truck	0.000154	0.000154	0.000154	0.000154	0.000154	0.000231	0.000231	0.000231	0.000231	0.000231	0.000231	0.000231	0.000231	0.000154	0
Onsite Water Truck	0.000772	0.000772	0.000772	0.000772	0.000772	0.000772	0.000772	0.000772	0.000772	0.000772	0.000772	0.000772	0.000772	0.000772	0
Onsite Concrete Pump Truck	0	0.000154	0.000231	0.000231	0.000154	0.000077	0.000077	0	0	0	0	0	0	0	0
Total (lbs/day)	**0.00100**	**0.00116**	**0.00131**	**0.00131**	**0.00123**	**0.00123**	**0.00131**	**0.00123**	**0.00123**	**0.00123**	**0.00123**	**0.00123**	**0.00116**	**0.00100**	**0.000540**
Onsite Flatbed Truck	0.00201	0.00201	0.00401	0.00401	0.00401	0.00401	0.00602	0.00602	0.00602	0.00602	0.00602	0.00602	0.00401	0.00201	0.00201
Onsite Fuel/Lube Truck	0.00401	0.00401	0.00401	0.00401	0.00401	0.00602	0.00602	0.00602	0.00602	0.00602	0.00602	0.00602	0.00602	0.00401	0
Onsite Water Truck	0.02006	0.02006	0.02006	0.02006	0.02006	0.02006	0.02006	0.02006	0.02006	0.02006	0.02006	0.02006	0.02006	0.02006	0
Onsite Concrete Pump Truck	0	0.00401	0.00602	0.00602	0.00401	0.00201	0.00201	0	0	0	0	0	0	0	0
Total (lbs/month)	**0.0261**	**0.0301**	**0.0341**	**0.0341**	**0.0321**	**0.0321**	**0.0341**	**0.0321**	**0.0321**	**0.0321**	**0.0321**	**0.0321**	**0.0301**	**0.0261**	**0.01404**

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Table C1.1j: Onsite Power Plant Construction Motor Vehicle NOx Emissions

Vehicle Type	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15
Onsite Flatbed Truck	0.0741	0.0741	0.1483	0.1483	0.1483	0.1483	0.2224	0.2224	0.2224	0.2224	0.2224	0.2224	0.1483	0.0741	0.0741
Onsite Fuel/Lube Truck	0.1483	0.1483	0.1483	0.1483	0.1483	0.2224	0.2224	0.2224	0.2224	0.2224	0.2224	0.2224	0.2224	0.1483	0
Onsite Water Truck	0.7414	0.7414	0.7414	0.7414	0.7414	0.7414	0.7414	0.7414	0.7414	0.7414	0.7414	0.7414	0.7414	0.7414	0
Onsite Concrete Pump Truck	0	0.1483	0.2224	0.2224	0.1483	0.0741	0.0741	0	0	0	0	0	0	0	0
Total (lbs/day)	**0.964**	**1.112**	**1.260**	**1.260**	**1.186**	**1.186**	**1.260**	**1.186**	**1.186**	**1.186**	**1.186**	**1.186**	**1.112**	**0.964**	**0.5190**
Onsite Flatbed Truck	1.928	1.928	3.855	3.855	3.855	3.855	5.783	5.783	5.783	5.783	5.783	5.783	3.855	1.928	1.928
Onsite Fuel/Lube Truck	3.855	3.855	3.855	3.855	3.855	5.783	5.783	5.783	5.783	5.783	5.783	5.783	5.783	3.855	2
Onsite Water Truck	19.276	19.276	19.276	19.276	19.276	19.276	19.276	19.276	19.276	19.276	19.276	19.276	19.276	19.276	10
Onsite Concrete Pump Truck	0	3.855	5.783	5.783	3.855	1.928	1.928	0	0	0	0	0	0	0	0
Total (lbs/month)	**25.06**	**28.91**	**32.77**	**32.77**	**30.84**	**30.84**	**32.77**	**30.84**	**30.84**	**30.84**	**30.84**	**30.84**	**28.91**	**25.06**	**13.493**

Table C1.1k: Onsite Power Plant Construction Motor Vehicle PM_{10} Emissions

Vehicle Type	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15
Onsite Flatbed Truck	0.00495	0.00495	0.00990	0.00990	0.00990	0.00990	0.01485	0.01485	0.01485	0.01485	0.01485	0.01485	0.00990	0.00495	0.00495
Onsite Fuel/Lube Truck	0.00990	0.00990	0.00990	0.00990	0.00990	0.01485	0.01485	0.01485	0.01485	0.01485	0.01485	0.01485	0.01485	0.00990	0
Onsite Water Truck	0.04951	0.04951	0.04951	0.04951	0.04951	0.04951	0.04951	0.04951	0.04951	0.04951	0.04951	0.04951	0.04951	0.04951	0
Onsite Concrete Pump Truck	0	0.00990	0.01485	0.01485	0.00990	0.00495	0.00495	0	0	0	0	0	0	0	0
Total (lbs/day)	**0.0644**	**0.0743**	**0.0842**	**0.0842**	**0.0792**	**0.0792**	**0.0842**	**0.0792**	**0.0792**	**0.0792**	**0.0792**	**0.0792**	**0.0743**	**0.0644**	**0.03466**
Onsite Flatbed Truck	0.1287	0.1287	0.2575	0.2575	0.2575	0.2575	0.3862	0.3862	0.3862	0.3862	0.3862	0.3862	0.2575	0.1287	0.1287
Onsite Fuel/Lube Truck	0.2575	0.2575	0.2575	0.2575	0.2575	0.3862	0.3862	0.3862	0.3862	0.3862	0.3862	0.3862	0.3862	0.2575	0
Onsite Water Truck	1.2874	1.2874	1.2874	1.2874	1.2874	1.2874	1.2874	1.2874	1.2874	1.2874	1.2874	1.2874	1.2874	1.2874	1
Onsite Concrete Pump Truck	0	0.2575	0.3862	0.3862	0.2575	0.1287	0.1287	0	0	0	0	0	0	0	0
Total (lbs/month)	**1.674**	**1.931**	**2.189**	**2.189**	**2.060**	**2.060**	**2.189**	**2.060**	**2.060**	**2.060**	**2.060**	**2.060**	**1.931**	**1.674**	**0.9012**

Table C1.1l: Onsite Power Plant Construction Motor Vehicle $PM_{2.5}$ Emissions

Vehicle Type	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15
Onsite Flatbed Truck	0.00448	0.00448	0.00895	0.00895	0.00895	0.00895	0.01343	0.01343	0.01343	0.01343	0.01343	0.01343	0.00895	0.00448	0.00448
Onsite Fuel/Lube Truck	0.00895	0.00895	0.00895	0.00895	0.00895	0.01343	0.01343	0.01343	0.01343	0.01343	0.01343	0.01343	0.01343	0.00895	0
Onsite Water Truck	0.04475	0.04475	0.04475	0.04475	0.04475	0.04475	0.04475	0.04475	0.04475	0.04475	0.04475	0.04475	0.04475	0.04475	0
Onsite Concrete Pump Truck	0	0.00895	0.01343	0.01343	0.00895	0.00448	0.00448	0.00000	0	0	0	0	0	0	0
Total (lbs/day)	**0.0582**	**0.0671**	**0.0761**	**0.0761**	**0.0716**	**0.0716**	**0.0761**	**0.0716**	**0.0716**	**0.0716**	**0.0716**	**0.0716**	**0.0671**	**0.0582**	**0.03133**
Onsite Flatbed Truck	0.1164	0.1164	0.2327	0.2327	0.2327	0.2327	0.3491	0.3491	0.3491	0.3491	0.3491	0.3491	0.2327	0.1164	0.1164
Onsite Fuel/Lube Truck	0.2327	0.2327	0.2327	0.2327	0.2327	0.3491	0.3491	0.3491	0.3491	0.3491	0.3491	0.3491	0.3491	0.2327	0.1164
Onsite Water Truck	1.1636	1.1636	1.1636	1.1636	1.1636	1.1636	1.1636	1.1636	1.1636	1.1636	1.1636	1.1636	1.1636	1.1636	0.5818
Onsite Concrete Pump Truck	0.0000	0.2327	0.3491	0.3491	0.2327	0.1164	0.1164	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Total (lbs/month)	**1.513**	**1.745**	**1.978**	**1.978**	**1.862**	**1.862**	**1.978**	**1.862**	**1.862**	**1.862**	**1.862**	**1.862**	**1.745**	**1.513**	**0.8145**

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Table C1.5a: Offsite Motor Vehicle Usage during Construction

	Number per Month														
Vehicle Type	**1**	**2**	**3**	**4**	**5**	**6**	**7**	**8**	**9**	**10**	**11**	**12**	**13**	**14**	**15**
Offsite Delivery Trucks[a]	189	232	392	290	286	265	232	194	238	206	204	87	82	72	50
Construction Worker Commute[b]	17	30	45	54	58	83	116	134	154	144	147	131	81	63	32

[a] Included Standard Deliveries and Heavy Haul Deliveries as Offsite Delivery Trucks.

[b] Assumed 1 commute per 1 worker.

Table C1.5b: Offsite Motor Vehicle CO Emissions

	Number per Month														
Vehicle Type	**1**	**2**	**3**	**4**	**5**	**6**	**7**	**8**	**9**	**10**	**11**	**12**	**13**	**14**	**15**
Offsite Delivery Trucks	157.63	193.49	326.93	241.86	238.52	221.01	193.49	161.79	198.49	171.80	170.13	72.56	68.39	60.05	41.70
Construction Worker Commute	5.38	9.49	14.23	17.08	18.34	26.25	36.69	42.38	48.71	45.54	46.49	41.43	25.62	19.93	10.12
Total (lbs/month)	**163.0**	**203.0**	**341.2**	**258.9**	**256.9**	**247.3**	**230.2**	**204.2**	**247.2**	**217.3**	**216.6**	**114.0**	**94.0**	**80.0**	**51.82**
Total (ton/yr)	**0.51**														

Table C1.5c: Offsite Motor Vehicle VOC Emissions

	Number per Month														
Vehicle Type	**1**	**2**	**3**	**4**	**5**	**6**	**7**	**8**	**9**	**10**	**11**	**12**	**13**	**14**	**15**
Offsite Delivery Trucks	27.04	33.19	56.09	41.49	40.92	37.92	33.19	27.76	34.05	29.47	29.19	12.45	11.73	10.30	7.15
Construction Worker Commute	0.16	0.29	0.43	0.51	0.55	0.79	1.10	1.28	1.47	1.37	1.40	1.25	0.77	0.60	0.30
Total (lbs/month)	**27.20**	**33.48**	**56.51**	**42.01**	**41.47**	**38.71**	**34.30**	**29.03**	**35.52**	**30.85**	**30.59**	**13.70**	**12.50**	**10.90**	**7.46**
Total (ton/yr)	**0.071**														

Table C1.5d: Offsite Motor Vehicle SOx Emissions

	Number per Month														
Vehicle Type	**1**	**2**	**3**	**4**	**5**	**6**	**7**	**8**	**9**	**10**	**11**	**12**	**13**	**14**	**15**
Offsite Delivery Trucks	0.67	0.82	1.38	1.02	1.01	0.93	0.82	0.68	0.84	0.73	0.72	0.31	0.29	0.25	0.18
Construction Worker Commute	0.0067	0.0119	0.0179	0.0214	0.0230	0.0329	0.0460	0.0532	0.0611	0.0571	0.0583	0.0520	0.0321	0.0250	0.0127
Total (lbs/month)	**0.67**	**0.83**	**1.40**	**1.04**	**1.03**	**0.97**	**0.86**	**0.74**	**0.90**	**0.78**	**0.78**	**0.36**	**0.32**	**0.28**	**0.19**
Total (ton/yr)	**0.0018**														

Table C1.5e: Offsite Motor Vehicle NOx Emissions

	Number per Month														
Vehicle Type	**1**	**2**	**3**	**4**	**5**	**6**	**7**	**8**	**9**	**10**	**11**	**12**	**13**	**14**	**15**
Offsite Delivery Trucks	531.50	652.42	1102.37	815.53	804.28	745.22	652.42	545.56	669.30	579.31	573.68	244.66	230.60	202.48	140.61
Construction Worker Commute	0.58	1.02	1.52	1.83	1.96	2.81	3.93	4.54	5.21	4.88	4.98	4.44	2.74	2.13	1.08
Total (lbs/month)	**532.08**	**653.44**	**1103.89**	**817.36**	**806.24**	**748.04**	**656.35**	**550.10**	**674.51**	**584.18**	**578.66**	**249.09**	**233.34**	**204.61**	**141.69**
Total (ton/yr)	**1.33**														

Table C1.5f: Offsite Motor Vehicle PM_{10} Emissions (includes exhaust and paved road emissions)

	Number per Month														
Vehicle Type	**1**	**2**	**3**	**4**	**5**	**6**	**7**	**8**	**9**	**10**	**11**	**12**	**13**	**14**	**15**
Offsite Delivery Trucks	213.63	262.24	443.09	327.80	323.28	299.54	262.24	219.28	269.02	232.85	230.59	98.34	92.69	81.38	56.52
Construction Worker Commute	10.50	18.53	27.80	33.36	35.83	51.27	71.66	82.78	95.13	88.96	90.81	80.93	50.04	38.92	19.77
Total (lbs/month)	**224.13**	**280.77**	**470.89**	**361.16**	**359.10**	**350.81**	**333.90**	**302.06**	**364.15**	**321.80**	**321.40**	**179.26**	**142.73**	**120.30**	**76.28**
Total (ton/yr)	**0.763**														

Table C1.5g: Offsite Motor Vehicle PM2.5 Emissions (includes exhaust and paved road emissions)

	Number per Month														
Vehicle Type	**1**	**2**	**3**	**4**	**5**	**6**	**7**	**8**	**9**	**10**	**11**	**12**	**13**	**14**	**15**
Offsite Delivery Trucks	4.28	7.56	11.34	13.61	14.62	20.92	29.23	33.77	38.81	36.29	37.05	33.01	20.41	15.88	8.06
Construction Worker Commute	1.68	2.96	4.45	5.34	5.73	8.20	11.46	13.24	15.22	14.23	14.53	12.95	8.01	6.23	3.16
Total (lbs/month)	**5.96**	**10.53**	**15.79**	**18.95**	**20.35**	**29.12**	**40.70**	**47.01**	**54.03**	**50.52**	**51.57**	**45.96**	**28.42**	**22.10**	**11.23**
Total (ton/yr)	**0.132**														

Vehicle Type	**Roundtrip Miles per Day**
Offsite Delivery Trucks	100
Construction Worker Commute	60

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Table C1.4a: Number of Onsite Power Plant Construction Equipment

	Month														
Onsite Equipment	**1**	**2**	**3**	**4**	**5**	**6**	**7**	**8**	**9**	**10**	**11**	**12**	**13**	**14**	**15**
Manlift	1	2	3	3	3	3	4	4	4	4	4	3	2	1	1
Air Compressor	0	0	0	0	0	6	6	6	8	8	9	10	12	0	0
Excavator	2	2	2	2	3	3	3	2	2	1	1	1	1	1	0
Grader	1	1	1	1	1	1	1	0	0	0	0	0	0	0	0
Cranes	1	1	0	0	0	1	2	2	2	2	2	2	2	1	0
Asphalt Paver	0	0	0	0	0	0	0	0	0	0	0	0	1	1	1
Compactor	1	0	0	1	1	1	1	0	0	0	0	0	0	0	0
Welding Machine	0	1	3	4	8	10	14	14	15	15	15	10	5	1	0

Table C1.4b: Number of Onsite Power Plant Construction Motor Vehicles

	Month														
Vehicle Type	**1**	**2**	**3**	**4**	**5**	**6**	**7**	**8**	**9**	**10**	**11**	**12**	**13**	**14**	**15**
Onsite Flatbed Truck	1	1	2	2	2	2	3	3	3	3	3	3	2	1	1
Onsite Fuel/Lube Truck	2	2	2	2	2	3	3	3	3	3	3	3	3	2	1
Onsite Water Truck	2	2	2	2	2	2	2	2	2	2	2	2	2	2	1
Onsite Concrete Pump Truck	0	2	3	3	2	1	1	0	0	0	0	0	0	0	0

Table C1.4e: Motor Vehicle Emission Factors [a]

Vehicle Type	Vehicle Class	CO Exhaust lb/mi	VOC Exhaust lb/mi	SO_X Exhaust lb/mi	NO_X Exhaust lb/mi	PM_{10} Exhaust lb/mi	PM_{10} Paved Road lb/mi	$PM_{2.5}$ Exhaust lb/mi	$PM_{2.5}$ Paved Road lb/mi
Onsite Flatbed Truck	HHDT	0.0444	0.0224	0.0001	0.0741	0.0050	NA	0.00448	NA
Onsite Fuel/Lube Truck	HHDT	0.0444	0.0224	0.0001	0.0741	0.0050	NA	0.00448	NA
Onsite Water Truck	HHDT	0.0444	0.0224	0.0001	0.0741	0.0050	NA	0.00448	NA
Onsite Concrete Pump Truck	HHDT	0.0444	0.0224	0.0001	0.0741	0.0050	NA	0.00448	NA
Offsite Delivery Trucks	HHDT	0.0083	0.0014	0.0000	0.0281	0.0011	0.0102	0.00091	0.00161
Construction Worker Commute	LDA	0.0053	0.0002	0.0000	0.0006	0.0001	0.0102	0.00004	0.00161

[a] All emission factors were derived from the emission factors [g/mi] from EMFAC2007 for calendar year 2011 in Kings County. For this model, a speed of 5 mph was assumed for onsite vehicles. A speed of 45 mph was assumed for offsite vehicles and worker commutes. The emission factors account for emissions from running.

Derivation of Paved Road Emission Factor

Paved Roads emission factor from AP-42, Section 13.2.1: P*aved Roads* (11/06)

$$E = [k(sL/2)^{0.65}*(W/3)^{1.5}] - C$$

where:	PM10	PM2.5	
k =	7.3	1.1	particle size multiplier, g/VMT [Table 13.2-1.1]
sL =	0.03	0.03	road surface silt loading (g/m^2) [Table 13.2.1-3, for Ubiquitous Baseline Roadway with ADT >10,000]
W =	14	14	tons [Average vehicle weight, assumes truck weight = 17 tons and construction worker vehicle weight = 2.5 tons]
C =	0.2119	0.1617	emission factor for 1980's vehicle fleet exhaust, brake wear, and tire wear, g/VMT [Table 13.2.1-2 for PM_{10}]
$E_{(PM10/2.5)}$=	4.640	0.731	g/VMT

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Construction GHG Emission Calculations

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Table 1a: Onsite Power Plant Construction Equipment CO_2 Emissions

	Monthly Emissions														
Onsite Equipment	**1**	**2**	**3**	**4**	**5**	**6**	**7**	**8**	**9**	**10**	**11**	**12**	**13**	**14**	**15**
Manlift	2.8	5.6	8.4	8.4	8.4	8.4	11.1	11.1	11.1	11.1	11.1	8.4	5.6	2.8	2.8
Air Compressor	0	0	0	0	0	35.4	35.4	35.4	47.2	47.2	53.1	59.0	70.7	0	0
Excavator	27.3	27.3	27.3	27.3	41.0	41.0	41.0	27.3	27.3	13.7	13.7	13.7	13.7	13.7	0
Grader	15.3	15.3	15.3	15.3	15.3	15.3	15.3	0	0	0	0	0	0	0	0
Cranes	13.7	13.7	0	0	0	13.7	27.3	27.3	27.3	27.3	27.3	27.3	27.3	13.7	0
Asphalt Paver	0	0	0	0	0	0	0	0	0	0	0	0	8.6	8.6	8.6
Compactor	12.3	0	0	12.3	12.3	12.3	12.3	0	0	0	0	0	0	0	0
Welding Machine	0	2.1	6.4	8.6	17.1	21.4	30.0	30.0	32.2	32.2	32.2	21.4	10.7	2.1	0
Total (metric tons/month, E_m)	**71**	**63.99**	**57.40**	**71.87**	**94.11**	**147.43**	**172.46**	**131.19**	**145.13**	**131.46**	**137.36**	**129.75**	**136.61**	**40.84**	**11.36**
Annual Average (metric tons/year, E_a)	**732**														
Total (metric tons/year, E_t)	**1,542**														

Table 1b: Onsite Power Plant Construction Equipment CH_4 Emissions

	Monthly Emissions														
Onsite Equipment	1	**2**	**3**	**4**	**5**	**6**	**7**	**8**	**9**	**10**	**11**	**12**	**13**	**14**	**15**
Manlift	0.0004	0.0008	0.0012	0.0012	0.0012	0.0012	0.0015	0.0015	0.0015	0.0015	0.0015	0.0012	0	0	0.0004
Air Compressor	0	0	0	0	0	0	0	0	0	0	0.0073	0.0081	0.0098	0	0
Excavator	0.004	0.0038	0.0038	0.0038	0.0057	0.0057	0.0057	0.0038	0.0038	0.0019	0.0019	0.0019	0.0019	0	0
Grader	0.002	0	0	0.0021	0.0021	0.0021	0.0021	0	0	0	0	0	0	0	0
Cranes	0.002	0	0	0	0	0	0	0.0038	0.0038	0.0038	0.0038	0.0038	0.0038	0.0019	0
Asphalt Paver	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0.001
Compactor	0.002	0	0	0.0017	0.0017	0.0017	0.0017	0	0	0	0	0	0	0	0
Welding Machine	0	0	0	0	0	0	0	0.0041	0.0044	0.0044	0.0044	0.0030	0.0015	0.0003	0
Total (metric tons/month, E_m)	**0.010**	**0.0088**	**0.0079**	**0.0099**	**0.0130**	**0.0203**	**0.0238**	**0.0181**	**0.0200**	**0.0181**	**0.0189**	**0.0179**	**0.0188**	**0.0056**	**0.0016**
Annual Average (metric tons/year, E_a)	**0.10**														
Total (metric tons/year, E_t)	**0.21**														

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Table 1c: Onsite Power Plant Construction Equipment N_2O Emissions

	Monthly Emissions														
Onsite Equipment	**1**	**2**	**3**	**4**	**5**	**6**	**7**	**8**	**9**	**10**	**11**	**12**	**13**	**14**	**15**
Manlift	0.00003	0.0001	0.0001	0.0001	0.0001	0.0001	0.0001	0.0001	0.0001	0.0001	0.0001	0.0001	0	0	0.00003
Air Compressor	0	0	0	0	0	0	0	0	0	0	0.0005	0.0006	0.0007	0	0
Excavator	0.0003	0.0003	0.0003	0.0003	0.0004	0.0004	0.0004	0.0003	0.0003	0.0001	0.0001	0.0001	0.0001	0	0
Grader	0.0002	0	0	0.0002	0.0002	0.0002	0.0002	0	0	0	0	0	0	0	0
Cranes	0.0001	0	0	0	0	0	0	0.0003	0.0003	0.0003	0.0003	0.0003	0.0003	0.0001	0
Asphalt Paver	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0.0001
Compactor	0.0001	0	0	0.0001	0.0001	0.0001	0.0001	0	0	0	0	0	0	0	0
Welding Machine	0	0	0	0	0	0	0	0	0.0003	0.0003	0.0003	0.0002	0.0001	0.00002	0
Total (metric tons/month, E_m)	**0.001**	**0.0006**	**0.0006**	**0.0007**	**0.0009**	**0.0015**	**0.0017**	**0.0013**	**0.0014**	**0.0013**	**0.0014**	**0.0013**	**0.0013**	**0.0004**	**0.0001**
Annual Average (metric tons/year, E_a)	**0.007**														
Total (metric tons/year, E_t)	**0.015**														

Table 1d: Onsite Power Plant Construction Equipment Diesel Fuel Consumption

	Fuel Consumption														
Onsite Equipment	**1**	**2**	**3**	**4**	**5**	**6**	**7**	**8**	**9**	**10**	**11**	**12**	**13**	**14**	**15**
Manlift	275	549	824	824	824	824	1,098	1,098	1,098	1,098	1,098	824	549	275	275
Air Compressor	0	0	0	0	0	3,485	3,485	3,485	4,646	4,646	5,227	5,808	6,970	0	0
Excavator	2,693	2,693	2,693	2,693	4,039	4,039	4,039	2,693	2,693	1,346	1,346	1,346	1,346	1,346	0
Grader	1,505	1,505	1,505	1,505	1,505	1,505	1,505	0	0	0	0	0	0	0	0
Cranes	1,346	1,346	0	0	0	1,346	2,693	2,693	2,693	2,693	2,693	2,693	2,693	1,346	0
Asphalt Paver	0	0	0	0	0	0	0	0	0	0	0	0	845	845	845
Compactor	1,214	0	0	1,214	1,214	1,214	1,214	0	0	0	0	0	0	0	0
Welding Machine	0	211	634	845	1,690	2,112	2,957	2,957	3,168	3,168	3,168	2,112	1,056	211	0
Total (gallons/month)	**7,033**	**6,304**	**5,655**	**7,080**	**9,272**	**14,525**	**16,991**	**12,925**	**14,298**	**12,952**	**13,533**	**12,783**	**13,459**	**4,023**	**1,119**
Total (gallons/project)	**151,953**														

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Table 2a: Onsite Power Plant Construction Motor Vehicle CO_2 Emissions

Vehicle Type	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15
Onsite Flatbed Truck	0.032	0.032	0.064	0.064	0.064	0.064	0.096	0.096	0.096	0.096	0.096	0.096	0.064	0.032	0.032
Onsite Fuel/Lube Truck	0.064	0.064	0.064	0.064	0.064	0.096	0.096	0.096	0.096	0.096	0.096	0.096	0.096	0.064	0.032
Onsite Water Truck	0.319	0.319	0.319	0.319	0.319	0.319	0.319	0.319	0.319	0.319	0.319	0.319	0.319	0.319	0.160
Onsite Concrete Pump Truck	0	0.064	0.096	0.096	0.064	0.032	0.032	0	0	0	0	0	0	0	0
Total (metric tons/month)	**0.41**	**0.48**	**0.54**	**0.54**	**0.51**	**0.51**	**0.54**	**0.51**	**0.51**	**0.51**	**0.51**	**0.51**	**0.48**	**0.41**	**0.22**
Annual Average (metric tons/year, E_a)	**3.16**														
Total (metric tons/year, E_t)	**7.21**														

Table 2b: Onsite Power Plant Construction Motor Vehicle CH_4 Emissions

Vehicle Type	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15
Onsite Flatbed Truck	0.0000013	0.0000013	0.0000026	0.0000026	0.0000026	0.0000026	0.0000040	0.0000040	0.0000040	0.0000040	0.0000040	0.0000040	0.0000026	0.0000013	0.0000013
Onsite Fuel/Lube Truck	0.0000026	0.0000026	0.0000026	0.0000026	0.0000026	0.0000040	0.0000040	0.0000040	0.0000040	0.0000040	0.0000040	0.0000040	0.0000040	0.0000026	0.0000013
Onsite Water Truck	0.0000132	0.0000132	0.0000132	0.0000132	0.0000132	0.0000132	0.0000132	0.0000132	0.0000132	0.0000132	0.0000132	0.0000132	0.0000132	0.0000132	0.0000066
Onsite Concrete Pump Truck	0	0.0000026	0.0000040	0.0000040	0.0000026	0.0000013	0.0000013	0	0	0	0	0	0	0	0
Total (metric tons/month)	**0.00002**	**0.000020**	**0.000022**	**0.000022**	**0.000021**	**0.000021**	**0.000022**	**0.000021**	**0.000021**	**0.000021**	**0.000021**	**0.000021**	**0.000020**	**0.000017**	**0.000009**
Annual Average (metric tons/year, E_a)	**0.0001**														
Total (metric tons/year, E_t)	**0.0003**														

Table 2c: Onsite Power Plant Construction Motor Vehicle N_2O Emissions

Vehicle Type	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15
Onsite Flatbed Truck	0.0000011	0.0000011	0.0000022	0.0000022	0.0000022	0.0000022	0.0000033	0.0000033	0.0000033	0.0000033	0.0000033	0.0000033	0.0000022	0.0000011	0.0000011
Onsite Fuel/Lube Truck	0.0000022	0.0000022	0.0000022	0.0000022	0.0000022	0.0000033	0.0000033	0.0000033	0.0000033	0.0000033	0.0000033	0.0000033	0.0000033	0.0000022	0.0000011
Onsite Water Truck	0.0000110	0.0000110	0.0000110	0.0000110	0.0000110	0.0000110	0.0000110	0.0000110	0.0000110	0.0000110	0.0000110	0.0000110	0.0000110	0.0000110	0.0000055
Onsite Concrete Pump Truck	0	0.0000022	0.0000033	0.0000033	0.0000022	0.0000011	0.0000011	0	0	0	0	0	0	0	0
Total (metric tons/month)	**0.000014**	**0.000017**	**0.000019**	**0.000019**	**0.000018**	**0.000018**	**0.000019**	**0.000018**	**0.000018**	**0.000018**	**0.000018**	**0.000018**	**0.000017**	**0.000014**	**0.000008**
Annual Average (metric tons/year, E_a)	**0.0001**														
Total (metric tons/year, E_t)	**0.0002**														

Table 2d: Onsite Power Plant Construction Motor Vehicle Diesel Fuel Consumption

	Fuel Consumption														
Vehicle Type	**1**	**2**	**3**	**4**	**5**	**6**	**7**	**8**	**9**	**10**	**11**	**12**	**13**	**14**	**15**
Onsite Flatbed Truck	3	3	6	6	6	6	9	9	9	9	9	9	6	3	3
Onsite Fuel/Lube Truck	6	6	6	6	6	9	9	9	9	9	9	9	9	6	3
Onsite Water Truck	6	6	6	6	6	6	6	6	6	6	6	6	6	6	3
Onsite Concrete Pump Truck	0	6	9	9	6	3	3	0	0	0	0	0	0	0	0
Total (gallons/month)	**16**	**22**	**28**	**28**	**25**	**25**	**28**	**25**	**25**	**25**	**25**	**25**	**22**	**16**	**9**
Total (gallons/project)	**346**														

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Table 3a: Offsite Motor Vehicle Usage During Construction

	Number per Month														
Vehicle Type	**1**	**2**	**3**	**4**	**5**	**6**	**7**	**8**	**9**	**10**	**11**	**12**	**13**	**14**	**15**
Offsite Delivery Trucks[a, c]	189	232	392	290	286	265	232	194	238	206	204	87	82	72	50
Construction Worker Commute[b]	17	30	45	54	58	83	116	134	154	144	147	131	81	63	32

[a] Included Standard Deliveries and Heavy Haul Deliveries as Offsite Delivery Trucks, characterized as Medium-Duty Trucks (MDT)
[b] Assumed 1 commute per 1 worker.
[c] Assumed each offsite delivery truck makes 1 delivery.

Table 3b: Offsite Motor Vehicle CO_2 Emissions

	Monthly Emissions														
Vehicle Type	**1**	**2**	**3**	**4**	**5**	**6**	**7**	**8**	**9**	**10**	**11**	**12**	**13**	**14**	**15**
Offsite Delivery Trucks	27.41	33.64	56.84	42.05	41.47	38.43	33.64	28.13	34.51	29.87	29.58	12.62	11.89	10.44	7.25
Construction Worker Commute	0.50	0.88	1.32	1.59	1.70	2.44	3.41	3.94	4.52	4.23	4.32	3.85	2.38	1.85	0.94
Total (metric tons/month)	**27.90**	**34.52**	**58.16**	**43.64**	**43.17**	**40.86**	**37.05**	**32.07**	**39.03**	**34.10**	**33.90**	**16.46**	**14.27**	**12.29**	**8.19**
Annual Average (metric tons/year, E_a)	**158**														
Total (metric tons/year, E_t)	**476**														

Table 3c: Offsite Motor Vehicle CH_4 Emissions

	Monthly Emissions														
Vehicle Type	**1**	**2**	**3**	**4**	**5**	**6**	**7**	**8**	**9**	**10**	**11**	**12**	**13**	**14**	**15**
Offsite Delivery Trucks	0.0011	0.0014	0.0024	0.0017	0.0017	0.0016	0.0014	0.0012	0.0014	0.0012	0.0012	0.0005	0.0005	0.0004	0.0003
Construction Worker Commute	0.00004	0.0001	0.0001	0.0001	0.0001	0.0002	0.0003	0.0003	0.0004	0.0003	0.0004	0.0003	0.0002	0.0002	0.0001
Total (metric tons/month)	**0.0012**	**0.0015**	**0.0025**	**0.0019**	**0.0019**	**0.0018**	**0.0017**	**0.0015**	**0.0018**	**0.0016**	**0.0016**	**0.0008**	**0.0007**	**0.0006**	**0.0004**
Annual Average (metric tons/year, E_a)	**0.007**														
Total (metric tons/year, E_t)	**0.021**														

Table 3d: Offsite Motor Vehicle N_2O Emissions

	Monthly Emissions														
Vehicle Type	**1**	**2**	**3**	**4**	**5**	**6**	**7**	**8**	**9**	**10**	**11**	**12**	**13**	**14**	**15**
Offsite Delivery Trucks	0.0009	0.0012	0.0020	0.0015	0.0014	0.0013	0.0012	0.0010	0.0012	0.0010	0.0010	0.0004	0.0004	0.0004	0.0003
Construction Worker Commute	0.00004	0.0001	0.0001	0.0001	0.0001	0.0002	0.0003	0.0003	0.0004	0.0003	0.0004	0.0003	0.0002	0.0002	0.0001
Total (metric tons/month)	**0.0010**	**0.0012**	**0.0021**	**0.0016**	**0.0016**	**0.0015**	**0.0014**	**0.0013**	**0.0016**	**0.0014**	**0.0014**	**0.0007**	**0.0006**	**0.0005**	**0.0003**
Annual Average (metric tons/year, E_a)	**0.006**														
Total (metric tons/year, E_t)	**0.018**														

Table 3e: Offsite Motor Vehicle Fuel Consumption

	Fuel Consumption														
Vehicle Type	**1**	**2**	**3**	**4**	**5**	**6**	**7**	**8**	**9**	**10**	**11**	**12**	**13**	**14**	**15**
Offsite Delivery Trucks	2,700	3,314	5,600	4,143	4,086	3,786	3,314	2,771	3,400	2,943	2,914	1,243	1,171	1,029	714
Construction Worker Commute	57	100	150	180	193	277	387	447	513	480	490	437	270	210	107
Total (gallons/month)	**2,757**	**3,414**	**5,750**	**4,323**	**4,279**	**4,062**	**3,701**	**3,218**	**3,913**	**3,423**	**3,404**	**1,680**	**1,441**	**1,239**	**821**
Total Diesel (gallons/project)	**43,129**														
Total Gas (gallons/project)	**4,297**														
Total (gallons/project)	**47,425**														

Table 3f: Offsite Motor Vehicle Miles Traveled

Vehicle Type	**Roundtrip Miles per Delivery**
Offsite Delivery Trucks	100
Construction Worker Commute	60

Table 4: Equations Used to Calculate Emissions

Emission Source	Pollutant(s)	Equation	Variables
Construction Equipment	CO2, CH4, N2O	$E_m = N * FC * EF * H * 22 * 0.001$	E_m = Emissions (Mton/month)
			N = Number of pieces of equipment
			FC = Fuel Consumption (gal/hr)
			EF = Emission factor (kg/gal)
			H = Daily hours of operation, assumed to be 12 hr/day
			22 = 22 construction days per month
			0.001 = Conversion from kg to Mton
		$E_t = \Sigma E_m$	E_t = Total Emissions (Mton/yr)
			E_m = Emissions (Mton/month)
		$E_a = \Sigma E_m$ for Worst-Case Months, 9 through 20	E_a = Annual Average Emissions (Mton/yr)
			E_m = Emissions (Mton/month)
Onsite and Offsite Motor Vehicle	CO2	$E_m = N * VMT * 22 * EF * 0.001 / FE$	E_m = Emissions (Mton/month)
			VMT = Vehicle miles traveled per day (miles/day)
			FE = Fuel Economy (miles/hr)
			22 = 22 construction days per month
			0.001 = Conversion from kg to Mton
			EF = Emission Factor (kg/gal)
		$E_t = \Sigma E_m$	E_t = Total Emissions (Mton/yr)
			E_m = Emissions (Mton/month)
		$E_a = \Sigma E_m$ for Worst-Case Months, 9 through 20	E_a = Annual Average Emissions (Mton/yr)
			E_m = Emissions (Mton/month)
Onsite and Offsite Motor Vehicle	CH4, N2O	$E_m = N * VMT * 22 * EF * 0.000001$	E_m = Emissions (Mton/month)
			N = Number of vehicles or Number of deliveries
			VMT = Vehicle miles traveled per day (miles/day)
			22 = 22 construction days per month
			0.000001 = Conversion from g to Mton
			EF = Emission Factor (g/mile)
		$E_t = \Sigma E_m$	E_t = Total Emissions (Mton/yr)
			E_m = Emissions (Mton/month)
		$E_a = \Sigma E_m$ for Worst-Case Months, 9 through 20	E_a = Annual Average Emissions (Mton/yr)
			E_m = Emissions (Mton/month)

Reference: California Climate Action Registry General Reporting Protocol, Version 3.0, Chapter 7, April 2008.

GWF Henrietta Combined Cycle Power Plant Project (01-AFC-18C)
Data Response Set 2
Data Response #16 - February 2009

Table 5a: Number of Onsite Power Plant Construction Equipment

Project Construction GHG Emissions	Month														
	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15
Manlift	1	2	3	3	3	3	4	4	4	4	4	3	2	1	1
Air Compressor	0	0	0	0	0	6	6	6	8	8	9	10	12	0	0
Excavator	2	2	2	2	3	3	3	2	2	1	1	1	1	1	0
Grader	1	1	1	1	1	1	1	0	0	0	0	0	0	0	0
Cranes	1	1	0	0	0	1	2	2	2	2	2	2	2	1	0
Asphalt Paver	0	0	0	0	0	0	0	0	0	0	0	0	1	1	1
Compactor	1	0	0	1	1	1	1	0	0	0	0	0	0	0	0
Welding Machine	0	1	3	4	8	10	14	14	15	15	15	10	5	1	0

Table 5b: Number of Onsite Power Plant Construction Motor Vehicles

Vehicle Type	Month														
	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15
Onsite Flatbed Truck	1	1	2	2	2	2	3	3	3	3	3	3	2	1	1
Onsite Fuel/Lube Truck	2	2	2	2	2	3	3	3	3	3	3	3	3	2	1
Onsite Water Truck	2	2	2	2	2	2	2	2	2	2	2	2	2	2	1
Onsite Concrete Pump Truck	0	2	3	3	2	1	1	0	0	0	0	0	0	0	0

Table 6: Power Plant Construction Equipment Emission Factors

Project Construction GHG Emissions	Fuel Type	Hours per Month[a]	Fuel Consumption, EF (gal/hr)[b]		
			CO_2	CH_4	N_2O
Manlift	diesel	264	1.04	1.04	1.04
Air Compressor	diesel	264	2.20	2.20	2.20
Excavator	diesel	264	5.10	5.10	5.10
Grader	diesel	264	5.70	5.70	5.70
Cranes	diesel	264	5.10	5.10	5.10
Asphalt Paver	diesel	264	3.20	3.20	3.20
Compactor	diesel	264	4.60	4.60	4.60
Welding Machine	diesel	264	0.80	0.80	0.80

[a] Hours per month assumes 12 work hours per day and 22 days per month.

[b] Fuel Consumption based on consumption in the OFFROAD2007 model for San Joaquin APCD in the year 2011.

Table 7: Motor Vehicle Fuel Economy

Project Construction GHG Emissions	Fuel Type	Fuel economy (miles per gallon)[a]
Onsite Flatbed Truck	Diesel	7
Onsite Fuel/Lube Truck	Diesel	7
Onsite Water Truck	Diesel	7
Onsite Concrete Pump Truck	Diesel	7
Offsite Delivery Trucks	Diesel	7
Construction Worker Commute	Gasoline	18

[a] Fuel economy for trucks based on assumptions from the California Climate Action Registry, General Reporting Protocol, April 2008. Construction worker commute vehicle fuel economy based on assuming workers would drive model year 2000 or newer passenger cars and fuel economy data from EPA (www.fueleconomy.gov).

Table 8: Greenhouse Gas Emission Factors

Project Construction GHG Emissions	Emission Factor	Emission Factor Units	Emission Factor Source
Mobile Combustion			
Gasoline	8.81	kg CO2/gallon	California Climate Action Registry General Reporting Protocol, Version 3.0, Table C.4, April 2008.
Diesel	10.15	kg CO2/gallon	California Climate Action Registry General Reporting Protocol, Version 3.0, Table C.4, April 2008.
Mobile Combustion			
Gasoline Passenger Car Model Year 2000-Present	0.04	g N2O/mile	California Climate Action Registry General Reporting Protocol, Version 3.0, Table C.5, April 2008.
Gasoline Delivery Truck Model Year 1990-Present	0.2	g N2O/mile	California Climate Action Registry General Reporting Protocol, Version 3.0, Table C.5, April 2008.
Diesel Heavy Duty Trucks Model Year 1996-Present	0.05	g N2O/mile	California Climate Action Registry General Reporting Protocol, Version 3.0, Table C.5, April 2008.
Diesel Off-road Vehicles	0.0001	kg N2O/ gallon	California Climate Action Registry General Reporting Protocol, Version 3.0, Table C.5, April 2008.
Mobile Combustion			
Gasoline Passenger Car Model Year 2000-Present	0.04	g CH4/mile	
Gasoline Delivery Truck Model Year 1990-Present	0.12	g CH4/mile	California Climate Action Registry General Reporting Protocol, Version 3.0, Table C.5, April 2008.
Diesel Heavy Duty Trucks Model Year 1996-Present	0.06	g CH4/mile	California Climate Action Registry General Reporting Protocol, Version 3.0, Table C.5, April 2008.
Diesel Off-road Vehicles	0.0014	kg CH4/ gallon	California Climate Action Registry General Reporting Protocol, Version 3.0, Table C.5, April 2008.

ATTACHMENT DR19-1A

Cumulative Stationary Emissions Sources within 6 Miles

ATC Within 6 Miles

APPs Received Between 1/1/2006 and 1/13/2009

Region C

Facility ID *153*

Facility Name BUFORD OIL CO (STAR MART)

Facility Type GASOLINE DISPENSING

Distance To Location
6746.2

Degrees
9.78744

Received	*Type*	*Status*	*Description*
10/10/2007	ATC	FINAL	modify GDF
8/6/2007	ATC	FINAL	gdf

Facility ID *155*

Facility Name BUFORD OIL CO. (STAR MART #4)

Facility Type GASOLINE DISPENSING

Distance To Location
354.8638

Degrees
91.84418

Received	*Type*	*Status*	*Description*
3/19/2008	ATC	FINAL	GEAR: GDF MODIFICATION

Facility ID *249*

Facility Name CENTRAL VALLEY CABINET MFG.

Facility Type WOOD KITCHEN CABINETS

Distance To Location
6854.586

Degrees
13.15784

Received	*Type*	*Status*	*Description*
4/21/2006	ATC	FINAL	Evaluate new dust collector

Facility ID *271*

Facility Name GOLDEN SIERRA MNGMT INC/DBA D ST CHEVRON

Facility Type GASOLINE DISPENSING

Distance To Location

67.84933

Degrees

2.770896

Received	*Type*	*Status*	*Description*
6/24/2008	ATC	FINAL	GDF- Install Healy Phase II VRS (VR 201-F)

Facility ID *430*

Facility Name FAST AND FRIENDLY

Facility Type GASOLINE DISPENSING

Distance To Location

6649.746

Degrees

5.122194

Received	*Type*	*Status*	*Description*
6/13/2007	ATC	FINAL	modify GDF

Facility ID *657*

Facility Name ISLAND COOPERATIVE GIN INC

Facility Type COTTON GINNING

Distance To Location

9410.09

Degrees

338.9395

Received	*Type*	*Status*	*Description*
3/15/2006	ATC	FINAL	Modify cotton gin emission limits based on source test results

Facility ID 774

Facility Name LEPRINO FOODS COMPANY

Facility Type CHEESE PRODUCTION

Distance To Location 445.811

Degrees 187.928

Received	Type	Status	Description
11/30/2007	ATC	FINAL	modify process dryer unit -6 NOx and CO emissions limits for Rule 4309 compliance

Facility ID 1163

Facility Name SK FOODS INC

Facility Type AGRICULTURAL PRODUCTS PROCESSING - FRUITS/VEGETAB

Distance To Location 1497.907

Degrees 284.2636

Received	Type	Status	Description
5/25/2006	ATC	FINAL	Modify boilers -2 and -3 to correct the equipment descriptions
6/9/2008	ATC	FINAL	Install a seasonal boiler (99.9 MMBtu/hr)
6/1/2006	ATC	FINAL	Modify boiler and engine.
4/13/2006	ATC	FINAL	Modify equipment descriptions for two boilers
1/24/2006	ATC	FINAL	Modify boiler for Rule 4306 compliance by installing SCR and 9 ppmv
7/3/2007	ATC	FINAL	[rental boiler] 99.9 MMBtu'hr natural gas-fired Nebraska boiler with a Todd Variflame low-NOx burner equipped with SCR

Facility ID 1167

Facility Name 7-ELEVEN, INC

Facility Type GASOLINE DISPENSING

Distance To Location 1280.289

Degrees 80.90988

Received	Type	Status	Description

7/6/2006	ATC	FINAL	GDF GEAR: Modification of existing facility; upgrade phase II from Balance (G-70-52-AM) to Healy EVR with ISD (VR-202-A)
9/9/2008	ATC	FINAL	GEAR: GDF

Facility ID *1289*

Distance To Location
159.8765

Facility Name LEMOORE MOBIL (CHHUY K CHAO)

Facility Type GASOLINE DISPENSING

Degrees
1.04293

Received	*Type*	*Status*	*Description*
9/21/2006	ATC	FINAL	convert dispensers to balance system

Facility ID *1382*

Distance To Location
206.9368

Facility Name WESTHAVEN COTTON COMPANY

Facility Type COTTON GINNING

Degrees
157.722

Received	*Type*	*Status*	*Description*
2/7/2007	ATC	FINAL	to modify a cotton gin to convert into a roller gin

Facility ID *2246*

Distance To Location
3991.656

Facility Name JONES AUTO BODY

Facility Type AUTO BODY SPRAY COATING

Degrees
187.944

Received	*Type*	*Status*	*Description*
9/24/2007	ATC	FINAL	new motor vehicle coating operation, and to add SLC for VOC 54.7 lb-VOC/day

Facility ID 2297

Facility Name ALL STAR MINI MART

Facility Type GASOLINE DISPENSING

Distance To Location 6656.933

Degrees 3.738147

Received	Type	Status	Description
2/27/2008	ATC	FINAL	Install Healy w/o ISD

Facility ID 2794

Facility Name CITY OF LEMOORE

Facility Type GOVERNMENT SERVICES

Distance To Location 4895.538

Degrees 228.8015

Received	Type	Status	Description
2/8/2006	ATC	FINAL	ICE

Facility ID 3053

Facility Name FASTRIP OIL CO, L P

Facility Type GASOLINE DISPENSING

Distance To Location 538.2127

Degrees 71.09173

Received	Type	Status	Description
4/9/2008	INHOUSE PTO	FINAL	administratively split one existing permit into two separate permit units, per compliance request (change order dated 4/7/08)
2/13/2006	ATC	FINAL	replace dispensers

Facility ID 3167

Facility Name GOLDEN GATE PETROLEUM

Facility Type GASOLINE DISPENSING

Distance To Location 2287.586

Degrees 189.2748

Received	Type	Status	Description
11/7/2006	ATC	FINAL	Application for split GDF/cardlock operation

Facility ID 3346

Facility Name VERIZON WIRELESS - LEMOORE

Facility Type TELECOMMUNICATIONS

Distance To Location 4895.538

Degrees 228.8015

Received	Type	Status	Description
3/27/2008	ATC	FINAL	GEAR: DICE
5/27/2008	ATC	FINAL	96 bhp Tier 3 certified diesel-fired IC engine (supercedes ATC for Tier 2 IC engine)

Facility ID 3479

Facility Name MBI POWDER COATINGS

Facility Type GASOLINE DISPENSING

Distance To Location 458.9205

Degrees 287.224

Received	Type	Status	Description
1/30/2006	ATC	FINAL	GDF
1/8/2009	ATC	PR-ASSI	GEAR: GDF UPGRADE

Facility ID 3613

Facility Name GRANGEVILLE MARKET

Facility Type GASOLINE DISPENSING

Distance To Location 7966.916

Degrees 32.76139

Received	Type	Status	Description
3/25/2008	ATC	FINAL	GEAR: MODIFY GDF

Facility ID 3929

Facility Name GWF ENERGY LLC - HENRIETTA

Facility Type ELECTRICAL GENERATION

Distance To Location 0

Degrees

Received	Type	Status	Description
10/19/2007	TV RENEWAL	COMPLE	TV Renewal DROP DEAD DATE: 4/19/09
8/4/2008	ATC	FR-ASSI	the modification of two 46.9 MW simple-cycle peak-demand power generating gas turbine systems to convert them to allow operation in both combined cycle mode and simple cycle mode

Facility ID 3955

Facility Name LEPRINO FOODS COMPANY

Facility Type CHEESE PRODUCTION

Distance To Location 2760.117

Degrees 195.4621

Received	Type	Status	Description
1/25/2008	ATC	FINAL	modify boiler units -1, -2, and -3 to install a common heat exchanger
9/5/2008	ATC	FINAL	install new lactose permeate drying system [identical to unit -5]
10/16/2006	ATC	FINAL	reinstate LPG as backup fuel for boiler units -1, -2, -3, and dryer unit -4
11/13/2008	ATC	PR-IN PR	expansion of cheese manufacturing operations

Facility ID *4130*

Distance To Location

4452.441

Facility Name HG FOODS LLC/DBA BURGER KING #2319

Facility Type RESTAURANT - FAST FOOD

Degrees

38.46581

Received	*Type*	*Status*	*Description*
1/14/2008	ATC	FINAL	GEAR: CHARBROILER

Facility ID *4148*

Distance To Location

1240.01

Facility Name BK SYDRAN VENTURES/BURGER KING #9474

Facility Type RESTAURANT - FAST FOOD

Degrees

84.82716

Received	*Type*	*Status*	*Description*
9/4/2007	ATC	FINAL	GEAR: CHARBROILER
1/30/2008	ATC	FINAL	GEAR: increase throughput

Facility ID *4337*

Distance To Location

1350.563

Facility Name E2C REMEDIATION

Facility Type SOIL REMEDIATION

Degrees

197.7265

Received	*Type*	*Status*	*Description*
3/24/2006	ATC	FINAL	MODIFICATION OF THE SOIL REMEDIATION OPERATION SERVED BY A SOLLECO ECAT 300 ELECTRICAL CATALYTIC OXIDIZER: REPLACE CATALYTIC OXIDIZER WITH TWO BAKER FURNACE, MODEL 250SCFM, 1000 LB CARBON CANISTERS CONNECTED IN SERIES

Facility ID *7059*

Facility Name HOWARD LAMBERT

Facility Type SOIL REMEDIAITON

Distance To Location

162.4696

Degrees

23.93349

Received	*Type*	*Status*	*Description*
9/8/2008	ATC	FINAL	GEAR: SOIL REMEDIATION

Facility ID *7106*

Facility Name ASSOCIATED SOILS ANALYSIS, INC /

Facility Type

Distance To Location

158.2177

Degrees

147.676

Received	*Type*	*Status*	*Description*
1/12/2006	ATC	FINAL	soil remediation project with electric catalytic oxidizer

Region P

Facility ID *2795*

Facility Name CITY OF LEMOORE

Facility Type

Distance To Location

1036.418

Degrees

292.4545

Received	*Type*	*Status*	*Description*
4/21/2006	PORTABLE	PROPOS	diesel engine driving a street sweeper

Facility ID *3592*

Facility Name KINGS RIVER COMMODITIES

Facility Type

Distance To Location

3991.656

Degrees

187.944

Received	*Type*	*Status*	*Description*
6/23/2008	PORTABLE	PROPOS	Diesel commodity grinder

Facility ID *7141*

Facility Name RICK LARSON - AMERICAN TRAVELING SHOWS

Facility Type

Distance To Location

7487.075

Degrees

8.224561

Received	*Type*	*Status*	*Description*
4/3/2006	PORTABLE	PROPOS	Diesel engine

ATTACHMENT DR19-1B

Summary of Cumulative Stationary Emissions Sources within 6 Miles

GWF Henrietta Combined Cycle Power Plant Project (01-AFC-18C)
Data Response Set 2
Data Response #19 - February 2009

Summary of SJVAPCD Cumulative Sources with 6 Miles of GWF Henrietta

Facility ID	Facility Name	Facility Type	Date Received	Project	Project Type	Decision	Comment
153	Buford Oil Company	Gasoline Dispensing	10/10/2007	Modify GDF	ATC	Exclude	VOC Source
153	Buford Oil Company	Gasoline Dispensing	8/6/2007	GDF	ATC	Exclude	VOC Source
155	Buford Oil Company	Gasoline Dispensing	3/19/2008	Gear: GDF Modification	ATC	Exclude	VOC Source
249	Central Valley Cabinet Mfg.	Wood Cabinets	4/21/2006	Evaluate New Dust Collector	ATC	Exclude	Increase of 0.5 tons-PM10/year
271	Golden Sierra Mngmt Inc	Gasoline Dispensing	6/24/2008	GDF - Install Healy Phase II VRS	ATC	Exclude	VOC Source
430	Fast and Friendly	Gasoline Dispensing	6/13/2007	Modify GDF	ATC	Exclude	VOC Source
657	Island Cooperative Gin Inc	Cotton Ginning	3/15/2006	Modify Gin emission limits	ATC	Exclude	No Emissions Increase
774	Leprino Foods Company	Cheese Production	11/30/2007	modify process dryer emission limits	ATC	Exclude	Emissions reductions to comply with Rule 4309
1163	SK Foods Inc	Ag Product Processing	5/25/2006	Modify boiler equip. description	ATC	Exclude	No Emissions Increase
1163	SK Foods Inc	Ag Product Processing	6/9/2008	Install a seasonal 99.9 Mmbtu/hr boiler	ATC	Exclude	Small increase (< 0.8 tons/year) in each of the following: NOX, CO, PM10 and SOX
1163	SK Foods Inc	Ag Product Processing	6/1/2006	Modify boiler and engine	ATC	Exclude	Small increase (< 1.5 tons/year) in each of the following: NOX, CO, PM10 and SOX
1163	SK Foods Inc	Ag Product Processing	4/13/2006	Modify boiler equip. description	ATC	Exclude	No Emissions Increase
1163	SK Foods Inc	Ag Product Processing	1/24/2006	modify boiler for Rule 4306 compliance	ATC	Exclude	Emissions reductions to comply with Rule 4306
1163	SK Foods Inc	Ag Product Processing	7/3/2007	Rental Boiler - 99.9 Mmbtu/hr	ATC	Exclude	Portable Source
1167	7-Eleven, Inc	Gasoline Dispensing	7/6/2006	GDF Gear	ATC	Exclude	VOC Source
1167	7-Eleven, Inc	Gasoline Dispensing	9/9/2008	Gear: GDF	ATC	Exclude	VOC Source
1289	LeMoore Mobil	Gasoline Dispensing	9/21/2006	Convert dispensers to balance system	ATC	Exclude	VOC Source
1382	Westhaven Cotton Company	Cotton Ginning	2/7/2007	Modify cotton gin, convert to roller gin	ATC	Exclude	No Emissions Increase
2246	Jones Auto Body	Auto Body Spray Coating	9/24/2007	new coating operation, add SLC for VOC 54.7 lb/day	ATC	Exclude	VOC Source
2297	All Star Mini Mart	Gasoline Dispensing	2/27/2008	Install Healy w/o ISD	ATC	Exclude	VOC Source
2794	City of LeMoore	Government Services	2/8/2006	ICE	ATC	Exclude	No Emissions Increase, modification of 2 emergency IC engines to comply with Rule 4702
3053	Fastrip Oil Co, LP	Gasoline Dispensing	4/9/2008	split existing permit	In House PTO	Exclude	VOC Source
3053	Fastrip Oil Co, LP	Gasoline Dispensing	2/13/2006	replace dispensers	ATC	Exclude	VOC Source
3167	Golden Gate Petroleum	Gasoline Dispensing	11/7/2006	App for split GDF/cardlock application	ATC	Exclude	VOC Source
3346	Verizon wireless - Lemoore	Telecommunication	3/27/2008	D ICE	ATC	Exclude	superceded by tier 3 ICE
3346	Verizon wireless - Lemoore	Telecommunication	5/27/2008	Tier 3 D ICE	ATC	Exclude	Small Increase (less than 10 lb/year) increase in NOX and CO emissions.
3479	MBI Poweder Coatings	Gasoline Dispensing	1/30/2006	GDF	ATC	Exclude	VOC Source
3479	MBI Poweder Coatings	Gasoline Dispensing	1/8/2009	GDF Upgrade	ATC	Exclude	VOC Source
3613	Grangeville Market	Gasoline Dispensing	3/25/2008	Modify GDF	ATC	Exclude	VOC Source
3929	GWF Henrietta	Electrical Generation	10/19/2007	TV Renewal	TV Renewal	Exclude	Henrietta
3929	GWF Henrietta	Electrical Generation	8/4/2008	Mod gas turbine	ATC	Exclude	Henrietta
3955	Leprino Foods Company	Cheese Production	9/5/2008	install lactose permeate dryer system	ATC	Exclude	Increase of 2.0 tons-PM10/year
3955	Leprino Foods Company	Cheese Production	11/13/2008	expansion of cheese manufacturing operations	ATC	Exclude	Project in progress, not yet finalized.
3955	Leprino Foods Company	Cheese Production	1/25/2008	modify boiler units 1,2 and 3, for common heat exch.	ATC	Exclude	No Emissions Increase
3955	Leprino Foods Company	Cheese Production	10/16/2006	reinstate LPG as backup for boilers 1,2,3, dryer 4	ATC	Exclude	Small increase (< 0.2 tons/year) in SOX
4130	HG Foods LCC	Restaurant - Fast Food	1/14/2008	Charbroiler	ATC	Exclude	Small increase (< 0.3 tons/year) in each of the following: NOX and PM10
4148	BK Sydran Ventures	Restaurant - Fast Food	9/4/2007	Charbroiler	ATC	Exclude	No emissions increase, replaced by next project below.
4148	BK Sydran Ventures	Restaurant - Fast Food	1/30/2008	Increase Throughput	ATC	Exclude	Small increase (< 0.1 tons/year) in each of the following: NOX and PM10
4337	E2C Remediation	Soil Remediation	3/24/2006	Modification of operation	ATC	Exclude	VOC Source
7059	Howard Lambert	Soil Remediation	9/8/2008	Gear: soil Remediation	ATC	Exclude	VOC Source
7106	Associated Soils Analysis, Inc	Soil Remediation	1/12/2006	Soil Remediation w/ Elec. Cat Oxidizer	ATC	Exclude	VOC Source
2795	City of Lemoore	Government Services	4/21/2006	Diesel engine Driving Street Sweeper	Portable	Exclude	Mobile Source
3592	Kins River Commodoties		6/23/2008	Diesel Commodity Grinder	Portable	Exclude	Mobile Source
7141	Rick Larsen		4/3/2006	Diesel engine Driving Street Sweeper	Portable	Exclude	Mobile Source

ATTACHMENT DR20-1A

SJVAPCD ATC Completeness Determination

San Joaquin Valley
AIR POLLUTION CONTROL DISTRICT

SEP 0 5 2008

Mark Kehoe
GWF Energy LLC - Henrietta
4300 Railroad Avenue
Pittsburg, CA 94565

Re: Notice of Receipt of Complete Applications
Project Number: C-1083176

Dear Mr. Kehoe:

The San Joaquin Valley Air Pollution Control District (District) has received your Authority to Construct applications for the modification of two 46.9 MW simple-cycle peak-demand power generating gas turbine systems to convert them to allow operation in both combined cycle mode and simple cycle mode and the installation of one 460 bhp diesel fired emergency internal combustion engine powering a firewater pump and one 42.0 MMBtu/hr natural gas fired boiler, located at 16027 25th Avenue in Lemoore, CA. Based on our preliminary review, the applications appear to be complete. This means that your applications contain sufficient information to proceed with our analysis. However, during the processing of your applications, the District may request additional information to clarify, correct, or otherwise supplement, the information on file.

According to District Rule 2201, Section 5.3, *Final Action*, please be aware that the District will not be able to issue the final Authority to Construct (ATC) permits for this project until the requirements of the California Environmental Quality Act have been fully satisfied by the Lead Agency.

Per your request, the Authority to Construct will be issued with a Certificate of Conformity (COC). Your project will therefore go for EPA Review per District Rule 2520 for a 45-day period at the conclusion of our analysis, prior to the issuance of the final Authority to Construct.

We will begin processing your applications as soon as possible. In general, complete applications are processed on a first-come first-served basis.

It is estimated that the project analysis process will take 111 hours, and you will be charged at the weighted hourly labor rate in accordance with District Rule 3010. This estimate includes the following major processing steps: Determining Completeness (11 hours), Engineering Evaluation (45 hours), BACT Analysis (25 hours), Health Risk Assessment (10 hours), CEQA Analysis (10 hours) and Permit Preparation (10 hours). The current weighted labor rate is $90.00 per hour, but please note that this fee is revised annually to reflect actual costs and therefore may change. No payment is due at this time; an invoice will be sent to you upon completion of this project.

Please note that this letter is not a permit and does not authorize you to proceed with your project. Final approval, if appropriate, will be in the form of an Authority to Construct permit after application processing is complete. If you have any questions, please contact Mr. Jim Swaney at (559) 230-5900.

Sincerely,

David Warner
Director of Permit Services

Jim Swaney, P.E.
Permit Services Manager
DW:ddb

ATTACHMENT DR20-1B

SJVAPCD Potential Federal PSD Applicability

San Joaquin Valley
AIR POLLUTION CONTROL DISTRICT

RECEIVED

SEP 08 2008

GWF Corporate Office

SEP 05 2008

Mark Kehoe
GWF Energy LLC - Henrietta
4300 Railroad Avenue
Pittsburg, CA 94565

Re: Potential Federal PSD Applicability
District Project # C-1083176
Conversion of Existing Simple Cycle Power Plant to Allow Combined Cycle and Simple Cycle Operation

Dear Mr. Kehoe:

This letter is to inform you that the above referenced project may trigger federal Prevention of Significant Deterioration (PSD) requirements. PSD is a pre-construction approval process that regulates pollutants for which the Valley is in attainment (i.e., nitrogen oxides, sulfur oxides, and carbon monoxide).

The San Joaquin Valley Air Pollution Control District does not have delegation from EPA to implement the federal PSD program. This letter is to inform you that your company is responsible for contacting Gerardo Rios of U.S. EPA at (415) 972-3974 for information on PSD applicability and requirements relative to this project. If PSD approval is required, you must receive EPA's PSD permit prior to construction.

Sincerely,

David Warner
Permit Services Director

Jim Swaney, P.E.
Permit Services Manager

DW:ddb

cc: Gerardo Rios, USEPA Reg. IX
75 Hawthorne St.
San Francisco, CA 94205

Northern Region
4800 Enterprise Way
Modesto, CA 95356-8718
Tel: (209) 557-6400 FAX: (209) 557-6475

Central Region (Main Office)
1990 E. Gettysburg Avenue
Fresno, CA 93726-0244
Tel: (559) 230-6000 FAX: (559) 230-6061
www.valleyair.org

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