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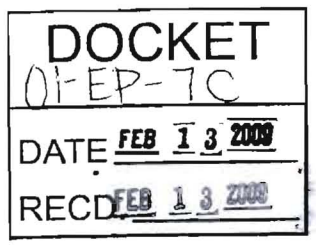
CH2MHILL

February 13, 2009



Ron Yasney
Project Manager
California Energy Commission
1516 Ninth Street
Sacramento, CA 95814-5512

Subject: **Data Responses Set 3 (Responses to Data Requests 23 through 28)**
GWF Hanford Combined Cycle Power Plant Project (01-EP-7)

On behalf of the GWF Energy LLC., please find attached six hardcopies and six CD copies of the Data Responses, Set 3, in response to Staff's Data Requests dated January 20, 2009.

Please call me if you have any questions.

Sincerely,

CH2M HILL

Jennifer L. Scholl

Jennifer Scholl
Senior Project Manager

Petition for License Amendment

GWF Hanford Combined-Cycle Power Plant

Data Responses Set 3

(Responses to Data Requests 23 through 28)

GWF Hanford Energy Park Peaker (01-EP-7)

Submitted by

GWF®

With Technical Assistance by

CH2MHILL

February 2009

EY072008001SAC

GWF Hanford Combined Cycle Power Plant

(01-EP-7)

Data Responses Set 3

(Responses to Data Requests 23 through 28)

Submitted to

California Energy Commission

Submitted by

GWF Energy, LLC

February 2009

With Assistance from

CH2MHILL
2485 Natomas Park Drive
Suite 600
Sacramento, CA 95833

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Introduction

Attached are GWF Energy LLC's responses to the California Energy Commission (CEC) staff's Data Requests numbered 23 through 28 – Soil and Water Resources for the GWF Hanford Combined Cycle Power Plant Project (GWF Hanford). The CEC staff served these data requests on January 20, 2009, as part of the discovery process for GWF Hanford's License Amendment Application (01-EP-7). The responses are presented in the same order as the CEC staff presented them and numbered (23 through 28). 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 23 would be numbered Table DR23-1. The first figure used in response to Data Request 23 would be Figure DR23-1, 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.

We continue to appreciate the cooperative working relationship with CEC staff as GWF Hanford 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.

Soil and Water Resources (23–28)

Project Background

GWF Energy LLC (GWF) proposes to modify the existing Hanford Energy Peaker Plant (HEPP) by converting the facility from a nominal 95-megawatt (MW) simple-cycle power plant into a combined-cycle power plant with a nominal generating capacity of 120 MW net (GWF Hanford). HEPP was constructed in the town of Hanford, in Kings County, and has been operating as a peaker plant to provide critical peak energy.

The primary modifications related to Soil and Water Resources that were identified in the proposed amendment include the following:

1. Increase in water consumption of approximately 8 AFY for the once-through steam generators (OTSG) feed water makeup and the lube oil cooler makeup;
2. Addition of a new water treatment skid for boiler makeup water;
3. Modification of the wastewater treatment system to optimize water supply requirements and minimize off-site wastewater disposal;
4. Modifications to the storm water drainage collection systems;
5. Expansion of the existing storm water retention basin for storm water management. The new basin will be larger than the existing basin by approximately 1,200 cubic yards. Excavated material from the retention basin will be retained onsite and incorporated into final facility grading;
6. Temporary disturbance of about 5.2 acres for construction laydown;
7. Addition of an Air Cooled Condenser (ACC) for system heat rejection; and,
8. Use of a Wet Surface Air Cooler (WSAC) when temperatures exceed 88 °F.

Background: Water Supply

The current HEPP water usage is approximately 103 AFY. GWF Hanford, with the two OTSGs and the STG lube oil cooler, will require approximately 111 AFY. During construction, the applicant estimates that water use will average about 1,000 gallons per day and a maximum of up to 6,000 gallons per day will be required. During the 5-month construction period, total construction water use is estimated to be less than 0.5 acre-feet for dust control, and flushing and testing of the water treatment system and OTSGs.

The current HEPP water supply is provided by groundwater pumped and treated at the adjacent Hanford LP cogeneration facility. Groundwater use is authorized under an existing Banking Agreement with the Kings County Water District. The use of

groundwater is mitigated through a GWF-sponsored groundwater recharge program that requires a 1:1 ratio of water used to groundwater banking credit. GWF established a water purchase agreement with Angiola Water District that allowed banking at 1.76:1 ratio to allow for drought protection.

Staff understands that the City of Hanford sanitary sewer treatment facility is about 1.2 miles from the GWF Hanford project site. This facility may be able to provide recycled water for some or all of the project's operational and construction water supply.

Data Request

23. Please provide a monthly summary of water use for the existing HEPP. Please include hours of operation, power delivered, and water use for each year of operation. Please breakdown water use data for steam cycle makeup, gas turbine SPRINT, evaporative inlet cooling, emission controls, turbine wash water, and service water.

Response: A monthly summary of water use for the HEPP for the last three years is provided in Attachment DR23-1.

Data Request

24. Please provide a detailed discussion regarding the availability and feasibility of utilizing an alternative source of water such as agricultural wastewater or recycled water from the City of Hanford's sanitary sewer treatment facility to provide the additional annual water supply required for GWF Hanford as compared to the most recent full year of operation ("as-operated" conditions).

Response: GWF Energy LLC had discussions with the City of Hanford (City) regarding availability of recycled water for use to satisfy the increase in water supply requirements for the combined cycle modifications, described more fully in the Petition for License Amendment. The City indicated that recycled water could be made available in sufficient quantities for GWF Hanford. The City's Sewage Treatment Plant employs primary and secondary treatments units. The City does not currently have plans to construct a tertiary unit at the Plant. Besides the City's recycled water, there are no other sources of recycled water or agricultural waste water that could be feasibly obtained. The water quality characteristics of the City's recycled water are presented in Attachment DR24-1.

GWF Hanford requires water that meets tertiary standards because of the increased water quality requirements of the Wet Surface Air Condenser (WSAC) needed to cool the lube-oil cooler on the Steam Turbine. In addition, the recycled water would also require treatment to satisfy water quality requirements for use as makeup to the OTSG. The use of recycled water from the City of Hanford would also require construction of an approximately 2-mile pipeline from the Sewage Treatment Plant to the GWF Hanford as well as securing of several easements from private property owners including the Burlington-Northern Railroad. The rejected wastes from the water treatment units would then require further treatment and disposal offsite at an approved Waste Disposal Facility. The capital cost of the

treatment facilities, pipelines, and other infrastructure upgrades needed to achieve tertiary treatment standards for the City's recycled water are summarized in Table DR24-1.

TABLE DR24-1
Estimated Capital Cost of Treatment Facilities and Pipelines for Recycled Water Use at GWF Hanford

Facilities/Processes	Capital Cost
Recycled Water Transfer Pump Station and Pipeline	$560,000
Tertiary Treatment (installed)	$500,000
Boiler Feedwater Treatment	$80,000
Waste Treatment	$150,000
Total Capital Cost	**$1,290,000**
Offsite Disposal Annual Cost	**$18,000**

It would be economically infeasible for a project that only requires 8 acre-feet of water per year to complete the intensive capital investments summarized in Table DR24-1. As a result, it is not feasible for GWF Hanford to utilize the City's recycled water for its water supply needs.

25. Please provide a detailed discussion and (back up) supporting information for construction water supply estimates.

Response: The estimated maximum construction water requirement of 6,000 gallons of water is based on an OTSG volume provided by the manufacturer plus the average daily water usage of 1,000 gallons. Because GWF Hanford will require limited soil disturbance, a minimum amount of water would be required for fugitive dust suppression. The average daily water usage assumes 2 gallons per minute of water flow for dust mitigation and an 8 hour working day.

Background: Stormwater

The existing HEPP stormwater retention basin will be expanded to accommodate GWF Hanford. The new basin will be expanded by approximately 1,200 cubic yards. With the exception of the expanded retention basin, stormwater management practices remain unchanged from those included in the original HEPP license. The stormwater retention basin is sized to capture and detain the runoff resulting from a 100-year 10-day rainfall event. All runoff will be either infiltrated to the subsurface or evaporated, hence no stormwater discharges will be released to surface waters or to the surrounding ground surface.

Infiltration of stormwater generated at the project site is an ideal BMP to control runoff and protect downstream properties from flooding and water quality impacts. However, infiltration BMPs can lead to significant groundwater quality impacts if the stormwater discharged to a stormwater retention/infiltration pond is impacted by toxic constituents.

Data Request

26. Please provide a draft Drainage Erosion and Sediment Control Plan (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. Please provide all conceptual erosion control information for those phases of construction and post-construction that have been developed or provide a statement when such information will be available. The DESCP may be combined with the Stormwater Pollution Prevention Plan required by the Regional Water Quality Control Board to limit the need for the project to develop separate stormwater management plans.

    A. Vicinity Map – A map(s) at a minimum scale 1"=100' shall be provided indicating the location of all project elements (construction site, laydown area, pipelines, etc.) with depictions of all significant geographic features including swales, storm drains, and sensitive areas.

    B. Site Delineation – All areas subject to soil disturbance for the CGS (project site, laydown area, all linear facilities, landscaping areas, and any other project elements) shall be delineated showing boundary lines of all construction/demolition areas and the location of all existing and proposed structures, pipelines, roads, and drainage facilities.

    C. Watercourses and Critical Areas – The DESCP shall show the location of all nearby watercourses including swales, storm drains, and drainage ditches. Indicate the proximity of those features to the CGS construction, laydown, and landscape areas and all transmission and pipeline construction corridors.

    D. Drainage Map – The DESCP shall provide a topographic site map(s) at a minimum scale 1"=100' showing all existing, interim and proposed drainage systems and drainage area boundaries. On the map, spot elevations are required where relatively flat conditions exist. The spot elevations and contours shall be extended off-site for a minimum distance of 100 feet in flat terrain.

    E. Drainage of Project Site Narrative – The DESCP shall include a narrative of the drainage measures to be taken to protect the site and downstream facilities. The narrative should include the summary pages from the hydraulic analysis prepared by a professional engineer/erosion control specialist. The narrative shall state the watershed size(s) in acres that was used in the calculation of drainage measures. The hydraulic analysis should be used to support the selection of BMPs and structural controls to

divert off-site and on-site drainage around or through the CGS construction and laydown areas.

F. Clearing and Grading Plans – The DESCP shall provide a delineation of all areas to be cleared of vegetation and areas to be preserved. The plan shall provide elevations, slopes, locations, and extent of all proposed grading as shown by contours, cross sections or other means. The locations of any disposal 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 DESCP shall include a table with the quantities of material excavated or filled for the site and all project elements of the CGS project (project site, lay down area, transmission corridors, and pipeline corridors) whether such excavations or fill is temporary or permanent, and the amount of such material to be imported or exported.

H. Best Management Practices Plan – The DESCP shall identify on the topographic site map(s) the location of the site specific BMPs to be employed during each phase of construction (initial grading/demolition, project element excavation and construction, and final grading/stabilization). BMPs shall include measures designed to prevent wind and water erosion.

I. Best Management Practices Narrative – The DESCP shall show the location (as identified in H above), timing, and maintenance schedule of all erosion and sediment control BMPs to be used prior to initial grading, during all project element (site, pipelines, etc.) excavations and construction, final grading/stabilization, and post-construction. Separate BMP implementation schedules shall be provided for each project element for each phase of construction. The maintenance schedule should include post-construction maintenance of structural control BMPs, or a statement provided when such information will be available.

Response: Attachment DR26-1 includes a copy of the GWF Hanford Preliminary Draft DESCP.

Data Request

27. Please provide hydrologic design calculations for the proposed stormwater retention basin, including estimates of the 100-year 10-day runoff volume, retention basin stage-volume relationship, infiltration rates, and estimated residence time of water in the pond for average conditions (California Stormwater Quality Association (QASQA) Water Quality Volume), as well as during the 10-day, 100-year storm event. Please include details on soil characteristics such as infiltration capacity in the analysis of basin drawdown.

Response: Attachment DR27-1 includes design calculations for the proposed stormwater retention basin.

Data Request

28. Please provide a summary of stormwater quality sample results measurements, collected during the history of HEPP. Please include specifics of the on-site sampling events and concentration of storm water contaminants.

Response: A summary of HEPP storm water quality sample results is shown in Table DR28-1.

TABLE DR28-1
HEPP Stormwater Quality Sample Results

Sample Date	Cond. (µmhos/cm)	Oil & Grease (mg/L)	pH (S.U.)	TSS (mg/L)	Fe - total (mg/L)	Fe - diss. (mg/L)
3/25/2006	146	< 3	7.1	< 10	—	—
1/28/2007	406	< 3	7.4	<10	0.24	< 0.05
11/26/2008	252	5	7.0	34	1.89	< 0.0.5
12/21/2008	60	< 3	6.6	29	—	—

ATTACHMENT DR23-1

Hanford Energy Peaker Plant Historical Water Use Summary

GWF Hanford Combined Cycle Power Plant Project (01-EP-7)
Data Responses Set 3
Data Response #23 - February 2009

Hanford Energy Peaker Plant Historical Water Use Summary

2008		Operating hours			Estimated water usage rate[1]			
	Water Supply (gallons)	Unit A	Unit B	Total NMWH	SMEC (gpm)	SPRINT (gpm)	Nox control (gpm)	Total GPM
JAN	195,715	37.6	37.3	3,173	0	17.8	44.8	62.6
FEB	0	4.2	4.2	376	0	18.7	47.2	65.9
MAR	118,258	8.6	7.8	668	4.5	18.7	43.1	66.3
APR	68,339	11.8	2.4	579	4.5	19	43.2	66.7
MAY	272,832	22.6	34.1	2,354	9.1	19.5	43.9	72.5
JUN	443,624	48.2	48.9	4,079	13.6	19.6	44.4	77.6
JUL	265,992	43.7	37.4	3,088	13.6	19.6	40.5	73.7
AUG	556,368	46.3	50.2	3,958	13.6	19.6	43.4	76.6
SEP	761,661	80.9	84.7	6,811	13.6	19.6	43.5	76.7
OCT	855,248	87.8	93.6	7,909	9.1	19.4	46.0	74.5
NOV	636,465	61.7	61.8	5,388	4.5	18.4	46.1	69.0
DEC	684,956	86.5	84.8	7,158	0	17.9	44.2	62.1
Total	4,859,458	540	547	45,541				
Combined Op hrs		1,087						

Notes

1) Estimated water usage per hour of operation is based on average ambient conditions using methods from GE. The individual flows are not metered. Actual water use for SMEC (cooling), SPRINT, and emissions control will depend on ambient conditions during the actual operation. For this reason the product of the total gpm and the operating hours may not equal the water supply used.

2) Estimated water use for turbine water wash is 4,000 gallons per year

GWF Hanford Combined Cycle Power Plant Project (01-EP-7)
Data Responses Set 3
Data Response #23 - February 2009

2007		Operating hours				Estimated water usage rate[1]			
	Water Supply (gallons)	Unit A	Unit B	Total NMWH		SMEC (gpm)	SPRINT (gpm)	Nox control (gpm)	Total GPM
JAN	1,207,831	314.4	314.9	16,748		-	17.8	29.0	46.8
FEB	0	1.6	1.6	77		-	18.7	26.1	44.8
MAR	0	0.9	0.9	43		5	18.7	27.0	50.2
APR	74,260	8.3	2.3	576		5	19.0	57.0	80.5
MAY	0	0.9	0.0	13		9	19.5	17.5	46.1
JUN	434,972	42.6	44.6	3,583		14	19.6	43.5	76.7
JUL	359,997	36.5	36.5	2,931		14	19.6	42.6	75.8
AUG	946,244	101.6	101.6	8,479		14	19.6	44.1	77.3
SEP	88,743	5.3	5.3	445		14	19.6	44.5	77.7
OCT	71,064	1.0	1.2	86		9	19.4	40.6	69.1
NOV	189,245	21.0	20.8	1,744		5	18.4	44.2	67.1
DEC	77,932	11.7	12.8	993		-	17.9	42.9	60.8
Total	3,450,288	546	542	35,718					
Combined Op hrs		1,088							

Notes

1) Estimated water usage per hour of operation is based on average ambient conditions using methods from GE. The individual flows are not metered. Actual water use for SMEC (cooling), SPRINT, and emissions control will depend on ambient conditions during the actual operation. For this reason the product of the total gpm and the operating hours may not equal the water supply used.

2) Estimated water use for turbine water wash is 4,000 gallons per year

GWF Hanford Combined Cycle Power Plant Project (01-EP-7)
Data Responses Set 3
Data Response #23 - February 2009

2006		Operating hours				Estimated water usage rate[1]			
	Water Supply (gallons)	Unit A	Unit B	Total NMWH		SMEC (gpm)	SPRINT (gpm)	Nox control (gpm)	Total GPM
JAN	155,810	21.5	20.3	1,407		0	17.8	36.1	53.9
FEB	1	0.0	0.0	-		0	0		0.0
MAR	0	0.0	0.0	-		0	0		0.0
APR	0	2.6	7.4	331		4.5	19	35.6	59.1
MAY	146,208	16.3	14.9	1,132		9.1	19.5	38.7	67.3
JUN	507,254	48.8	48.0	4,170		13.6	19.6	45.5	78.7
JUL	1,242,225	145.7	145.1	11,265		13.6	19.6	41.1	74.3
AUG	151,304	15.7	13.5	1,150		13.6	19.6	41.8	75.0
SEP	68,372	4.2	3.2	263		13.6	19.6	38.3	71.5
OCT	0	4.2	3.2	291		9.1	19.4	41.9	70.4
NOV	134,096	13.6	13.5	1,023		4.5	18.4	40.1	63.0
DEC	0	1.1	0.7	55		0	17.9	32.6	50.5
Total	2,405,270	274	270	21,087					
Combined Op hrs		543							

Notes

1) Estimated water usage per hour of operation is based on average ambient conditions using methods from GE. The individual flows are not metered. Actual water use for SMEC (cooling), SPRINT, and emissions control will depend on ambient conditions during the actual operation. For this reason the product of the total gpm and the operating hours may not equal the water supply used.

2) Estimated water use for turbine water wash is 4,000 gallons per year

ATTACHMENT DR24-1

City of Hanford WWTP Effluent Analysis Results

City of Hanford WWTP
Effluent Analysis Results

Date	Influent Flow MGD Metered Continuous	Effluent BOD mg/l Grab Weekly	Effluent pH Grab Daily	Effluent Total Coliforms MPN/100ml Grab Daily	Effluent TSS mg/l Grab Weekly	Effluent TDS mg/l Grab Weekly	Effluent Set Solids mg/l Grab Daily	Effluent EC umhos Grab Weekly	Effluent NH_3 mg/l Grab 2 x Month	Effluent TKN mg/l 24 hr composite 2 x Month	Effluent NO_3-N mg/l 24 hr composite 2 x Month	Effluent Total N mg/l Calculated 2 x Month	Effluent SAR Unitless Calculated Monthly	Effluent Color Unitless Observed Daily
01/01/07	4.905402		6.9	<2			<0.1							CLEAR
01/02/07	5.387876		6.8	<2			<0.1							CLEAR
01/03/07	4.777895		7.0	8			<0.1							CLEAR
01/04/07	5.897570	6	6.8	2	9	563	<0.1	966						CLEAR
01/05/07	4.796775		6.8	<2			<0.1							CLEAR
01/06/07	5.029723		6.8	<2			<0.1							CLEAR
01/07/07	4.985118		7.0	<2			<0.1							CLEAR
01/08/07	4.978541		6.8	<2			<0.1							CLEAR
01/09/07	5.381112		6.8	<2			<0.1							CLEAR
01/10/07	4.843111		6.9	<2			<0.1		ND	1.4	18.3	19.7	17.9	CLEAR
01/11/07	5.119466		6.8	<2			<0.1							CLEAR
01/12/07	5.143501	7	6.8	<2	7	551	<0.1	987						CLEAR
01/13/07	4.081910		6.9	<2			<0.1							CLEAR
01/14/07	4.948916		6.8	<2			<0.1							CLEAR
01/15/07	5.260447		6.8	<2			<0.1							CLEAR
01/16/07	5.132726		6.8	<2			<0.1							CLEAR
01/17/07	4.979990	3	6.9	2	9	696	<0.1	967						CLEAR
01/18/07	5.132069		6.8	2			<0.1							CLEAR
01/19/07	5.031999		6.9	<2			<0.1							CLEAR
01/20/07	5.022740		6.9	<2			<0.1							CLEAR
01/21/07	4.982261		7.0	<2			<0.1							CLEAR
01/22/07	4.976373		6.7	<2			<0.1							CLEAR
01/23/07	5.013412		6.8	<2			<0.1		ND	3.2	18.4	21.6		CLEAR
01/24/07	5.294730		7.1	5			<0.1							CLEAR
01/25/07	4.941505	6	6.9	220	13	640	<0.1	1004						CLEAR
01/26/07	5.062180		6.8	7			<0.1							CLEAR
01/27/07	5.026616		7.0	22			<0.1							CLEAR
01/28/07	5.124700		7.1	8			<0.1							CLEAR
01/29/07	5.113001		6.9	7			<0.1							CLEAR
01/30/07	4.885274		6.9	<2			<0.1							CLEAR
01/31/07	4.934866	ND	7.1	<2	9	570	<0.1	932						CLEAR
Minimum	4.081910	ND	6.7	<2	7	551	<0.1	932	ND	1.4	18.3	19.7	17.9	
Maximum	5.897570	7	7.1	220	13	696	<0.1	1004	ND	3.2	18.4	21.6	17.9	
Average	5.038445	4	6.9	9.43	9	604	<0.1	971	0	2	18	21	17.9	
Total Samples	31	5	31	31	5	5	31	5	2	2	2	2	1	

City of Hanfoprd
Effluent Analysis Results

Date	Influent Flow MGD Metered Continuous	Effluent BOD mg/l Grab Weekly	Effluent pH Grab Daily	Effluent Total Coliforms MPN/100ml Grab Daily	Effluent TSS mg/l Grab Weekly	Effluent TDS mg/l Grab Weekly	Effluent Set Solids mg/l Grab Daily	Effluent EC umhos Grab Weekly	Effluent NH_3 mg/l Grab 2 x Month	Effluent TKN mg/l 24 hr composite 2 x Month	Effluent NO_3-N mg/l 24 hr composite 2 x Month	Effluent Total N mg/l Calculated 2 x Month	Effluent SAR Unitless Calculated Monthly	Effluent Color Unitless Observed Daily
02/01/07	5.177271		6.9	<2			<0.1							CLEAR
02/02/07	5.215414		7.0	<2			<0.1							CLEAR
02/03/07	4.933700		6.8	<2			<0.1							CLEAR
02/04/07	4.993219		7.0	<2			<0.1							CLEAR
02/05/07	5.060560		6.9	<2			<0.1							CLEAR
02/06/07	5.021670	ND	7.0	<2	8	579	<0.1	958						CLEAR
02/07/07	4.775481		7.0	2			<0.1							CLEAR
02/08/07	5.195867		7.0	<2			<0.1							CLEAR
02/09/07	4.915138		6.9	<2			<0.1							CLEAR
02/10/07	5.835921		6.9	<2			<0.1							CLEAR
02/11/07	4.961733		7.0	<2			<0.1							CLEAR
02/12/07	4.993114		6.9	<2			<0.1							CLEAR
02/13/07	5.375059		6.9	<2			<0.1		ND	2.2	17.4	19.6	18.1	CLEAR
02/14/07	5.001123	5	6.8	<2	8	641	<0.1	988						CLEAR
02/15/07	5.102905		6.8	2			<0.1							CLEAR
02/16/07	5.090554		6.9	<2			<0.1							CLEAR
02/17/07	5.057670		7.0	<2			<0.1							CLEAR
02/18/07	4.787414		7.0	<2			<0.1							CLEAR
02/19/07	5.021555		7.0	<2			<0.1							CLEAR
02/20/07	5.449972		6.8	<2			<0.1		0.2	1.6	19.6	21.3		CLEAR
02/21/07	4.796595	6	6.8	<2	4	651	<0.1	1019						CLEAR
02/22/07	5.021731		6.9	<2			<0.1							CLEAR
02/23/07	4.949519		6.8	<2			<0.1							CLEAR
02/24/07	5.009999		7.0	23			<0.1							CLEAR
02/25/07	5.074540		6.9	5			<0.1							CLEAR
02/26/07	4.978091		7.0	>1600			<0.1							CLEAR
02/27/07	5.186414	6	6.9	49	4	600	<0.1	930						CLEAR
02/28/07	4.844190		7.1	<2			<0.1							CLEAR
Minimum	4.775481	ND	6.8	<2	4	579	<0.1	930	ND	1.6	17.4	19.6	18.1	
Maximum	5.835921	6	7.1	1600.0	8	651	<0.1	1019	0.2	2.2	19.6	21.3	18.1	
Average	5.065229	4	6.9	60.0	6	618	<0.1	974	0.1	1.9	18.5	20.5	18.1	
Total Samples	28	4	28	28	4	4	28	4	2	2	2	2	1	

City of Hanford
Effluent Analysis Results

Date	Influent Flow MGD Metered Continuous	Effluent BOD mg/l Grab Weekly	Effluent pH Grab Daily	Effluent Total Coliforms MPN/100ml Grab Daily	Effluent TSS mg/l Grab Weekly	Effluent TDS mg/l Grab Weekly	Effluent Set Solids mg/l Grab Daily	Effluent EC umhos Grab Weekly	Effluent NH_3 mg/l Grab 2 x Month	Effluent TKN mg/l 24 hr composite 2 x Month	Effluent NO_3-N mg/l 24 hr composite 2 x Month	Effluent Total N mg/l Calculated 2 x Month	Effluent SAR Unitless Calculated Monthly	Effluent Color Unitless Observed Daily
03/01/07	5.032224		7	<2			<0.1							CLEAR
03/02/07	5.093363		7.2	<2			<0.1							CLEAR
03/03/07	4.995990		7.0	<2			<0.1							CLEAR
03/04/07	4.905948		6.9	<2			<0.1							CLEAR
03/05/07	4.972788		7.0	<2			<0.1							CLEAR
03/06/07	5.280374	4	7.0	<2	7	587	<0.1	973	0.5	5.4	18.4	23.8	16.7	CLEAR
03/07/07	4.867140		6.8	95			<0.1							CLEAR
03/08/07	5.081170		6.8	<2			<0.1							CLEAR
03/09/07	5.178703		6.8	<2			<0.1							CLEAR
03/10/07	5.078704		6.8	<2			<0.1							CLEAR
03/11/07	5.382260		6.7	<2			<0.1							CLEAR
03/12/07	4.737560		6.8	170			<0.1							CLEAR
03/13/07	4.875966		6.8	2			<0.1							CLEAR
03/14/07	4.920980		6.8	<2			<0.1							CLEAR
03/15/07	4.949857		6.9	5			<0.1							CLEAR
03/16/07	5.065042	5	6.9	8	6	645	<0.1	1099	0.3	2.5	23.5	26		CLEAR
03/17/07	4.977312		6.9	<2			<0.1							CLEAR
03/18/07	4.899353		7.0	<2			<0.1							CLEAR
03/19/07	5.050958		6.8	<2			<0.1							CLEAR
03/20/07	5.370815		6.9	4			<0.1							CLEAR
03/21/07	4.920226		7.0	<2			<0.1							CLEAR
03/22/07	5.175624	5	6.9	<2	7	624	<0.1	1074						CLEAR
03/23/07	4.944466		6.8	<2			<0.1							CLEAR
03/24/07	5.052234		6.8	5			<0.1							CLEAR
03/25/07	4.977483		7.2	220			<0.1							CLEAR
03/26/07	5.063309		6.9	7			<0.1							CLEAR
03/27/07	5.300999		6.8	49			<0.1							CLEAR
03/28/07	4.734499	ND	6.8	<2	9	624	<0.1	994						CLEAR
03/29/07	4.908781		7.0	<2			<0.1							CLEAR
03/30/07	4.789879		7.1	<2			<0.1							CLEAR
03/31/06	5.072776		7.1	<2			<0.1							CLEAR
Minimum	4.734499	ND	6.7	<2	6	587	<0.1	973	0.3	2.5	18.4	23.8	16.7	
Maximum	5.382260	5	7.2	<2	9	645	<0.1	1099	0.5	5.4	23.5	26	16.7	
Average	5.021187	3.5	6.9	18.8	7	620	<0.1	1035	0.4	4.0	21.0	25	16.7	
Total Samples	31	4	31	31	4	4	31	4	2	2	2	2	1	

City of Hanford
Effluent Analysis Results

Date	Influent Flow MGD Metered Continuous	Effluent BOD mg/l Grab Weekly	Effluent pH Grab Daily	Effluent Total Coliforms MPN/100ml Grab Daily	Effluent TSS mg/l Grab Weekly	Effluent TDS mg/l Grab Weekly	Effluent Set Solids mg/l Grab Daily	Effluent EC umhos Grab Weekly	Effluent NH_3 mg/l Grab 2 x Month	Effluent TKN mg/l 24 hr composite 2 x Month	Effluent NO_3-N mg/l 24 hr composite 2 x Month	Effluent Total N mg/l Calculated 2 x Month	Effluent SAR Unitless Calculated Monthly	Effluent Color Unitless Observed Daily
04/01/07	4.830363		6.9	<2			<0.1							CLEAR
04/02/07	5.072363		6.9	<2			<0.1							CLEAR
04/03/07	5.040357		6.8	<2			<0.1							CLEAR
04/04/07	4.707399	ND	6.8	<2	3	618	<0.1	1047						CLEAR
04/05/07	4.930837		6.8	2			<0.1		ND	2.2	16.8	19	18.6	CLEAR
04/06/07	4.893934		6.9	<2			<0.1							CLEAR
04/07/07	4.776302		7.0	<2			<0.1							CLEAR
04/08/07	4.764261		7.0	<2			<0.1							CLEAR
04/09/07	4.940431		6.8	<2			<0.1							CLEAR
04/10/07	5.037451	ND	6.9	<2	4	619	<0.1	1009						CLEAR
04/11/07	4.806321		6.9	<2			<0.1							CLEAR
04/12/07	5.014695		6.9	<2			<0.1							CLEAR
04/13/07	5.083865		6.9	23			<0.1							CLEAR
04/14/07	4.996048		7.1	2			<0.1							CLEAR
04/15/07	4.953921		7.0	5			<0.1							CLEAR
04/16/07	5.208854		6.8	4			<0.1							CLEAR
04/17/07	5.439292		6.9	<2			<0.1	1083	0.3	2.1	18.2	20.3		CLEAR
04/18/07	4.747848	5	6.8	<2	4	668	<0.1							CLEAR
04/19/07	5.012909		6.8	<2			<0.1							CLEAR
04/20/07	4.996195		7.0	5			<0.1							CLEAR
04/21/07	5.023140		6.9	5			<0.1							CLEAR
04/22/07	5.007434		6.9	<2			<0.1							CLEAR
04/23/07	5.008766		6.8	<2			<0.1							CLEAR
04/24/07	5.349116	5	6.9	<2	6	633	<0.1	973						CLEAR
04/25/07	4.859910		6.8	<2			<0.1							CLEAR
04/26/07	5.139069		6.9	<2			<0.1							CLEAR
04/27/07	5.170618		6.8	<2			<0.1							CLEAR
04/28/07	4.802774		7.3	<2			<0.1							CLEAR
04/29/07	4.911147		6.9	<2			<0.1							CLEAR
04/30/07	5.115138		6.8	<2			<0.1							CLEAR
Minimum	4.707399	ND	6.8	<2	3	618	<0.1	973	ND	2.1	16.8	19	18.6	
Maximum	5.439292	5	7.3	23	6	668	<0.1	1083	0.3	2.2	18.2	20.3	18.6	
Average	4.988025	3	6.9	1.5	4	635	<0.1	1028	0	2	18	20	18.6	
Total Samples	30	4	30	31	4	4	31	4	2	2	2	2	1	

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05/01/07	5.477625		6.8	<2			<0.1							CLEAR
05/02/07	4.928593		6.8	<2			<0.1							CLEAR
05/03/07	5.116316	4	6.9	<2	6	653	<0.1	983						CLEAR
05/04/07	5.040925		6.8	<2			<0.1							CLEAR
05/05/07	4.930144		7.0	<2			<0.1							CLEAR
05/06/07	5.025880		7.0	<2			<0.1							CLEAR
05/07/07	4.888359		6.9	5			<0.1							CLEAR
05/08/07	5.113990		6.7	15			<0.1							CLEAR
05/09/07	4.734014	6	7.0	<2	5	656	<0.1	1063	ND	2.6	19.4	22.0	19.5	CLEAR
05/10/07	5.520655		6.9	<2			<0.1							CLEAR
05/11/07	3.863214		6.9	<2			<0.1							CLEAR
05/12/07	4.433426		7.1	<2			<0.1							CLEAR
05/13/07	4.776486		7.2	<2			<0.1							CLEAR
05/14/07	5.072942		6.9	5			<0.1							CLEAR
05/15/07	5.117378	6	6.9	<2	6	631	<0.1	973						CLEAR
05/16/07	4.950912		6.9	<2			<0.1							CLEAR
05/17/07	5.016558		7.2	17			<0.1							CLEAR
05/18/07	4.934780		7.2	<2			<0.1							CLEAR
05/19/07	5.098490		6.8	<2			<0.1							CLEAR
05/20/07	4.938667		6.8	<2			<0.1							CLEAR
05/21/07	5.142929		6.9	<2			<0.1							CLEAR
05/22/07	5.361570	6	6.9	<2	7	623	<0.1	985	1.5	5	13.5	18		CLEAR
05/23/07	4.838397		6.8	<2			<0.1							CLEAR
05/24/07	4.704118		6.8	<2			<0.1							CLEAR
05/25/07	5.002730		6.9	<2			<0.1							CLEAR
05/26/07	4.920638		7.0	<2			<0.1							CLEAR
05/27/07	4.794690		7.3	<2			<0.1							CLEAR
05/28/07	4.898763		6.8	<2			<0.1							CLEAR
05/29/07	5.397016		6.9	<2			<0.1							CLEAR
05/30/07	4.789889		7.3	<2			<0.1							CLEAR
05/31/07	5.100000	14	7.1	<2	11	646	<0.1	1065						CLEAR
Minimum	3.863214	4	6.7	<2	5	623	<0.1	973	ND	2.6	13.5	18	19.5	
Maximum	5.520655	14	7.3	17	11	656	<0.1	1065	1.5	5	19.4	22	19.5	
Average	4.965487	7	6.9	1.40	7	642	<0.1	1014	1	4	16	20	19.5	
Total Samples	31	5	31	31	5	5	31	5	2	2	2	2	1	

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06/01/07	5.077916		7.0	<2			<0.1							CLEAR
06/02/07	5.032210		7.1	<2			<0.1							CLEAR
06/03/07	4.953764		6.8	<2			<0.1							CLEAR
06/04/07	5.069990		6.9	17			<0.1							CLEAR
06/05/07	5.349828		7.0	4			<0.1		0.3	3.3	14.1	17.4	16	CLEAR
06/06/07	4.737794	3	7.0	<2	3	568	<0.1	968						CLEAR
06/07/07	5.012999		6.8	<2			<0.1							CLEAR
06/08/07	5.237999		7.0	11			<0.1							CLEAR
06/09/07	4.893999		7.1	<2			<0.1							CLEAR
06/10/07	4.812624		7.1	<2			<0.1							CLEAR
06/11/07	5.106799		7.1	8			<0.1							CLEAR
06/12/07	5.105627	5	6.9	<2	5	580	<0.1	969						CLEAR
06/13/07	4.756053		6.7	<2			<0.1							CLEAR
06/14/07	5.194715		6.9	<2			<0.1							CLEAR
06/15/07	4.858011		6.9	<2			<0.1							CLEAR
06/16/07	4.886672		6.9	<2			<0.1							CLEAR
06/17/07	4.954258		6.9	<2			<0.1							CLEAR
06/18/07	4.201938		6.8	<2			<0.1							CLEAR
06/19/07	5.148967		7.2	<2			<0.1							CLEAR
06/20/07	4.895189		7.3	<2			<0.1							CLEAR
06/21/07	4.049676	ND	6.8	<2	3	552	<0.1	908						CLEAR
06/22/07	4.959772		7.3	<2			<0.1							CLEAR
06/23/07	4.912964		7.2	220			<0.1							CLEAR
06/24/07	4.903658		7.1	<2			<0.1							CLEAR
06/25/07	4.671390		7.0	<2			<0.1							CLEAR
06/26/07	5.362720		7.3	<2			<0.1							CLEAR
06/27/07	4.835200	15	6.8	<2	5	585	<0.1	907						CLEAR
06/28/07	5.057443		6.8	2			<0.1							CLEAR
06/29/07	5.073060		6.9	<2			<0.1							CLEAR
06/30/07	4.982558		7.1	17			<0.1							CLEAR
Minimum	4.049676	ND	6.7	<2	3	552	<0.1	907.0	0.3	3.3	14.1	17.4	16	
Maximum	5.362720	15	7.3	220	5	585	<0.1	969.0	0.3	3.3	14.1	17.4	16	
Average	4.936526	6	7.0	9.3	4	571	<0.1	938.0	0	3	14	17	16	
Total Samples	30	4	30	30	4	4	30	4	1	1	1	1	1	

City of Hanford
Effluent Analysis Results

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07/01/07	4.934620		7.3	<2			<0.1							CLEAR
07/02/07	5.097500		6.8	11			<0.1							CLEAR
07/03/07	5.998107		7.0	<2			<0.1							CLEAR
07/04/07	4.039511		6.9	8			<0.1							CLEAR
07/05/07	5.022530		6.9	79			<0.1							CLEAR
07/06/07	5.189544	ND	7.0	<2	4	573	<0.1	831	ND	2.0	1.6	3.6	21.8	CLEAR
07/07/07	4.820600		7.0	<2			<0.1							CLEAR
07/08/07	4.885279		7.0	<2			<0.1							CLEAR
07/09/07	5.223505		6.8	5			<0.1							CLEAR
07/10/07	5.247999		6.9	<2			<0.1							CLEAR
07/11/07	4.982622	3	7.1	2	3	528	<0.1	937						CLEAR
07/12/07	5.099786		6.9	<2			<0.1							CLEAR
07/13/07	5.231111		6.9	<2			<0.1							CLEAR
07/14/07	5.034278		7.2	2			<0.1							CLEAR
07/15/07	4.973990		7.3	<2			<0.1							CLEAR
07/16/07	5.127280		7.1	<2			<0.1							CLEAR
07/17/07	5.107824		7.0	<2			<0.1		ND	2.3	10.4	12.7		CLEAR
07/18/07	5.132850	9	7.1	<2	5	578	<0.1	954						CLEAR
07/19/07	5.224094		7.1	170			<0.1							CLEAR
07/20/07	5.145672		7.2	>1600			<0.1							CLEAR
07/21/07	5.172258		7.1	>1600			<0.1							CLEAR
07/22/07	4.877064		7.0	<2			<0.1							CLEAR
07/23/07	5.139736		6.8	<2			<0.1							CLEAR
07/24/07	5.216920	13	7.2	2	9	608	<0.1	905						CLEAR
07/25/07	5.001724		6.9	920			<0.1							CLEAR
07/26/07	5.026907		7.1	<2			<0.1							CLEAR
07/27/07	4.983899		7.1	<2			<0.1							CLEAR
07/28/07	4.866650		7.0	<2			<0.1							CLEAR
07/29/07	4.944630		7.0	<2			<0.1							CLEAR
07/30/07	4.963850		7.0	<2			<0.1							CLEAR
07/31/07	5.267686		7.0	13			<0.1							CLEAR
Minimum	4.039511	ND	6.8	<2	3	528	<0.1	831	ND	2	1.6	3.6	21.8	
Maximum	5.998107	13	7.3	1600	9	608	<0.1	954	ND	2.3	10.4	12.7	21.8	
Average	5.063872	6	7.0	146.6	5	572	<0.1	907	0	2	6	8	21.8	
Total Samples	31	4	31	31	4	4	31	4	2	2	2	2	1	

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08/01/07	4.659380	2	7.0	240	4	638	<0.1	917						
08/02/07	5.005108		7.1	240			<0.1							CLEAR
08/03/07	4.901132		7.0	<2			<0.1							CLEAR
08/04/07	4.905731		7.2	<2			<0.1							CLEAR
08/05/07	4.856625		7.0	<2			<0.1							CLEAR
08/06/07	5.016328		7.1	7			<0.1							CLEAR
08/07/07	5.145972		7.0	2			<0.1							CLEAR
08/08/07	4.798829		7.0	<2			<0.1							CLEAR
08/09/07	5.075100	3	7.0	<2	5	605	<0.1	838	ND	2.9	13.7	16.6	18.6	CLEAR
08/10/07	5.151750		7.3	<2			<0.1							CLEAR
08/11/07	4.620105		6.9	<2			<0.1							CLEAR
08/12/07	4.798193		6.9	<2			<0.1							CLEAR
08/13/07	4.953171		7.1	<2			<0.1							CLEAR
08/14/07	5.514982		6.8	<2			<0.1							CLEAR
08/15/07	4.590818		7.2	2			<0.1							CLEAR
08/16/07	5.106731		7.3	<2			<0.1							CLEAR
08/17/07	4.924838	6	7.0	<2	6	602	<0.1	885						CLEAR
08/18/07	4.869509		7.1	<2			<0.1							CLEAR
08/19/07	4.888544		7.1	<2			<0.1							CLEAR
08/20/07	4.978141		7.0	<2			<0.1							CLEAR
08/21/07	5.058121		6.8	<2			<0.1							CLEAR
08/22/07	4.865300		6.8	<2			<0.1							CLEAR
08/23/07	4.976175		7.0	<2			<0.1		ND	1.7	0.4	2.1		CLEAR
08/24/07	5.061279	ND	7.0	<2	4	494	<0.1	896						CLEAR
08/25/07	5.030848		6.8	2			<0.1							CLEAR
08/26/07	4.767442		6.7	<2			<0.1							CLEAR
08/27/07	4.869430		6.9	<2			<0.1							CLEAR
08/28/07	5.163715		7.0	<2			<0.1							CLEAR
08/29/07	4.909645	ND	7.0	<2	4	575	<0.1	878						CLEAR
08/30/07	5.163715		7.0	<2			<0.1							CLEAR
08/31/07	5.045454		6.7	<2			<0.1							CLEAR
Minimum	4.590818	ND	6.7	<2	4	494	<0.1	838	ND	1.7	0.4	2.1	18.6	
Maximum	5.514982	6	7.3	240	6	638	<0.1	917	ND	2.9	13.7	16.6	18.6	
Average	4.957165	2	7.0	16.43	5	583	<0.1	883	0	2	7	9	18.6	
Total Samples	31	5	31	31	5	5	31	5	2	2	2	2	1	

City of Hanford
Effluent Analysis Results

Date	Influent Flow MGD Metered Continuous	Effluent BOD mg/l Grab Weekly	Effluent pH Grab Daily	Effluent Total Coliforms MPN/100ml Grab Daily	Effluent TSS mg/l Grab Weekly	Effluent TDS mg/l Grab Weekly	Effluent Set Solids mg/l Grab Daily	Effluent EC umhos Grab Weekly	Effluent NH_3 mg/l Grab 2 x Month	Effluent TKN mg/l 24 hr composite 2 x Month	Effluent NO_3-N mg/l 24 hr composite 2 x Month	Effluent Total N mg/l Calculated 2 x Month	Effluent SAR Unitless Calculated Monthly	Effluent Color Unitless Observed Daily
09/01/07	4.902481		7.0	<2			<0.1							CLEAR
09/02/07	4.727642		7.0	<2			<0.1							CLEAR
09/03/07	4.833792		7.0	<2			<0.1							CLEAR
09/04/07	4.939942		7.1	<2			<0.1							CLEAR
09/05/07	4.760582		6.7	<2			<0.1							CLEAR
09/06/07	5.041931		6.8	<2			<0.1							CLEAR
09/07/07	5.052721	ND	6.9	<2	4	582	<0.1	865						CLEAR
09/08/07	4.925110		7.0	<2			<0.1							CLEAR
09/09/07	4.854462		7.1	<2			<0.1							CLEAR
09/10/07	4.980156		6.8	<2			<0.1							CLEAR
09/11/07	5.234492		6.9	<2			<0.1							CLEAR
09/12/07	4.696322		7.1	<2			<0.1							CLEAR
09/13/07	5.111601	ND	6.9	<2	3	588	<0.1	962						CLEAR
09/14/07	5.091170		7.0	<2			<0.1							CLEAR
09/15/07	4.855464		7.2	<2			<0.1							CLEAR
09/16/07	4.772520		7.1	<2			<0.1							CLEAR
09/17/07	4.984344		7.0	22			<0.1							CLEAR
09/18/07	5.282078		6.7	22			<0.1							CLEAR
09/19/07	4.742447		6.9	14			<0.1							CLEAR
09/20/07	5.029505	2	7.1	<2	4	600	<0.1	880						CLEAR
09/21/07	5.242198		7.1	2			<0.1							CLEAR
09/22/07	4.797384		6.6	2			<0.1							CLEAR
09/23/07	4.756600		6.9	<2			<0.1							CLEAR
09/24/07	4.935512		6.7	<2			<0.1							CLEAR
09/25/07	5.384362		7.0	2			<0.1							CLEAR
09/26/07	4.671085		6.9	49			<0.1		ND	4.8	12.6	17.4	17.9	CLEAR
09/27/07	4.981109	5	7.2	920	6	620	<0.1	921						CLEAR
09/28/07	5.069790		6.7	920			<0.1							CLEAR
09/29/07	4.900335		6.9	<2			<0.1							CLEAR
09/30/07	4.786074		7.0	920			<0.1							CLEAR
Minimum	4.671085	ND	6.6	<2	3	582	<0.1	865	ND	4.8	12.6	17.4	17.9	
Maximum	5.384362	5	7.2	920	6	620	<0.1	962	ND	4.8	12.6	17.4	17.9	
Average	4.944774	2	6.9	95.8	4	598	<0.1	907	0	5	13	17	17.9	
Total Samples	30	4	30	31	4	4	31	4	1	1	1	1	1	

ATTACHMENT DR26-1

GWF Hanford Preliminary Draft DESCP

Drainage, Erosion, and Sedimentation Control Plan for the GWF Hanford Project

Prepared for

GWF Energy LLC

February 2009

CH2MHILL
2485 Natomas Park Drive
Suite 600
Sacramento, CA 95833

Drainage, Erosion, and Sedimentation Control Plan for the GWF Hanford Project

Submitted to

GWF Energy LLC

February 2009

CH2MHILL

Contents

GWF Hanford Project Drainage, Erosion, and Sedimentation Control Plan

GWF Energy LLC (GWF) is proposing to modify the existing Hanford Energy Peaker Plant (HEPP) nominal 95-megawatt (MW) simple-cycle power plant by converting the facility into a combined-cycle power plant with a nominal 25 MW (net) of additional generating capacity. The modifications to the facility will be referred to hereinafter as GWF Hanford Combined-Cycle Power Plant (GWF Hanford) with a new nominal generating capacity for this site of 120 MW net. GWF will construct, own, and operate GWF Hanford.

GWF has prepared this Drainage, Erosion and Sedimentation Control Plan (DESCP) for the GWF Hanford project to demonstrate that construction activities associated with the project will not result in an increase in offsite flooding potential or sedimentation and that the project will meet all local, state, and federal regulatory requirements associated with the protection of water quality and soil resources. The DESCP includes the following elements:

- A vicinity map showing the location of all project elements with depictions of all significant geographic features
- A site delineation that includes the boundary lines of all construction areas and the location of existing and proposed structures, pipelines, roads, and drainage facilities
- Site maps showing existing/proposed drainage systems
- A description of the drainage measures to be taken to protect the site and downstream facilities, including a discussion of compliance with the Regional Water Quality Control Board (RWQCB) discharge order
- A delineation of all areas to be cleared of vegetation
- Identification of the quantities of material excavated or filled for the site and all project elements, including those materials removed from the site due to contamination
- An illustration of existing topography and site-specific Best Management Practices (BMPs) to be implemented during construction, as well as a schedule of the timing and implementation of erosion and sediment control measures

A. Vicinity Map

GWF Hanford is located in northeastern Kings County, approximately 30 miles south of Fresno, south of the City of Hanford within the city limits off of Idaho Avenue (Figure 1). GWF Hanford is located on a portion of the southwest quarter of Section 13, Township 19 South and Range 21 East at an elevation of 242 feet above sea level on the essentially flat floor of the San Joaquin Valley. GWF Hanford will be located adjacent to property already in use for energy generation. Outside of Kings Industrial Park, land use in the vicinity of GWF Hanford is primarily agricultural, with the exception of a few businesses and

residences. Directly adjacent to the HEPP is the existing GWF Hanford LP (Hanford LP) power plant, which is a petroleum coke-fired plant. Hanford LP will provide certain services associated with the operation of GWF Hanford. Primary access to GWF Hanford will be from Idaho Avenue. GWF Hanford will occupy an approximately 4.7-acre, fenced site within the existing GWF owned 10-acre parcel in Hanford, California (Figure 2). In addition, temporary disturbance of approximately 5.3 acres for construction laydown and parking will occur on land that is outside of the existing plant fence line (Figure 2).

B. Site Delineation

Figure 3 shows the detailed site plan for the GWF Hanford project.

The GWF Hanford project includes the installation of new once-through steam generators (OTSGs) to allow the plant to be operated either in its current simple-cycle configuration with no steam generation, but with the selective catalytic reduction (SCR) and oxidation catalyst in operation, or as a combined-cycle power plant generating an additional 25 MW (net) of power with new proposed emission limits. Since GWF Hanford's interconnections to electrical transmission, natural gas, water supply, and sewer will occur through existing connections within the HEPP site, there will not be any offsite linear connections as part of the project. All of the new project components and modifications are within the existing HEPP and Hanford LP developed footprint.

Major components and features of the GWF Hanford project relevant to this document include:

- Addition of two (2) new OTSGs
- Demolition and removal of the two existing oxidation catalyst and selective catalytic reduction (SCR) systems, including the existing catalyst housing and 85-foot stacks
- Addition of a new 25 MW (net) condensing steam turbine generator (STG) with associated lube oil cooler
- Addition of a new 74-foot tall by 240-foot long by 42-foot wide air cooled condenser (ACC) for system heat rejection
- Onsite modifications to the water piping, fire protection, and the stormwater drainage collection systems
- Utilization of the existing Hanford LP stormwater retention pond for stormwater management – the pond will be expanded by approximately 1,200 cubic yards
- Modification of the wastewater treatment system to optimize water supply requirements and minimize offsite wastewater disposal

Construction of GWF Hanford is expected to take place from February 2011 through April 2012, for a total duration of 15 months of construction. Construction access generally will be from Idaho Avenue. Materials and equipment will be delivered by truck. During construction, temporary disturbance of approximately 5.3 acres for construction laydown and parking will occur on land that is outside of the existing plant fence line, but that was previously used for construction laydown and parking during the construction of HEPP.

Water will be used for fugitive dust control during construction. The maximum daily water use is expected to be approximately 6,000 gallons and the daily average is estimated at approximately 1,000 gallons.

Wastewater produced by GWF Hanford will be transferred to Hanford LP and recycled as cooling tower make up or it will be hauled offsite for recycle or disposal. The primary wastewater discharge from the plant will be from the oil/water separator and blowdown water generated by the wet surface air cooler, which will be recycled by Hanford LP in the Hanford LP cooling tower prior to discharge into the City sewer system. Water retained in the oil holding tank associated with the oil/water separator, as well as collected turbine wash water, will be hauled offsite for final disposal.

Natural gas will continue to be delivered to the site via an existing pipeline and pressurized onsite. GWF Hanford will be connected to an individual, dedicated, three-phase step-up transformer, which will be connected to the existing HEPP 115-kV switchyard. From the switchyard, the generated power will be transmitted into the PG&E Hanford Switchyard within the facility.

C. Watercourses and Critical Areas

The GWF Hanford site is south of the City of Hanford. The climate in the Hanford area is Mediterranean-subtropical, with mild winters and dry summers. The average annual rainfall is 8.19 inches (McCurdy, 1998). Most of the precipitation occurs between November and April. The rainfall for a 100-year 24-hour event is 2.5 inches and 1.6 inches for a 6-hour event; a 10-year 24-hour event is 1.7 inches and 1.1 inches for a 6-hour event (NOAA Atlas 2).

Soil resource information was obtained from a soil survey of Kings County published by the U.S. Department of Agriculture Soil Conservation Service (Arroues and Anderson, 1986). Project soil types in the area of the GWF Hanford project features are as listed in Table 1.

TABLE 1
Soil Mapping Unit Identified by Project Component

Project Component	Soil Mapping Unit	Soil Profile
GWF Hanford Project Site	130 – Kimberlina fine sandy loam, saline-alkali: Very deep and well drained. Alluvium derived from igneous and sedimentary rock.	Sandy Loam: 0 to 60 inches or more; calcareous below a depth of 8 inches and saline-alkali throughout.
Construction Parking and Laydown	130 – Kimberlina fine sandy loam, saline-alkali: Very deep and well drained. Alluvium derived from igneous and sedimentary rock.	Sandy Loam: 0 to 60 inches or more; calcareous below a depth of 8 inches and saline-alkali throughout.

Source: Excerpted from Table 8.9-2 Characteristics of Soil Types in the Immediate Vicinity of GWF Hanford Energy Park (GWF, 2000).

GWF Hanford is located within the existing HEPP site that is devoid of natural vegetation or communities. The HEPP site is graded and covered with concrete foundations, facility components, crushed rock, and a paved plant access road. The temporary construction parking and laydown area will be located along the northern perimeter of the site, extending outside of the existing site by approximately 200 feet. This area was previously used for laydown and parking during construction of the HEPP. This area is generally flat, has been previously graded, has been altered by past and current industrial use, and supports only weedy annuals.

Reconnaissance-level wildlife and floristic surveys of the GWF Hanford project site were conducted on April 26, 2007. During the 2007 field effort, the entire site and the temporary construction laydown and parking area was surveyed on foot and a list of plant and wildlife species was compiled. Habitats were assessed for their potential to support rare plant species and were compared to descriptions of special plant communities known from the San Joaquin Valley. Based on the reconnaissance survey performed in April 2007, it was determined that suitable habitat for these plants is not available on the project site. No special-status plant species were observed during 2007 field reconnaissance for the GWF Hanford, either within the power plant location or in the construction parking and laydown area.

Lakeside Ditch is located to the west of the project site and Sand Slough is located to the west and south of the project site (Figure 4). Lakeside Ditch transfers irrigation water from the Kings River to agricultural end users and provides stormwater drainage transfer for the region to groundwater recharge basins managed by the Kings County Water District. Lakeside Ditch contains water intermittently, depending on the season. Similarly, Sand Slough flows intermittently and receives stormwater from the region.

D. Drainage Map

Figures 5 and 6 show the grading and drainage plans for the GWF Hanford project.

E. Drainage Narrative

The stormwater management system was designed in accordance with the EPA's guidance document entitled "Storm Water Management for Construction Activities—Developing Pollution Prevention Plans and Best Management Practices" (EPA 832-R-92-005, September 1992) and the California Storm Water Best Management Practices Handbook.

Under the National Pollutant Discharge Elimination System (NPDES) *General Permits for Storm Water Discharges from Construction Sites,* it is necessary to estimate the runoff coefficient of the site before and after construction is complete. For the GWF Hanford project, calculations were prepared for the retention pond improvements (Appendix A). In this scenario, the existing pond volume approximates the pre-construction runoff volume for the site[1] and the total required pond volume represents the post-construction runoff

[1] This assumes that the existing retention pond was sized to accommodate the maximum runoff flows of the existing facilities – including the GWF Hanford project site in its existing condition – thus representing an approximate pre-construction runoff volume for the site.

volume. The runoff calculations used to support the sizing of the onsite retention pond were based on the Rational Method (as set forth in the City of Hanford Public Works Construction Standards Manual and Storm Drainage Design Criteria). The Rational Method is expressed by equations and tables using the known runoff coefficient, average rainfall intensity, and drainage area.

Relevant sections of Appendix A include:

- Volume needed for new development
- Existing Pond Volume
- Total Required Volume of Pond
- Proposed Pond Volume

A summary of the calculations is presented in Table 2.

TABLE 2
Summary of Retention Pond Improvement Calculations

Construction site area	Approximately 4.7 acres
Volume needed for new development	31,488 ft^3
Existing Pond Volume	124,637.56 ft^3
Total Required Volume of Pond	156,125.56 ft^3
Proposed Pond Volume	158,242.59 ft^3

ft^3 = cubic feet

During construction, approximately 4.7 acres of land associated with the GWF Hanford project will be graded. A percentage of the disturbed area will be returned to a vegetated state after construction. However, the project will increase stormwater runoff at the site due to the conversion of the existing pervious open area to impervious surface. GWF Hanford stormwater will be collected onsite and directed to the existing Hanford LP stormwater retention pond.

Grading for GWF Hanford will be designed to ensure that stormwater runoff during operations and maintenance is confined within GWF Hanford and drained to the existing stormwater retention pond located on the northwest side of the Hanford LP. The primary stormwater conveyance pipe, which runs along the northern fence line to the stormwater retention pond, can accommodate the increased flow generated by the GWF Hanford project. The GWF Hanford project includes the addition of two new catch basins in the northeast corner and the east property line of the project site. Stormwater from these catch basins will flow via underground pipe to the existing stormwater retention pond.

The stormwater retention pond will be widened by approximately 1,200 cubic yards (approximately 20 ft to the west within the existing fence line) to accommodate the increase in stormwater flow resulting from the construction and operation of GWF Hanford. The drainage systems for GWF Hanford have been designed to accommodate the stormwater flow resulting from a 10-day, 100 year storm (Appendix A).

Best engineering management practices and drainage control measures will be implemented to minimize erosion and water quality impacts during construction of GWF Hanford.

A construction stormwater monitoring program will be implemented and construction related stormwater discharge will be addressed in a construction SWPPP that minimizes soil erosion and is consistent with the requirements of the City of Hanford. In addition, best management practices (BMPs), including erosion and sediment controls, will be implemented to achieve compliance with the California National Pollutant Discharge Elimination System (NPDES) Storm Water General Permit for Storm Water Discharge Associated with Construction Activity and all other applicable LORS.

F. Clearing and Grading Plans

Figures 5 and 6 show the grading and drainage plans for the GWF Hanford project.

G. Clearing and Grading Narrative

The information provided in this section is preliminary and will be updated and expanded upon once the information is available. Once the project design is finalized and prior to any soil disturbance, GWF will update this DESCP and the SWPPP to reflect design changes.

Construction of GWF Hanford is expected to take place from February 2011 through April 2012, for a total duration of 15 months of construction. Construction will be scheduled between 6 a.m. and 6 p.m., Monday through Saturday. Additional hours may be necessary to make up schedule deficiencies or to complete critical construction activities. During the start-up phase of the project, some activities will continue 24 hours a day, seven days a week. Major milestones are listed in Table 3.

TABLE 3
Major Construction Milestones

Activity	Date
Contractor Mobilization	Month 1
Site Preparation	Month 1
SCR Demolition	Month 1 – 2
Underground Piping	Month 2 – 5
Foundations	Month 2 – 7
Pipe Rack	Month 6 – 10
Air Cooled Condenser	Month 8 – 12
Pipe	Month 7 – 12
Once Through Steam Generator	Month 9 – 11
Steam Turbine and Generator	Month 8 – 13
STG Enclosure	Month 12 – 13
Mechanical Equipment	Month 7 – 13
Electrical Equipment	Month 7 – 15
Substation	Month 8 – 11
Start-up and Commissioning	Month 13 – 15
Contractor De-mobilization	Month 15

The Construction Contractor will perform clearing and grubbing of the construction areas using scrapers or the equivalent. Areas cleared and grubbed will be smoothed by earthwork equipment, possibly a grader or similar piece of equipment, and compacted by vibrating rollers. Concrete, mechanical and electrical works will be performed over a period of 15 months, with the aid of graders, rollers, front loaders, dump trucks, trenching machines, concrete mixer and pump trucks, cranes, and pick-ups. Table 4 outlines the amount of cut and fill planned for specific components of the project.

TABLE 4
Clearing and Grading

Description	Stockpile (yd^3)	Total Cut (yd^3)	Total Fill (yd^3)
To be determined			
Total			

yd^3 = cubic yards

The following subsections provide a discussion of clearing and grading associated with each of the major construction elements of the project.

GWF Hanford Project Site

Earthwork will consist of removal of topsoil, vegetation, and debris; excavation and compaction of earth to create the plant grade; and excavation for foundations and underground systems. Soil disturbing activities will include grubbing and clearing, rough grading, excavating, filling, and final grading. For all areas where earthwork will be executed, materials suitable for compaction will be stockpiled in designated onsite locations. Materials not suitable for compaction will be stored in separate stockpiles and reused on the site, as appropriate. Any contaminated materials encountered during excavation will be disposed of in accordance with applicable laws, ordinances, regulations, and standards.

Construction Laydown and Parking Areas

A total of 5.3 acres to the north of the project site will be used for construction laydown and parking areas. The construction laydown and parking areas may be graded and covered in gravel.

H. Best Management Practices

Discussed below in the narrative is a list and description of all potential BMPs to be used on the site during construction activities. BMP maps shall be provided once the SWPPP is complete. As part of the SWPPP, a current version of the BMP drawings are maintained in the project construction trailer and updated regularly to reflect modified or new BMPs that are being implemented and maintained on site.

I. Best Management Practices Narrative

A preliminary project construction schedule is provided in Table 5 (upon completion of final design engineering and prior to construction, a refined schedule of constructions activities will be included in the DESCP). An implementation and maintenance schedule for the drainage, erosion, and sediment control methods and practices that will be implemented at the GWF Hanford project site are included in Table 6.

TABLE 5
Key Construction Events

Event Description	Expected Dates
Date of Certification by CEC	TBD
Start of Rainy Season	October 15 (Typical) *Project site and linears must have SWPPP protection measures implemented prior to first rain and these measures must remain in effect for years 2011 through 2012.*
End of Rainy Season	May 1 (Typical)
Clearing and Grubbing	First quarter 2011
Rough Grading	First quarter 2011
Construction of Storm Drain Improvements	Second quarter 2011
Final Grade	Third quarter 2011
Building Construction	Third quarter 2011
Paving	Fourth quarter 2011
Completion of Construction	First Quarter 2012
Start of Operation	Second Quarter 2012

TABLE 6
BMP Implementation and Maintenance Schedule

Best Management Practices	Implementation	Inspection Frequency	Maintenance
Silt Fence	Two weeks prior to construction	Inspect before and after storm events (and once each 24-hour period during extended storm events), once a week during rainy season, and bi-weekly during dry season	Replace torn sections, repair up-rooted sections, clean out collected soils when greater the 1/3 height of fence

TABLE 6
BMP Implementation and Maintenance Schedule

Best Management Practices	Implementation	Inspection Frequency	Maintenance
Straw Wattle Dikes	Two weeks prior to construction	Inspect before and after storm events (and once each 24-hour period during extended storm events), once a week during rainy season, and bi-weekly during dry season	Replace crushed sections, replace rotted sections, clean out collected soil when greater than 1/3 height of roll
Coir logs (rolls)	Two weeks prior to construction	Inspect before and after storm events (and once each 24-hour period during extended storm events), once a week during rainy season, and bi-weekly during dry season	Replace crushed sections, replace rotted sections, clean out collected soil when greater than 1/3 height of roll
Erosion control blankets (geotextiles)	Two weeks prior to construction	Inspect before and after storm events (and once each 24-hour period during extended storm events), once a week during rainy season, and bi-weekly during dry season	Replace/repair as necessary
Straw bales	Two weeks prior to construction	Inspect before and after storm events (and once each 24-hour period during extended storm events) and once a week during dry periods	Clean out collected soil when greater than 1/3 height of roll
Sandbags	Two weeks prior to construction	Inspect before and after storm events (and once each 24-hour period during extended storm events), once a week during rainy season, and bi-weekly during dry season	Repair, reshape, replace bags as necessary, replace bags exposed to sunlight every 2 to 3 months, clean out collected soil when greater than 1/3 height of bag
Gravelbags	Two weeks prior to construction	Inspect before and after storm events (and once each 24-hour period during extended storm events), once a week during rainy season, and bi-weekly during dry season	Repair, reshape, replace bags as necessary, replace bags exposed to sunlight every 2 to 3 months, clean out collected soil when greater than 1/3 height of bag
Hydraulic Mulch	Two weeks prior to construction	Inspect before and after storm events (and once each 24-hour period during extended storm events), once a week during rainy season, and bi-weekly during dry season	Areas where erosion is evident shall be repaired and BMPs re-applied as soon as possible; maintain an unbroken, temporary mulched ground cover throughout the period of construction when the soils are not being reworked

TABLE 6
BMP Implementation and Maintenance Schedule

Best Management Practices	Implementation	Inspection Frequency	Maintenance
Straw, Wood, Organic Mulch	Two weeks prior to construction	Inspect before and after storm events (and once each 24-hour period during extended storm events), once a week during rainy season, and bi-weekly during dry season	Reapply mulch when bare earth becomes visible
Seeding	As soon possible after disturbance has permanently or temporarily ceased, but in no case more than 14 days after the construction activity in an area has ceased (Except when construction activity will resume on that portion of the site within 21 days)	Inspect before and after storm events (and once each 24-hour period during extended storm events), once a week during rainy season, and bi-weekly during dry season (Monitored every May for the first three years following project completion)	Areas that do not meet revegetation criteria will be reseeded
Hydroseeding	Two weeks prior to construction (avoid use of hydroseeding in areas where the BMP would be incompatible with future earthwork activities and would have to be removed)	Inspect before and after storm events (and once each 24-hour period during extended storm events), once a week during rainy season, and bi-weekly during non-rainy season	Areas where erosion is evident shall be repaired and BMPs re-applied as soon as possible; where seeds fail to germinate, or they germinate and die, the area must be re-seeded, fertilized, and mulched within the planting season, using not less than half the original application rates
Permanent revegetation	As soon possible after disturbance has permanently or temporarily ceased, but in no case more than 14 days after the construction activity in an area has ceased (Except when construction activity will resume on that portion of the site within 21 days)	Inspect before and after storm events (and once each 24-hour period during extended storm events), once a week during rainy season, and bi-weekly during dry season (Monitored every May for the first three years following project completion or until the site has been successfully revegetated to 75 percent coverage)	Areas that do not meet revegetation criteria will be reseeded
Aggregate surfacing	Two weeks prior to construction	Once a week during rainy season and bi-weekly during dry season	Keep all temporary roadway ditches clear, periodically apply additional aggregate on gravel roads, active dirt construction roads are commonly watered three or more times per day during the dry season.

TABLE 6
BMP Implementation and Maintenance Schedule

Best Management Practices	Implementation	Inspection Frequency	Maintenance
Stockpile Management	Place prior to the commencement of associated activities	Once a week during rainy season and bi-weekly during dry season	Repair and/or replace perimeter controls and covers as needed to keep them functioning properly
Stabilized Construction Entrance/Exit	Two weeks prior to construction	Once a week during rainy season and bi-weekly during dry season	Inspect local roads adjacent to the site daily, remove aggregate, separate and dispose of sediment if construction entrance/exit is clogged with sediment, keep all temporary roadway ditches clear, check for damage and repair as needed, replace gravel material when surface voids are visible, remove all sediment deposited on paved roadways within 24 hours, remove gravel and filter fabric at completion of construction
Street Sweeping, Vacuuming	Once construction commences	Inspect before and after storm events (and once each 24-hour period during extended storm events), when actively in use, points of ingress and egress must be inspected daily, otherwise once a week	When tracked or spilled sediment is observed outside the construction limits, it must be removed at least daily; after sweeping is finished, properly dispose of sweeper wastes at an approved dumpsite

The following describes the BMPs that will be implemented at the GWF project site and the construction laydown area as necessary during the pre-construction, construction, and post-construction phases of the project.

Preservation of Natural Features. Prior to the commencement of soil-disturbing activities, areas of existing vegetation that are to remain and environmentally sensitive areas shall be fenced for protection. In general, site designs shall preserve existing vegetation to the maximum extent possible. During construction, existing vegetation shall be preserved and protected by fencing for as long as possible to minimize erosion.

Stormwater run-on and Concentrated Flows. Existing watercourses shall be protected. To the extent feasible, all concentrated water flows shall be channeled away from disturbed soil areas and stockpiles. Concentrated water flows shall be conveyed in a non-eroding fashion. Erosion in areas of concentrated flow paths shall be controlled by applying erosion control blankets, erosion control seeding, and lining of swales.

Stockpile Management. Stockpiles shall be managed according to the type of material being stockpiled and the season, as follows:

- Soil stockpiles shall be covered or protected with soil stabilization measures and perimeter sediment barriers during the rainy season and covered or protected with perimeter sediment barriers during the non-rainy season.
- Concrete/asphalt rubble, rock, and aggregate base and sub-base stockpiles shall be covered or protected with perimeter sediment barriers year-round.
- Cold mix asphalt stockpiles shall be covered year-round.

Disturbed Soil Area Management. Disturbed soil areas shall be protected with an effective combination of measures including soil stabilization, sediment barriers, and basins/traps.

- Soil Stabilization – Hydraulic mulch; hydroseeding; suitably stabilized, non-polluting straw/wood/organic mulch; geotextiles; stabilized construction roadways.
- Sediment Barriers – Silt fences; sand and gravel bag barriers; straw bale barriers; fiber rolls.
- Basin/Traps –sediment traps.

Temporary erosion control shall be applied to remaining active and non-active areas as needed. Temporary erosion control measures shall be implemented prior to the start of the rainy season (defined as October 15 to May 1). Vegetative stabilization shall occur as soon as possible after disturbance has permanently or temporarily ceased, but in no case more than 14 days after the construction activity in an area has ceased. An exception to this requirement is when construction activity will resume on that portion of the site within 21 days.

A range of seedbed preparation methods shall be used. The seedbed preparation method used for any individual site shall depend on various factors including size of the area, slope, and potential for erosion. The seedbed shall be prepared to a depth of 3 to 4 inches, where possible, by harrowing, disking, or mechanical raking. Seed shall be dispersed by dry broadcasting where slopes are less than 2:1. Manually operated cyclone type spreaders will be employed to uniformly broadcast the seed. After broadcasting, the seed shall be manually raked, on contour, into the top 3/8 inch of soil.

Disturbed areas will be provided with permanent vegetative cover once construction in that area is complete. A successfully revegetated site must achieve 75 percent coverage. Seeding operations will take place after areas have received final grading. Permanent erosion control for the construction laydown area and temporary access roads will consist of revegetation with an erosion control seed mix.

Structural Practices. Proposed drainage improvements to the project site include increasing the size of the existing onsite stormwater retention pond by approximately 1,200 cubic yards (approximately 20 ft to the west within the existing fence line) to accommodate the increase in stormwater flow resulting from the construction and operation of GWF Hanford. The drainage systems for GWF Hanford have been designed to accommodate the stormwater flow resulting from a 10-day, 100 year storm. The calculations for detention storage volume are included in Appendix A.

Offsite Sediment Tracking. The construction entrance off of Idaho Avenue will be constructed and maintained to reduce tracking of sediments onto public streets. Excess material tracked onto public streets will be removed as necessary using a street sweeper with a water supply. Dump trucks hauling material from the site will be covered with

tarpaulin. These BMPs will be implemented during the rainy and non-rainy seasons as needed.

Petroleum Products. Construction equipment will require use of diesel fuel and oil on a regular basis. While a potential exists for spills or leaks, all onsite vehicles will be monitored for leaks and receive regular preventive maintenance to ensure proper operation and reduce the chance of leakage. No "topping off' of fuel tanks will be allowed to further reduce the possibility of spills.

Petroleum products will be stored in clearly labeled and tightly sealed containers or tanks. Any asphalt used onsite will be applied according to the manufacturer's recommendations. Any soil impacted by fuel or oil spills will be removed and disposed of by the Contractor at an approved disposal site. It will be the Contractor's responsibility to ensure that secondary containment around fuel/oil tanks (stationary or mobile) will meet the minimum requirements of the U.S. Environment Protection Agency (EPA) 40 CFR Part 112 with regard to secondary containment or more stringent state requirements, if applicable. Any spills will be contained and cleaned up immediately.

Sanitary Wastes. A licensed sanitary waste management contractor will collect all construction or temporary sanitary wastes from the portable units. The units will be maintained on a regular basis. Portable units shall be placed on a flat area at least 50 feet from streets or drain inlets. Portable units shall be anchored to prevent blowing or tipping over and all leaks or spills shall be reported immediately (sampling may be required).

Hazardous Wastes. Potentially hazardous waste associated with construction of the project will be limited to small quantities of liquids and solids such as lubricating oils, acids for equipment cleanup, concrete curing compounds, and waste paint. These wastes are typical of industrial construction activities and will be placed in containers onsite and disposed in accordance with applicable LORS and with the manufacturer's recommendations. Hazardous wastes will be either recycled or disposed of in a licensed Class I disposal facility, as appropriate. Waste oil and used oil filters will be recycled if the maintenance activities will take place onsite. Waste generated during each chemical cleaning operation will be temporarily stored onsite in portable tanks and disposed offsite by the chemical cleaning contractor at an appropriate disposal facility. Site personnel will be instructed of these procedures and the Contractor's Site Manager will be responsible for implementing these practices.

To prevent contact of hazardous wastes with stormwater runoff, secondary containment will be provided such as curbs and berms. As much as possible, all materials will be kept in a dry covered area.

Paints. All containers will be tightly sealed and properly stored to prevent leaks or spills. Excess paint will not be discharged to the stormwater system. Unused paints will be disposed in labeled original containers according to applicable local, state, and federal laws and regulations. Spray painting will not occur on windy or rainy days, and a drop cloth will be used to collect and dispose of drips associated with painting activities. All paints will be mixed indoors, in a containment area. If using water based paints, equipment will be cleaned in a sink that is connected to the sanitary sewer.

Concrete Trucks. Concrete trucks will not be allowed to discharge surplus concrete and drum wash at the site, unless these materials are fully contained in an engineered structure that can contain all free liquid until dry. Dried concrete shall then be removed and disposed of at an off site location. Alternatively, concrete washout will be taken offsite for disposal by the concrete contractor. No surplus concrete or drum wash water will be disposed of onto the ground surface.

Waste Materials. All construction waste material, trash, and construction debris will be collected and stored in a metal dumpster, leased from a licensed solid waste management contractor. The dumpster will meet all local and state solid waste management regulations. The dumpster will be emptied a minimum of twice per week or more often if necessary, and the trash will be hauled to the local dump. No construction waste will be buried onsite. All site personnel will be instructed regarding the correct procedure for waste disposal. The Site Manager will be responsible for seeing that these procedures are followed. All dumpsters will be covered, where possible.

Allowable Non-Stormwater Discharges. The following sources of non-stormwater discharges may be combined with stormwater discharges from project construction activities:

- Pavement wash waters and dust control water not containing toxic or hazardous substances.
- Uncontaminated dewatering discharges.
- Firefighting waters.
- Vegetation watering.
- Potable or spring water discharges.

Good Housekeeping. Good housekeeping practices are designed to maintain a clean and orderly work environment. The good housekeeping practices listed below will be followed to reduce the risk of potential pollutants entering stormwater discharges. All construction personnel will be responsible for monitoring and maintaining housekeeping tasks and reporting potential problems to the Contractor's Site Manager:

- Store only enough products required for doing the job.
- Store all materials in a neat and orderly manner in the appropriate containers. Materials that may adversely impact stormwater, such as: paint, oils, greases, sealers, etc., will be stored in covered areas such as temporary/permanent buildings or trailers, in accordance with the SWPPP.
- Keep products in the original container with the original manufacturer's label.
- Do not mix products unless recommended by the manufacturer.
- Use all of a product before disposing of the container.
- Use and dispose of products according to the Contractor's Site Manager's direction or manufacturer's recommendations.

- Perform regular inspections of the stormwater system and the material storage areas.
- When and where appropriate, use posters, bulletin boards, or meetings to remind and inform construction personnel of required procedures.
- Preventive maintenance includes regular inspection and maintenance of structural stormwater controls (catch basins, oil water separators, etc.) as well as other facility equipment and systems.

Storage areas for hazardous materials such as oils, greases, paints, fuels, and chemicals will be provided with secondary containment to ensure that spills in these areas do not reach stormwater. All hazardous chemical storage areas will be surrounded by curbs or dikes to contain the chemicals in the event of leaks or spills. The Contractor shall establish contingencies for the proper disposal of contaminated soils (use of licensed hauler, approved landfill) early in the construction period. Secondary containment will be designed to hold the entire contents of the largest single storage container plus rainfall from a 50-year, 24-hour storm for all outdoor storage areas. Curbs and dikes will be provided around all chemical storage areas, hazardous waste products, areas with possibility of oil spill, and washout areas.

Spills and leaks are one of the largest potential sources of stormwater pollutants at industrial facilities. Chemicals will be stored in chemical storage facilities appropriately designed for their individual characteristics. Bulk chemicals will be stored outdoors in aboveground storage tanks. Other chemicals will be stored and used in their delivery containers. All hazardous chemical storage areas will be surrounded by curbs or dikes to contain the chemicals in the event of leaks or spills. Secondary containment will be sized to hold the entire contents of the largest single storage tank. All drains and vent piping for volatile chemicals will be trapped and isolated from other drains. Containment areas for bulk storage tanks will not be drained. Any chemical spills in these areas will be removed with portable equipment and reused or properly disposed. It is anticipated that all substances will be applied/dispensed at manufacturer's recommendations.

In addition to the housekeeping and hazardous materials storage procedures described above, spill prevention and cleanup practices will be as follows:

- GWF's Site Manager or appointee is responsible for informing construction personnel of the manufacturer's recommended spill cleanup methods, and the location of that information and cleanup supplies.
- Materials and equipment for the cleanup of a relatively small spill will be kept in the materials storage area. These facilities may include brooms, rags, gloves, shovels, goggles, sand, sawdust, absorbent, plastic or metal trash containers, and protective clothing.
- All containers will be labeled, tightly sealed, and stacked or stored neatly and securely.

Spill response procedures will be as follows:

- Step 1: Upon discovery of a spill, stop the source of the spill.

- Step 2: Cease all spill material transfer until the release is stopped and waste removed from the spill site.
- Step 3: Initiate containment to prevent spill from reaching State waters.
- Step 4: Notify Supervisor and GWF's Site Manager of the spill.
- Step 5: GWF's Site Manager will immediately notify the GWF emergency coordinator, and coordinate further cleanup activities
- Step 6: Any significant spill of hazardous material will be reported to the appropriate state and/or local agencies by GWF personnel or qualified contractors. Table 7 lists the project's environmental emergency contacts.

TABLE 7
Environmental Emergency Telephone List

Company/Organization	Telephone Numbers
GWF Energy LLC (During Construction)	
Primary Facility Emergency Coordinator:	To be determined
Name, Manager 24-Hour Telephone Number: GWF Dispatch	
Alternate Facility Emergency Coordinator:	
Name, Principal Engineer	
GWF Environmental Specialist: Name GWF Media Representative: Name GWF Headquarters Telephone Name	
GWF Energy LLC (During Operation)	
Primary Facility Emergency Coordinator:	To be determined
Name, Manager 24-Hour Telephone Number: GWF Dispatch	
Alternate Facility Emergency Coordinator:	
Name, O&M Supervisor	
GWF Environmental Specialist: Onsite Employee GWF Media Representative: Name GWF Headquarters Telephone Operator	
Other Resources	
3E Company (MSDS by FAX): Chemtrec (emergency chemical information): Poison Control Center:	(800) 451-8346 (800) 424-9300 (800) 662-9886
Federal Agency	
U.S. Coast Guard/National Response Center:	(800) 424-8802
State Agencies	
California Office of Emergency Services (OES): California Department of Toxic Substances Control (DTSC)*: California Department of Fish and Game*: California State Lands Commission: Regional Water Quality Control Board (RWQCB)*:	(800) 852-7550 (800) 852-7550 (800) 852-7550 (562) 590-5201 (800) 852-7550

TABLE 7
Environmental Emergency Telephone List

Company/Organization	Telephone Numbers
Local Contacts	
Administering Agency – Kings County Department of Public Health:	(559) 584-1411
Fire – City of Hanford Fire Department:	911 or (559) 585-2500
Sheriff – Hanford Police Department:	911 or (559) 585-2535
Hospital – Hanford Community Hospital:	911 or (559) 585-5110
Ambulance/Paramedics:	911

* DTSC, RWQCB and California Department of Fish and Game have requested that emergency notifications to these offices be made through the OES 800 number.

- Step 7: Submit a Notice of Discharge Form within 7 days of the discharge event.
- Step 8: Review the construction stormwater pollution prevention plan and amend, if needed. Record a description of the spill, cause, and cleanup measures taken.

Inspection, Maintenance, and Recordkeeping Procedures. Site inspection and facility maintenance are important features of an effective stormwater management system. The Contractor's qualified personnel will inspect disturbed areas of the site that have not been stabilized, storage areas exposed to precipitation, all control measures, and site access areas to determine if the control measures and stormwater management system are effective in preventing significant impacts to receiving waters.

Inspections will be performed during the non-rainy season once every 2 weeks. Maintenance shall be performed as necessary.

Inspections will be performed before and after storm events and once each 24-hour period during extended storm events to identify BMP effectiveness and implement repairs or design changes as soon as feasible depending on field conditions. The discharger will complete an inspection checklist, which will include the following information:

- Inspection date
- Weather conditions
- A description of any inadequate BMPs
- List of observations of all BMPs
- Corrective actions required, including any changes to DESCP
- Inspector name, title, and signature

Erosion and Sediment Controls. The following procedures will be used to maintain erosion and sedimentation controls:

- All control measures will be inspected before and after storm events and once each 24-hour period during extended storm events.
- All measures will be maintained in good working order; if a repair is necessary, that repair will be initiated within 24 hours of the report.
- Sediment will be removed from the silt barriers when it has reached one-third of the height of the barrier.

- Silt barriers will be inspected for depth of accumulated sediment, tears, attachment to posts, and stability on a weekly basis.
- Aggregate-covered areas will be inspected for bare spots and washouts.
- The GWF Site Manager will select individuals to be responsible for inspections, maintenance, repairs, and reporting. The designated inspectors will receive the necessary training from GWF's Site Manager to properly inspect and maintain the controls in good working order.
- An Inspection Form will be completed after each inspection.
- The completed Inspection Forms will be retained onsite.

Non-Stormwater Controls. The following procedures will be used to maintain the non-stormwater controls:

- All control measures will be inspected before and after storm events and once each 24-hour period during extended storm events.
- All measures will be maintained in good working order; if a repair is necessary, that repair will be initiated within 24 hours of the report.
- The designated inspector will visually observe all drainage areas for the presence of unauthorized non-stormwater discharges and their sources.
- If a spill occurs that cannot be cleaned up before the next rain event, or under other circumstances warranting sample collection, the designated inspector will collect stormwater samples during the first two hours (even including weekends or holidays) of discharge. Similarly, if it appears that BMPs have failed or been damaged to the extent that they could result in discharge of pollutants in stormwater; and are discharging potentially impacted water, samples should be collected. Another instance that requires sampling is where stormwater comes in contact with exposed materials that could potentially contaminate stormwater runoff. The samples should be analyzed for visible and non-visible compounds with the analytical testing suite determined from the specific materials spilled or not contained properly, and for any constituents in the spill that occur in high enough concentrations to cause an impact to water quality.
- The GWF Site Manager will select individuals to be responsible for inspections, maintenance, repairs, and reporting. The designated inspectors will receive the necessary training from GWF's Site Manager to properly inspect and maintain the controls in good working order.
- An Inspection Form will be completed after each inspection.
- The completed Inspection Forms will be retained onsite.

Recordkeeping. Two inspection forms will be completed demonstrating that inspections and maintenance of the control measures are implemented: Erosion and Sedimentation Controls, and Non-stormwater Source Controls. All disturbed areas and materials storage areas require inspection at least every 1 day before and after storm events and once each 24-hour period during extended storm events. After each inspection, the inspector

completes an inspection report and retains a copy of the report. Any maintenance required is initiated within 24 hours of the inspection.

A copy of this DESCP and any supporting materials must be maintained at the construction site from the date of CEC approval to the date of final stabilization. All records and supporting documents will be compiled in an orderly manner, and maintained onsite until final site stabilization is completed.

The generation of reports, as part of the construction process and inspection or amendment procedures, provides accurate records, which can be used to evaluate the effectiveness of this DESCP and document compliance. Changes in design or construction of the stormwater management system are documented and included with the DESCP to facilitate review or evaluation.

Post-construction Stormwater Management. Final erosion and sediment control measures for final stabilization or exposed soil will be in place prior to final sign off of improvements. Post-construction erosion and sediment control measures to be used at this construction site once all construction is complete includes:

- Seeding
- Hydroseeding
- Mulching
- Removal of temporary erosion sediment control measures
- Permanent turf on all unprotected soil surface
- Removal of temporary erosion and sediment control measures (if necessary)

J. References

Arroues, Kerry D., and Carl H. Anderson, Jr., 1986. *Soil Survey of Kings County, California*. U.S. Department of Agriculture, Soil Conservation Service.

McCurdy, Greg, 1998. Personal communication from Greg McCurdy, Western Regional Climatic Data Center, to URS/Radian staff. Information also obtained from http://www/wrcc/dri/edu.

National Oceanic Atmospheric Administration (NOAA). Precipitation-Frequency Atlas of the Western (NOAA Atlas 2). Volume XI, California.

Appendix A Retention Pond Improvements Calculations

RETENTION POND IMPROVEMENTS- COMBINED CYCLE (rev. 07/18/08)
GWF, Hanford, CA

The existing retention pond in the north-western corner of the exisitng site will be widened to the west to increase the volume to include runoff for the new development, and to keep the water elevation in the event of the 100 year storm to 0.5 foot lower than the lowest catch basin grate in phase 2.

Volume needed for the new development

Source: City of Hanford, CA Public Works Construction Standards Manual - Storm Drainage Design Criteria Section

Volume of Runoff to be Contained (pg 3 of 7): Vreq (ft3) = C A R

C = Runoff Coef. (pg 6 of 7)	0.80	(for industrial site)
A = Drainage Area (ft2) **	82,000.00	
R = Runoff (ft) for 100 yr, 10 day storm	0.48	

Vreq(prop) = 31,488.00 ft3

** Drainage area is that added for Combined Cycle Conversion Project - With this addition the Basin will contain runoff from entire site within Plant Property Fence.

Volume in existing pond

Existing Pond Volume

Contour Elevation	Area of Contour (ac)	Average Area Volume (ft^3)	Cumm. Avg Volume (ft^3)
221.50	0.55	11,786.47	**124,637.56**
221.00	0.53	11,465.77	112,851.09
220.50	0.52	11,148.86	101,385.32
220.00	0.50	10,835.73	90,236.46
219.50	0.49	10,526.39	79,400.73
219.00	0.48	10,220.83	68,874.34
218.50	0.46	9,919.06	58,653.51
218.00	0.45	9,621.07	48,734.45
217.50	0.43	9,326.89	39,113.38
217.00	0.42	7,591.21	29,786.49
216.50	0.28	5,886.70	22,195.29
216.00	0.27	5,658.78	16,308.59
215.50	0.25	5,434.86	10,649.81
215.00	0.24	5,214.95	5,214.95
214.50	0.23	0.00	0.00

Exist Top of Pond Elev = 224 +/- ft
Existing Water Elev. = 221.50 - 1 ft freeboard = 222.50 ft

Vreq(exist) = Volume of existing pond at Elev 221.5 ft = 124637.56 ft^3

Total Required Volume of Pond = Vreq(prop) + Vreq(exist) = 156,125.56 ft^3

Prop. Top of water Elev = Lowest Catch Basin Grate - 0.5 ft = 221.50 ft

New Bottom Elev **= 214.50 ft

**Bottom elev for exisitng pond will remain 217.0 for the initial pond and 214.5 for the Simple Cycle extension, newly excavated portion will have a bottom elev of 214.5

Proposed Pond Volume (total)

Contour Elevation	Area of Contour (ac)	Average Area Volume (ft^3)	Cumm. Avg Volume (ft^3)
221.50	0.672	14,472.81	**158,242.59**
221.00	0.657	27,965.52	143,769.78
220.00	0.627	26,658.72	115,804.26
219.00	0.597	25,351.92	89,145.54
218.00	0.567	21,867.12	63,793.62
217.00	0.437	17,946.72	41,926.50
216.00	0.387	16,204.32	23,979.78
215.00	0.357	7,775.46	7,775.46
214.50	0.347	0.00	0.00

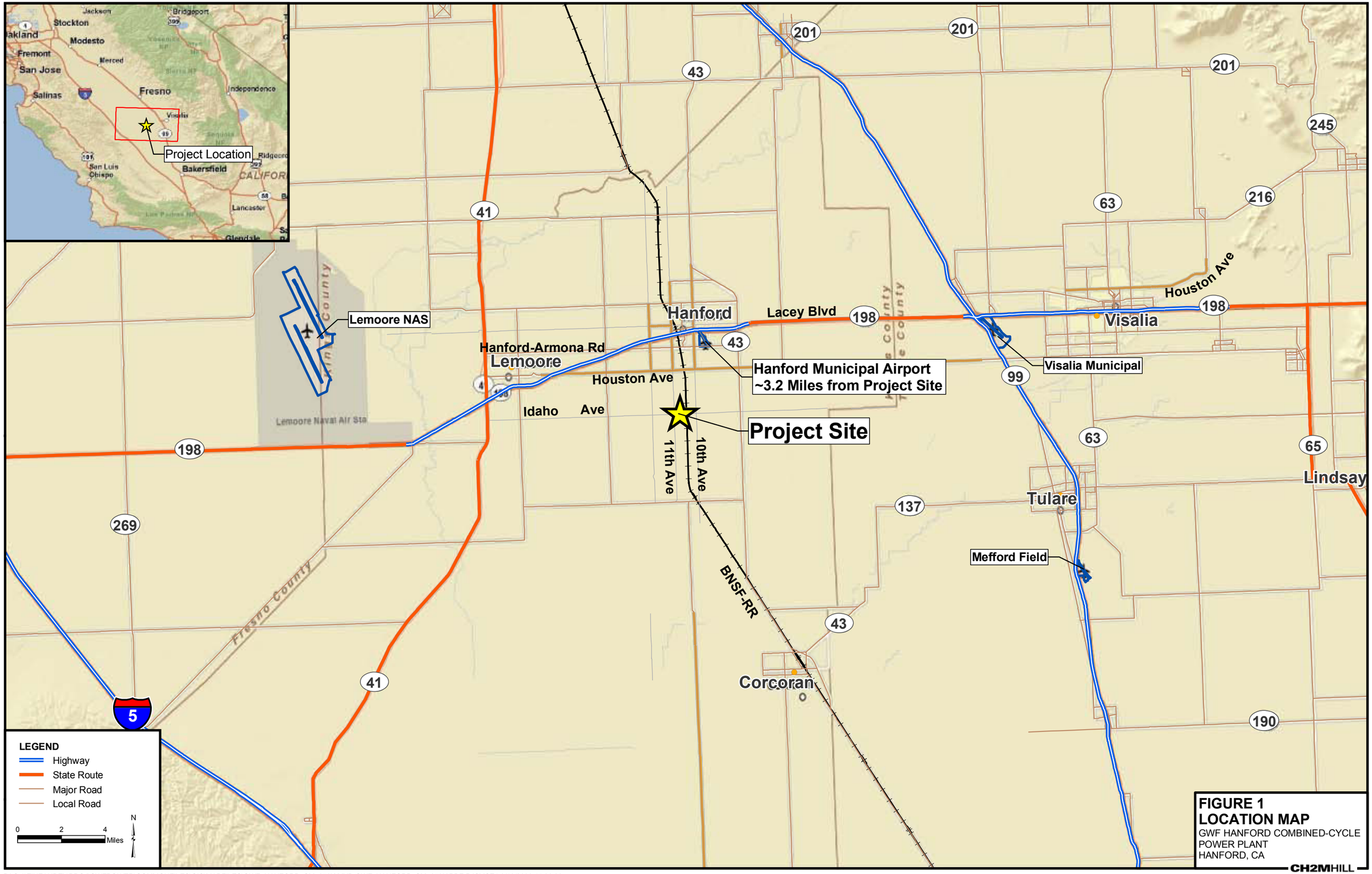
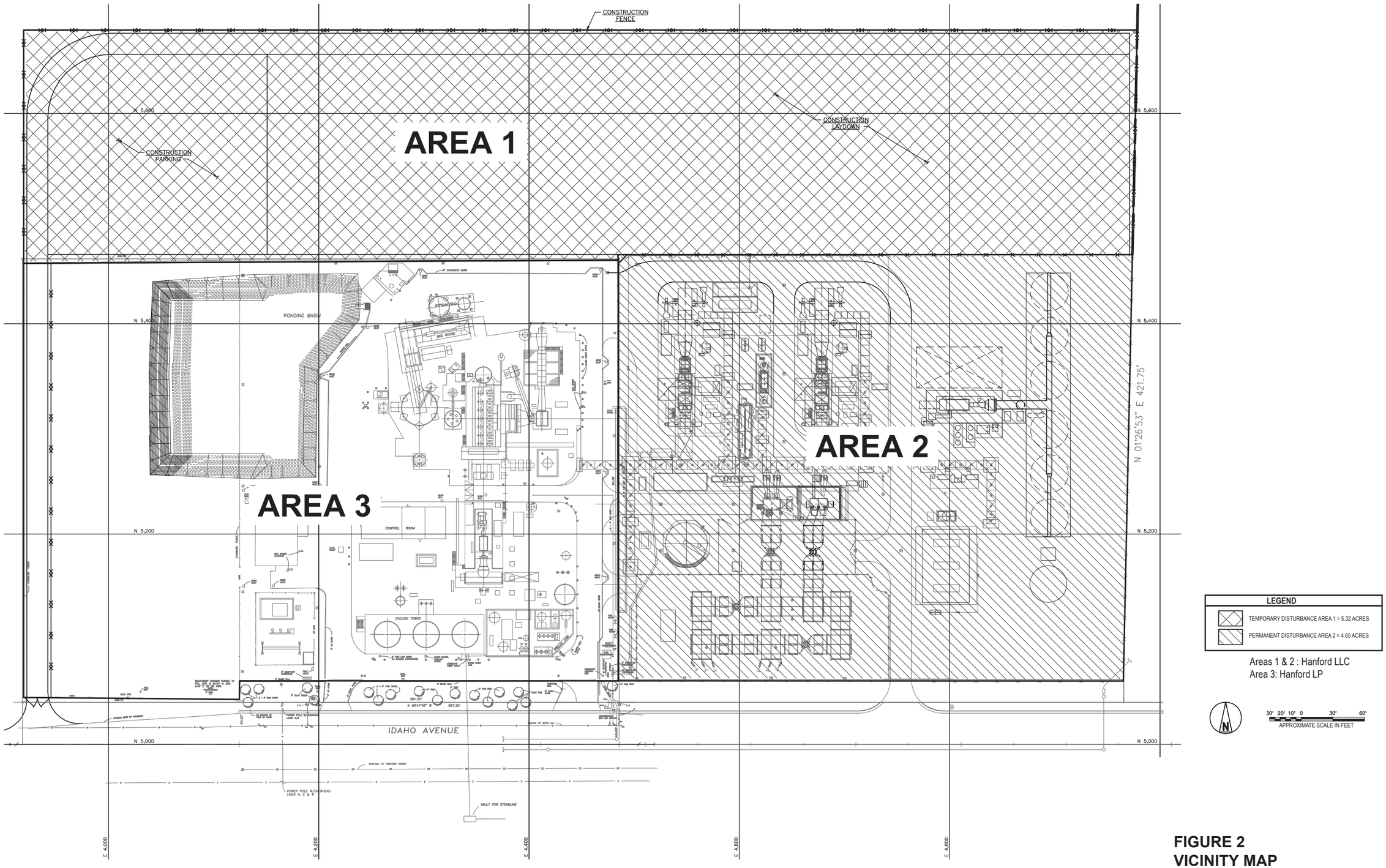


FIGURE 1
LOCATION MAP
GWF HANFORD COMBINED-CYCLE
POWER PLANT
HANFORD, CA

CH2MHILL

BAO \\ZINFANDEL\PROJ\GWFPOWER\COMMONFILES\GIS\MAPFILES\GWF_HANFORD_SM_250K.MXD GWF_HANFORD_SM_250K.PDF PJOYCE1 9/18/2008 11:39:39



LEGEND

- TEMPORARY DISTURBANCE AREA 1 = 5.32 ACRES
- PERMANENT DISTURBANCE AREA 2 = 4.65 ACRES

Areas 1 & 2 : Hanford LLC
Area 3: Hanford LP

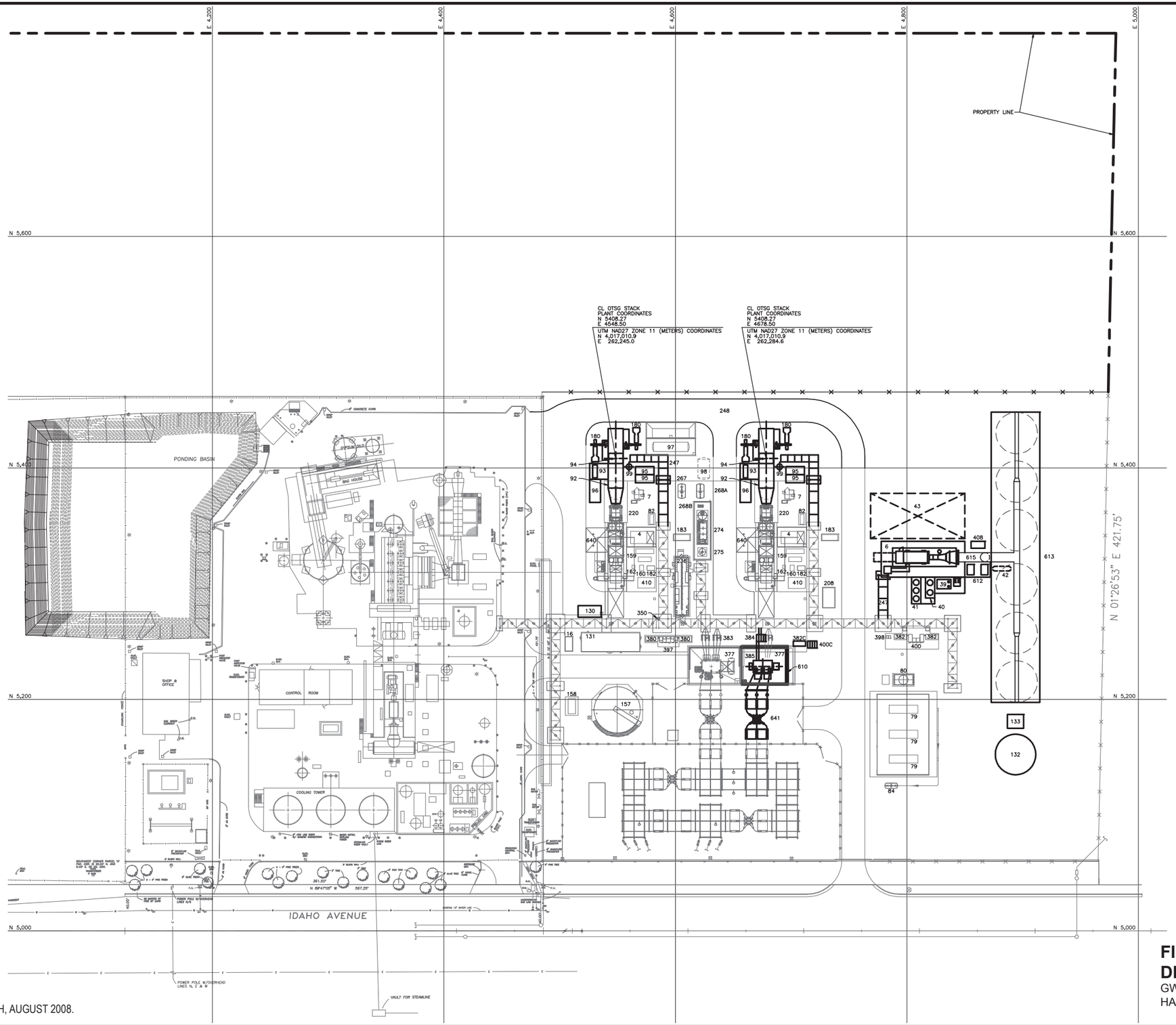
N

30' 20' 10' 0 30' 60'
APPROXIMATE SCALE IN FEET

FIGURE 2
VICINITY MAP
GWF HANFORD COMBINED-CYCLE POWER PLANT
HANFORD, CA

SOURCE: BLACK & VEATCH, AUGUST 2008.

CH2MHILL

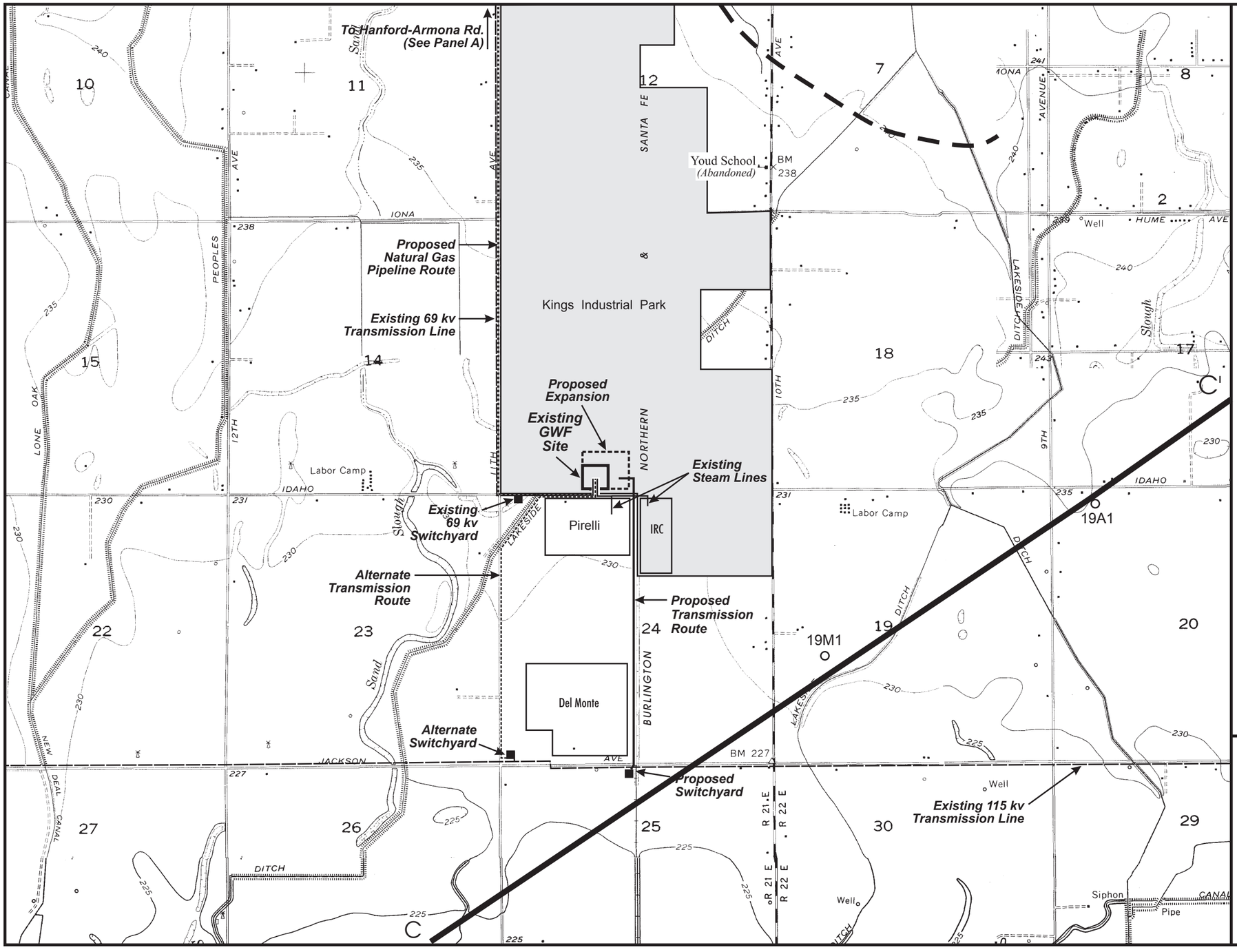


LEGEND	
NO.	COMPONENT NAME
1	COMBUSTION TURBINE LM6000
2	NOT USED
4	AUXILIARY SKID
6	STEAM TURBINE GENERATOR
7	CONTINUOUS EMISSIONS MONITORING EQUIPMENT
39	LUBE OIL SKID
40	STEAM TURBINE LUBE OIL COOLER
41	STEAM TURBINE LUBE OIL WSAC UNIT
42	CONDENSATE DRAIN TANK
43	AREA FOR ACCESS DURING STEAM TURBINE MAINTENANCE
79	FUEL GAS COMPRESSOR SKID
80	FUEL GAS COOLER
82	FUEL GAS FILTER
84	FUEL GAS WASTE SUMP WITH BLOWER
92	ONCE THROUGH STEAM GENERATOR (OTSG)
93	AMMONIA INJECTION GRID HEADER SKID
94	OTSG STACK
95	BOILER FEED PUMPS
96	COMBINED CYCLE AMMONIA SKID
97	COMBINED CYCLE AMMONIA RECEIVING & STORAGE
98	AMMONIA SPILL CONTAINMENT TANK (UNDERGROUND)
99	STARTUP SILENCER
116	RAW WATER FORWARDING PUMPS
130	WATER TREATMENT
131	WATER TREATMENT MODULE
132	FIRE WATER TANK
133	FIRE PUMP BUILDING
157	DEMIN. WATER STORAGE TANK
158	DEMIN. WATER INJECTION FORWARDING PUMPS
159	WATER INJECTION BOOST PUMP SKID
160	SPRINT PERFORMANCE SKID
162	HIGH PRESSURE DEMIN. WATER FILTER SKID
180	TEMPERING AIR FANS
182	SPRAY MIST EVAPORATIVE COOLER
183	CLOSED LOOP COOLER
191	FIRE CARTS (NOT SHOWN FOR CLARITY)
208	AIR COMPRESSOR SKID
220	ANTI-ICING HEAT EXCHANGER SYSTEM
236	POWER CONTROL MODULE
247	PIPE AND CABLE WAYS
248	ROAD
267	WASTE WATER WASH TANK
268-A	OILY WATER SUMP TANK
268-B	OILY WATER FORWARDING PUMP
274	OIL/WATER SEPARATOR
275	OIL STORAGE TANK
350	LIGHTING PANEL WITH TRANSFORMER
377	MAIN SUBSTATION STEP-UP TRANSFORMER
380	AUXILIARY TRANSFORMER 480V
382	FUEL GAS COMPRESSOR TRANSFORMER 13.8/4160V
382C	TRANSFORMER 13.8KV/480V (COMBINED CYCLE)
383	13.8KV SWITCH
384	13.8KV SWITCHGEAR
385	NON-SEGREGATED BUS DUCT
397	480V DISTRIBUTION SWITCHBOARD
398	FUEL GAS COMPRESSOR 480V MCC
400	4160V DISTRIBUTION PANEL
400C	480V SUS (COMBINED CYCLE)
408	AIR COOLED CONDENSER SWITCHGEAR
410	MEDIUM VOLTAGE SWITCH GEAR
610	TRANSFORMER FIRE WALL
612	CONDENSATE PUMPS
613	AIR COOLED CONDENSER
615	STEAM DUCT
640	ENGINE REMOVAL AREA
641	HIGH VOLTAGE CIRCUIT BREAKER

SOURCE: BLACK & VEATCH, AUGUST 2008.

FIGURE 3
DETAILED SITE PLAN
GWF HANFORD COMBINED-CYCLE POWER PLANT
HANFORD, CA

CH2MHILL



N

0 1000 2000

SCALE IN FEET

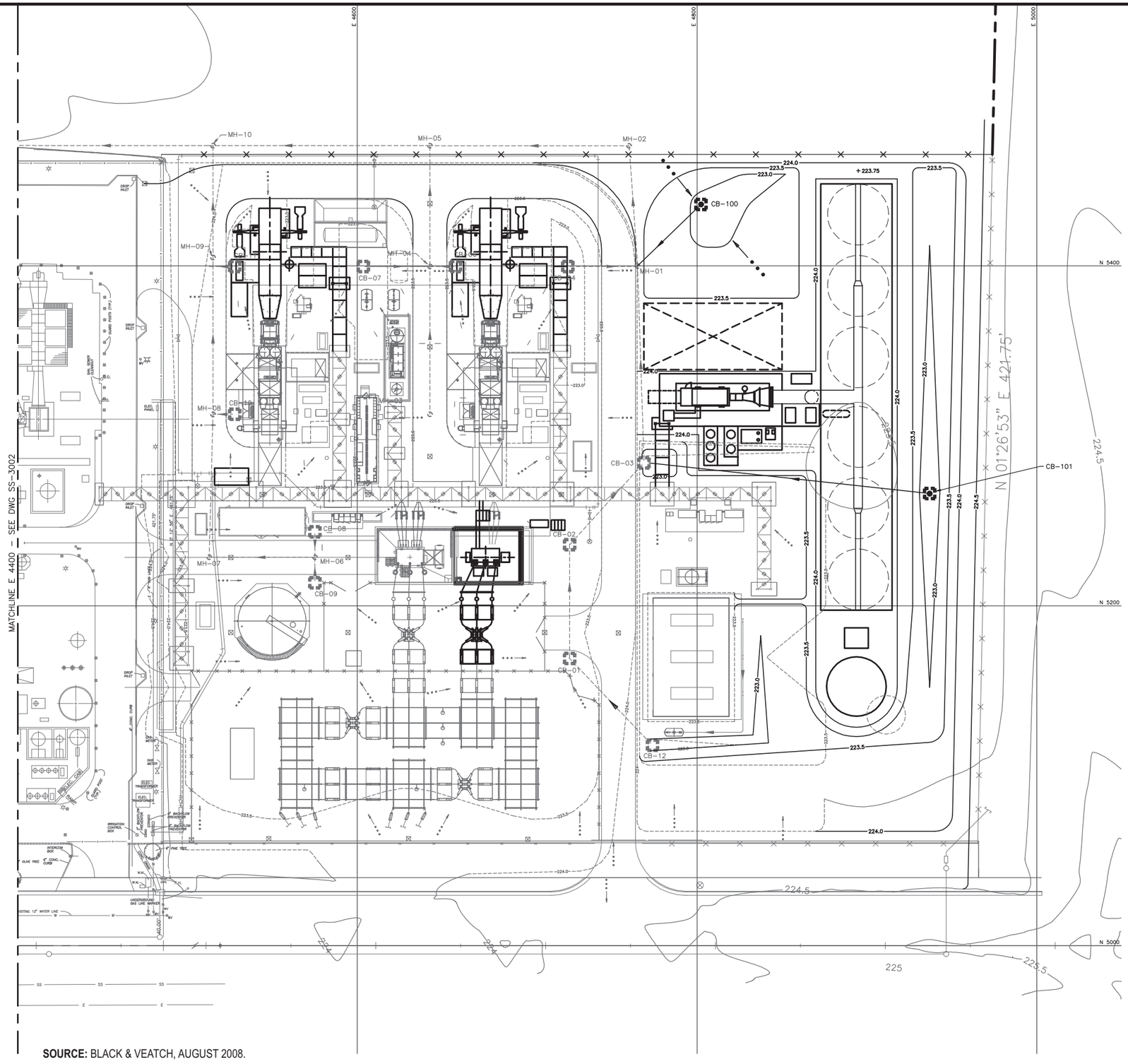
SOURCE: USGS 7.5 Minute Topographic Maps, Guernsey, Hanford, Remnoy and Waukena, CA Quadrangles (1954)

GWF Hanford Energy Park

Figure 4
Surface Water

RADIAN INTERNATIONAL
A DAMES & MOORE GROUP COMPANY

GWF\5-00hanford-geology.cdr - VMG 5/18/00 SAC



SOURCE: BLACK & VEATCH, AUGUST 2008.

NOTES

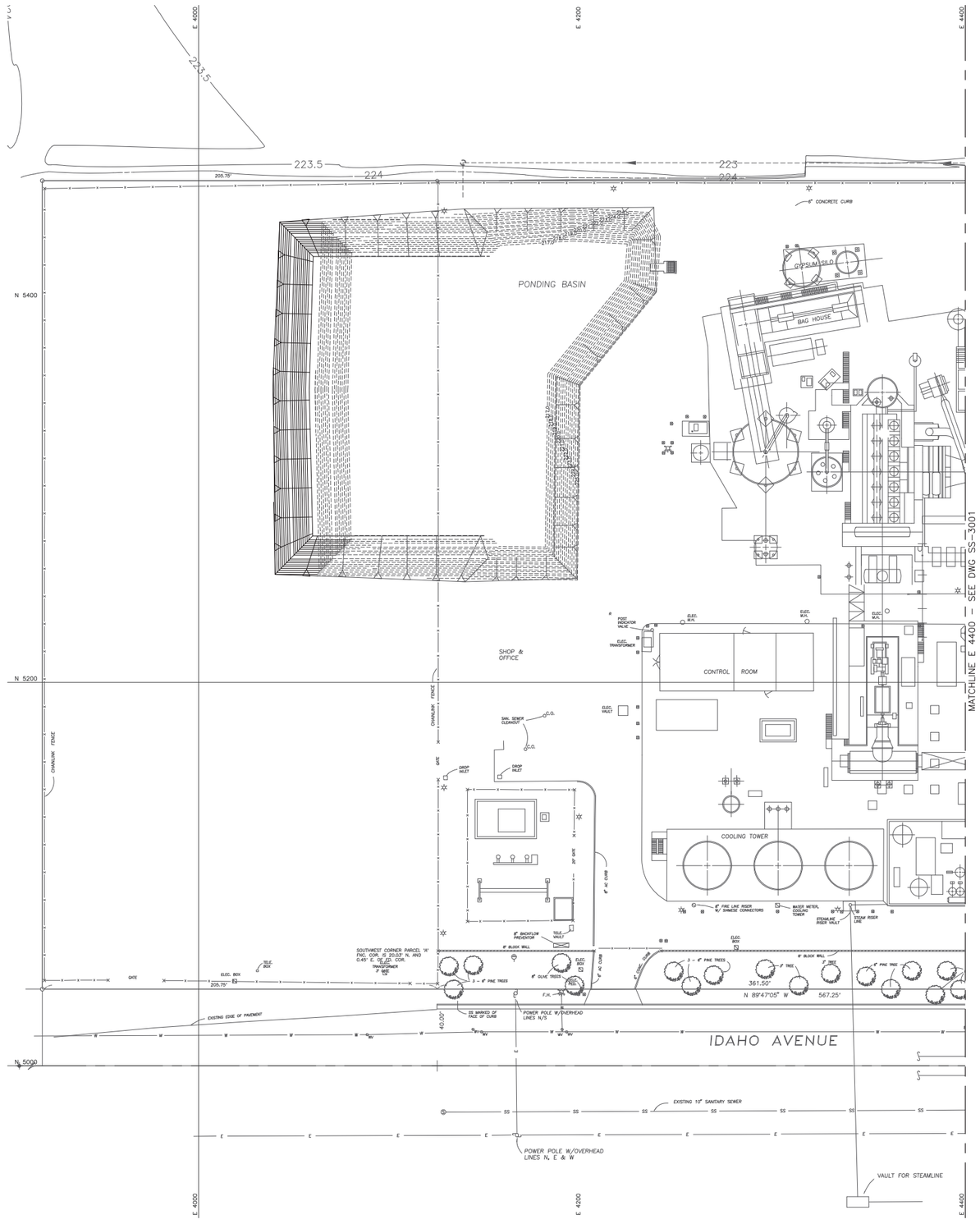
SEE DWG SS-3000 FOR GENERAL NOTES, LEGEND AND ABBREVIATIONS.

20' 10' 0 20' 40'
APPROXIMATE SCALE IN FEET

FIGURE 5
GRADING AND DRAINAGE PLAN
SHEET 1

GWF HANFORD COMBINED-CYCLE POWER PLANT
HANFORD, CA

CH2MHILL



SOURCE: BLACK & VEATCH, AUGUST 2008.

FIGURE 6
GRADING AND DRAINAGE PLAN
SHEET 2
GWF HANFORD COMBINED CYCLE POWER PLANT
HANFORD, CA

CH2MHILL

ATTACHMENT DR27-1

GWF Hanford Stormwater Retention Basin Design Calculations

RETENTION POND IMPROVEMENTS- COMBINED CYCLE (rev. 07/18/08)
GWF, Hanford, CA

The existing retention pond in the north-western corner of the exisitng site will be widened to the west to increase the volume to include runoff for the new development, and to keep the water elevation in the event of the 100 year storm to 0.5 foot lower than the lowest catch basin grate in phase 2.

Volume needed for the new development

Source: City of Hanford, CA Public Works Construction Standards Manual - Storm Drainage Design Criteria Section

Volume of Runoff to be Contained (pg 3 of 7): Vreq (ft3) = C A R

C = Runoff Coef. (pg 6 of 7)	0.80	(for industrial site)
A = Drainage Area (ft2) **	82,000.00	
R = Runoff (ft) for 100 yr, 10 day storm	0.48	

Vreq(prop) = 31,488.00 ft3

** Drainage area is that added for Combined Cycle Conversion Project - With this addition the Basin will contain runoff from entire site within Plant Property Fence.

Volume in existing pond

Existing Pond Volume

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217.50	0.43	9,326.89	39,113.38
217.00	0.42	7,591.21	29,786.49
216.50	0.28	5,886.70	22,195.29
216.00	0.27	5,658.78	16,308.59
215.50	0.25	5,434.86	10,649.81
215.00	0.24	5,214.95	5,214.95
214.50	0.23	0.00	0.00

Exist Top of Pond Elev = 224 +/- ft
Existing Water Elev. = 221.50 - 1 ft freeboard = 222.50 ft

Vreq(exist) = Volume of existing pond at Elev 221.5 ft = 124637.56 ft^3

Total Required Volume of Pond = Vreq(prop) + Vreq(exist) = 156,125.56 ft^3

Prop. Top of water Elev = Lowest Catch Basin Grate - 0.5 ft = 221.50 ft
New Bottom Elev **= 214.50 ft
**Bottom elev for exisitng pond will remain 217.0 for the initial pond and 214.5 for the Simple Cycle extension, newly excavated portion will have a bottom elev of 214.5

Proposed Pond Volume (total)

Contour Elevation	Area of Contour (ac)	Average Area Volume (ft^3)	Cumm. Avg Volume (ft^3)
221.50	0.672	14,472.81	**158,242.59**
221.00	0.657	27,965.52	143,769.78
220.00	0.627	26,658.72	115,804.26
219.00	0.597	25,351.92	89,145.54
218.00	0.567	21,867.12	63,793.62
217.00	0.437	17,946.72	41,926.50
216.00	0.387	16,204.32	23,979.78
215.00	0.357	7,775.46	7,775.46
214.50	0.347	0.00	0.00