

DEPARTMENT OF ENVIRONMENTAL SERVICES
CITY AND COUNTY OF HONOLULU

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AUG 31 2011



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IN REPLY REFER TO:
DIR 11-016

August 30, 2011

Mr. Ronald Ho
Clean Air Branch
Environmental Management Division
Hawaii Department of Health
919 Ala Moana Blvd., Suite 203
Honolulu, HI 96814

Mr. John Brock
Air Enforcement Office
US EPA, Region IX
75 Hawthorne Street
San Francisco, CA 94105

Subject: Semi-Annual Report for the Period of January 1, 2011 through June 30, 2011
Waimanalo Gulch Municipal Solid Waste Landfill
Covered Source Permit No. 0489-01-C

Dear Mr. Ho and Mr. Brock:

Pursuant to Condition G.2 in Covered Source Permit (CSP) Number 0489-01-C issued to the City and County of Honolulu for the Waimanalo Gulch Municipal Solid Waste Landfill (WGSL) and 40 CFR §60.757, this semi-annual report is hereby being submitted.

This semiannual report covers the period of January 1, 2011 through June 30, 2011 and uses the following forms as required by Condition G.2 of the CSP:

Monitoring Report Form, Collection and Control System
Monitoring Report Form, Visible Emissions

Based on information recently provided by the City's contractor (Waste Management of Hawaii, Inc. (WMH)), certain monthly wellhead monitoring data was not recorded for a number of wells in several months in the first half of 2011. As a result, the values reported for the 6-month averages and maximums are based on only the values for the wells and sampling events that WMH has verified were actually measured. This report includes additional information explaining this issue.

I certify that I have knowledge of the facts herein set forth, that the same are true, accurate and complete to the best of my knowledge and belief, and that all information

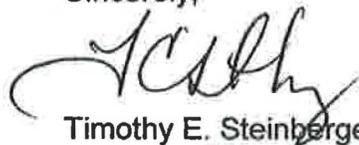
EXHIBIT K157 at 1

WML

Mr. Ronald Ho
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not identified by me as confidential in nature shall be treated by the Department of Health as public record.

Sincerely,

A handwritten signature in black ink, appearing to read 'T. Steinberger', written over the printed name.

Timothy E. Steinberger, P.E.
Director

Enclosure

cc: Joseph Whelan, Waste Management of Hawaii
Justin Lottig, Waste Management of Hawaii
Christian Colline, Waste Management

ASG 31 2011

in



WAIMANALO GULCH SANITARY LANDFILL

Covered Source Permit No. 0489-01-C

Semi-Annual Report

January 1, 2011 through June 30, 2011

August 29, 2011

Prepared for:

City and County of Honolulu and
Waste Management of Hawaii, Inc.
92-460 Farrington Hwy
Kapolei, HI 96707

Prepared by:



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EXHIBIT K157 at 3

md 10/18/11

INTRODUCTION

This semi-annual report has been prepared pursuant to Condition G.2 in Covered Source Permit (CSP) Number 0489-01-C issued to the City and County of Honolulu for the Waimanalo Gulch Sanitary Landfill (WGSL) and 40 CFR §60.757 and covers the period of January 1, 2011 through June 30, 2011.

Included as Attachments are the specific reporting forms required pursuant to Condition G.2:

- Attachment 1 – Monitoring Report Form “Collection and Control System”
- Attachment 2 – Monitoring Report Form “Visible Emissions”
- Attachment 3 – Available Monitoring Data
- Attachment 4 – Monitoring Data
- Attachment 5 – Monitoring Data (August 2011)

RECORD KEEPING AND REPORTING

Records are maintained and available for inspection in accordance with CSP Condition F.8 and 40 CFR §60.758. The primary location for records storage is at the WGSL.

Records are maintained at this location for a minimum of five years.

SEMI-ANNUAL MONITORING REPORT

The following information is included on the monitoring forms as required pursuant to Condition G.2 that also includes information as required in Special Condition G.3.

Section 1 of Monitoring Report Form “Collection and Control System” includes information pursuant to:

Condition G.3.a. Value, date, time, and duration of each exceedance of applicable parameters for:

- Gauge pressure in the gas collection header;
- Nitrogen or oxygen concentration in the landfill gas;
- Temperature of the landfill gas; and
- Surface concentrations of methane

Condition G.2.b.ix. ... all instances of non-compliance, indicate the dates, times, duration, and reason;

- *The flare was shut down on 6/21/11 to accommodate flare inspection and maintenance. A 24-Hour notification for this event was not submitted to the Hawaii Department of Health preceding the manual shutdown as required by CSP Standard Condition 16.*
- *In early August 2011, the City’s contractor, Waste Management of Hawaii, Inc., identified suspected non-compliance with the NSPS landfill gas wellhead monitoring requirements and undertook an investigation. On August 26, 2011, a*

WMH employee admitted that he had failed to take a large number of wellhead readings and instead fabricated those readings. WMH has terminated that employee and is undertaking further investigation to determine the scope of non-compliance and whether there is other valid data that can replace the missing data. As a result, the values reported for the 6-month average and maximum gauge pressures, oxygen concentrations, and temperatures are based on only the values for those wells and sampling events that were actually measured. Attachment 3 identifies the wells and months for which data is available. Attachment 4 presents the available data for January-June 2011. This report does not include data that WMH reasonably suspects or has confirmed is not actual data taken for the wells. Also attached is Attachment 5 with recorded data for August 2011.

Note that surface concentration data is included in Section 6 of Monitoring Report Form "Collection and Control System" are not in this section because the requested information is identical.

Section 2 of Monitoring Report Form "Collection and Control System" includes information pursuant to:

Condition G.2.b.i, ii, iii, and iv.

i. Average and maximum gauge pressure within each gas extraction well measured over 6-month period;

ii. Average and maximum nitrogen concentration average and maximum oxygen concentration measured over 6-month period;

iii. Average and maximum landfill gas temperature in extraction well measured over six-month period;

iv. Average and maximum methane concentration at landfill surface measured over quarterly period. If annual monitoring is allowed, the average and maximum methane concentration at landfill surface during the most recent monitoring event;

viii. For all maximum values, include the date and time that the value was identified;

Section 3 of Monitoring Report Form "Collection and Control System" includes information pursuant to:

Condition G.3.b. Description, reason, dates, start and end times, and duration of all periods when the gas stream is diverted from the control device through a bypass line or the indication of bypass flow as specified in Attachment II, Section E.

Condition G.2.b. v. Identification of any instances when the gas flow has been diverted from the control device, enclosed combustor, or open flare

Section 4 of Monitoring Report Form "Collection and Control System" includes information pursuant to:

Condition G.3.c. Description, reason, dates, start and end times, and duration of all periods when the control device was not operating for a period exceeding one (1) hour and length of time the control device was not operating.

Section 5 of Monitoring Report Form "Collection and Control System" includes information pursuant to:

Condition G.3.d. All periods when the collection system was not operating in excess of five (5) days, including dates and times that operation ceased, reason for not operating, actions taken, dates and times that operation resumed, and future operational protocol that will prevent a reoccurrence of the situation.

Section 6 of Monitoring Report Form "Collection and Control System" includes information pursuant to:

Condition G.3.e. The location of each exceedance of the 500 ppm surface methane concentration as provided in 60.753(d), concentration at each location for which an exceedance was recorded in the previous month. Also identify the dates of sampling, sampler's name, and actions taken to address the exceedance.

Section 7 of Monitoring Report Form "Collection and Control System" includes information pursuant to:

Condition G.3.f. The date of installation and the location of each well or collection system expansion added.

Section 8 of Monitoring Report Form "Collection and Control System" includes information pursuant to:

Condition G.3.b. Description, reason, dates, start and end times, and duration of all periods when the gas stream is diverted from the control device through a bypass line or the indication of bypass flow as specified in Attachment II, Section E.

Condition G.2.b. v. Identification of any instances when the gas flow has been diverted from the control device, enclosed combustor, or open flare

Additional Information Not Included on Forms provided by the Department.

Condition G.2.b.vi. Average, maximum, and minimum combustion temperature of an enclosed combustion device, as applicable;

Month	Maximum Temperature		Minimum Temperature		Average Temperature (°F)
	Reading (°F)	Date	Reading (°F)	Date	
January-11	1801	01/13/11	1451	01/28/11	1645
February-11	1778	02/25/11	1495	02/25/11	1645
March-11	1717	03/06/11	1519	03/05/11	1642
April-11	1706	04/20/11	1532	04/19/11	1642
May-11	1730	05/02/11	1435	05/02/11	1642
June-11	1707	06/19/11	1073	06/03/11	1637
Six-Month Period	1801		1073		1642

Note that the above measurements represent instantaneous values and are not to be compared against the three hour limit specified in the following condition.

Condition F.10.d. Periods of operation during which the parameter boundaries established during the most recent performance test are exceeded, including:

- i. For enclosed combustors except for boilers and process heaters with design heat input capacity of 44 megawatts (150 million British thermal unit per hour) or greater: all 3-hour periods of operation during which the average combustion temperature was more than 28°C below the average combustion temperature.

There were no 3-hour periods of operation when the combustion temperature was more than 28°C below the average combustion temperature of 1,583 degrees Fahrenheit (F) (861.7 degrees Celsius (C)) determined during the most recent performance test conducted on 10/27/2010.

Condition G.2.b. vii. Identification of any instances in which the pilot flame or flare flame for an open flare was not present;

The GCCS at WGSL does not employ an open flare. An enclosed flare is installed and controls the collected gas. There were no instances when LFG flowed through the flare when a flame was not present. The control system monitors the flame and shuts the system down when the flame is not present.

Section 1 of Monitoring Report Form "Visible Emissions" Includes information pursuant to:

Condition G.2.b. x. Any opacity exceedances as determined by the required monthly visible emissions monitoring. Each exceedance reported shall include the date, six (6) minute average opacity reading, possible reasons for exceedance, duration of exceedance, and corrective actions taken. If there were no exceedances, the permittee shall submit in writing a statement indicating that for each equipment there were no exceedances for that semi-annual period.

Visible emissions monitoring for the reporting period January 1 through June 30, 2011 was conducted on the following dates: January 25, 2011; February 25, 2011; March 26, 2011; April 7, 2011; May 27, 2011; and June 17, 2011.

There were no exceedances of opacity, i.e., the enclosed flare did not exhibit visible emissions greater than 20 percent for any 6-minute averaging period.

**ATTACHMENT 1 –
MONITORING REPORT FORM
“COLLECTION AND CONTROL SYSTEM”**

**MONITORING REPORT FORM
COLLECTION AND CONTROL SYSTEM
COVERED SOURCE PERMIT NO. 0489-01-C**

Issuance Date: March 11, 2005

Expiration Date: March 10, 2010

In accordance with the Hawaii Administrative Rules, Title 11, Chapter 60.1, Air Pollution Control, the permittee shall report to the Department of Health the following information semi-annually:

For Period: January 1, 2011 through June 30, 2011
Facility Name: Waimanalo Gulch Sanitary Landfill
Facility Location: Kapolei, HI

Date: August 29, 2011

Information that cannot be certified as accurate has been omitted from this report form and is under investigation as detailed in the cover letter attached here to.

Responsible Official (Print): Timothy E. Steinberger, P.E.
Title: Director, Environmental Services Department
Responsible Official (Signature): See Cover Letter with Certification Date: _____

1. Value and length of time for exceedance of applicable parameters. If there were no exceedances identified, then write "no exceedances" in the comment column.

Gauge pressure in gas collection header						
Well ID	Value	Date	Start Time	End Time	Duration (days)	Comments
WGSL0032	0	3/2/11	4:27 PM	3/2/11 4:27 PM	0	Corrective action was initiated within 5 days and the exceedance was corrected within 15 days pursuant to 40 CFR 60.755(a)(3).
WGSL0033	0	2/10/11	3:29 PM	2/10/11 5:49 PM	0	Corrective action was initiated within 5 days and the exceedance was corrected within 15 days pursuant to 40 CFR 60.755(a)(3).
WGSL0044	0	2/10/11	4:26 PM	2/10/11 5:41 PM	0	Corrective action was initiated within 5 days and the exceedance was corrected within 15 days pursuant to 40 CFR 60.755(a)(3).
WGSL0047	0.4	2/10/11	2:48 PM	2/10/11 6:09 PM	0	Corrective action was initiated within 5 days and the exceedance was corrected within 15 days pursuant to 40 CFR 60.755(a)(3).
WGSL0048	0.4	2/10/11	1:59 PM	2/10/11 6:06 PM	0	Corrective action was initiated within 5 days and the exceedance was corrected within 15 days pursuant to 40 CFR 60.755(a)(3).

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Well ID	Value	Date	Start Time	End Time	Duration (days)	Comments
WGSL0049	0.1	3/2/11	4:10 PM	3/2/11 4:10 PM	0	Corrective action was initiated within 5 days and the exceedance was corrected within 15 days pursuant to 40 CFR 60.755(a)(3).
WGSL0049	0.1	3/2/11	4:14 PM	3/2/11 4:14 PM	0	Corrective action was initiated within 5 days and the exceedance was corrected within 15 days pursuant to 40 CFR 60.755(a)(3).
WGSLGW02	0.5	3/2/11	4:04 PM	3/2/11 4:04 PM	0	Corrective action was initiated within 5 days and the exceedance was corrected within 15 days pursuant to 40 CFR 60.755(a)(3).
WGSLGW02	0	6/14/11	2:53 PM	6/14/11 2:53 PM	0	Corrective action was initiated within 5 days and the exceedance was corrected within 15 days pursuant to 40 CFR 60.755(a)(3).
WGSLGW06	0	2/10/11	1:23 PM	2/10/11 6:01 PM	0	Corrective action was initiated within 5 days and the exceedance was corrected within 15 days pursuant to 40 CFR 60.755(a)(3).
WGSLGW06	0	3/2/11	4:19 PM	3/2/11 4:19 PM	0	Corrective action was initiated within 5 days and the exceedance was corrected within 15 days pursuant to 40 CFR 60.755(a)(3).
WGSLGW15	0	6/14/11	3:34 PM	6/14/11 3:34 PM	0	Corrective action was initiated within 5 days and the exceedance was corrected within 15 days pursuant to 40 CFR 60.755(a)(3).
Oxygen Conc. (%)						
Well ID	Value	Date	Start Time	End Time	Duration (days)	Comments
NA	NA	NA	NA	NA	NA	No Exceedances

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Temp. (°C) of landfill gas						
Well ID	Value	Date	Start Time	End Time	Duration during reporting period (days)	Comments
GW-2	>55	1/1/2011		6/30/2011	180	See Note.
GW-6	>55	1/1/2011		6/30/2011	180	See Note.
GW-7	>55	1/1/2011		6/30/2011	180	See Note.
GW-8	>55	1/1/2011		6/30/2011	180	See Note.
GW-9	>55	1/1/2011		6/30/2011	180	See Note.
GW-11	>55	1/1/2011		6/30/2011	180	See Note.
GW-12	>55	1/1/2011		6/30/2011	180	See Note.
GW-13	>55	1/1/2011		6/30/2011	180	See Note.
GW-14	>55	1/1/2011		6/30/2011	180	See Note.
GW-15	>55	1/1/2011		6/30/2011	180	See Note.
GW-24	>55	1/1/2011		6/30/2011	180	See Note.
GW-25	<55	1/1/2011		6/30/2011	180	See Note.
GW-26	>55	1/1/2011		6/30/2011	180	See Note.
GW-27	>55	1/1/2011		6/30/2011	180	See Note.
GW-29	>55	1/1/2011		6/30/2011	180	See Note.
GW-30	>55	1/1/2011		6/30/2011	180	See Note.
GW-31	>55	1/1/2011		6/30/2011	180	See Note.
GW-32	>55	1/1/2011		6/30/2011	180	See Note.
GW-33	>55	1/1/2011		6/30/2011	180	See Note.
GW-34	>55	1/1/2011		6/30/2011	180	See Note.
GW-35	>55	1/1/2011		6/30/2011	180	See Note.
GW-36	>55	1/1/2011		6/30/2011	180	See Note.
GW-37	>55	1/1/2011		6/30/2011	180	See Note.
GW-38	>55	1/1/2011		6/30/2011	180	See Note.
GW-39	<55	1/1/2011		6/30/2011	180	See Note.
GW-40	>55	1/1/2011		6/30/2011	180	See Note.
GW-41	>55	1/1/2011		6/30/2011	180	See Note.
GW-42	<55	1/1/2011		6/30/2011	180	See Note.
GW-43	<55	1/1/2011		6/30/2011	180	See Note.
GW-44	>55	1/1/2011		6/30/2011	180	See Note.
GW-46	>55	1/1/2011		6/30/2011	180	See Note.
GW-47	>55	1/1/2011		6/30/2011	180	See Note.
GW-48	>55	1/1/2011		6/30/2011	180	See Note.
GW-49	>55	1/1/2011		6/30/2011	180	See Note.

Note: WMH has submitted (on behalf of the City & County of Honolulu) the following request letters to the United States EPA and Hawaii DOH CAB:

1. *Alternative Wellhead Operating Standards and Compliance Procedures* (dated 10/21/05).
2. *Alternative Wellhead Compliance Timeline Request* (dated 12/7/05).
3. *Alternative Wellhead Compliance Timeline Extension Request* (dated 12/28/06).
4. *Higher Operating Temperature Demonstration* (dated 7/16/08).
5. *Well 18 was closed in accordance with USEPA guidance (DOH notification dated 1/7/2010)*
6. *Well 28 was closed in accordance with USEPA guidance (DOH notification dated 1/7/2010)*
7. *Well 45 was closed in accordance with USEPA guidance (DOH notification dated 2/16/2010)*

To date, WMH/City & County of Honolulu has not received approval for the alternative compliance temperatures or the requested extensions. However, the issue of elevated temperatures at the Waimanalo landfill is the subject of a US EPA enforcement action (Citation No. R9-06-06). Studies by technical experts retained by WMH confirm that a subsurface fire is not present and is not contributing to the elevated temperatures. We are endeavoring to work out a corrective action plan as part of the settlement with US EPA.

A higher operating temperature demonstration was submitted to DOH and US EPA Region IX on 7/16/08 that establishes that the observed temperatures are normal for the facility. Upon approval by DOH and EPA, the wells noted herein would not otherwise have reportable temperature exceedances.

**MONITORING REPORT FORM
COLLECTION AND CONTROL SYSTEM
COVERED SOURCE PERMIT NO. 0489-01-C**

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Surface Conc. of Methane (ppmv as hexane)						
	Value	Date	Start Time	End Time	Duration	Comments
						See No. 6 below

2. Average and maximum values for the following: See Note Following this Section.

Header near Flare

Parameter	Average Value	Maximum Value	Date of Max. Value	Comments
Gauge pressure in gas collection header	-40.4	-39.6	2/10/11	Readings taken at flare inlet
Nitrogen Conc. (%) or				
Oxygen Conc. (%)	0.1	0.2	3/3/11	Readings taken at flare inlet
Temp. (°C) of landfill gas	30.6	33.0	3/14/11	Readings taken at flare inlet
Surface Concentrations of Methane - 1st Quarter '11	NA	NA	NA	NA
Surface Concentrations of Methane - 2nd Quarter '11	NA	NA	NA	NA

GW-2

Parameter	Average Value	Maximum Value	Date of Max. Value	Comments
Gauge pressure in gas collection header	-0.2	0.5	3/2/11	
Nitrogen Conc. (%) or			3/2,4/5,6/14,6/22	
Oxygen Conc. (%)	0.0	0.0		
Temp. (°C) of landfill gas	75.1	77.8	6/14/11	

GW-6

Parameter	Average Value	Maximum Value	Date of Max. Value	Comments
Gauge pressure in gas collection header	-0.1	0.0	2/10/11	
Nitrogen Conc. (%) or			1/15,2/10,3/2,4/5	
Oxygen Conc. (%)	0.0	0.1		
Temp. (°C) of landfill gas	70.7	71.1	1/15,2/10,3/2,4/5	

GW-7

Parameter	Average Value	Maximum Value	Date of Max. Value	Comments
Gauge pressure in gas collection header	-0.7	-0.4	2/10/11	
Nitrogen Conc. (%) or			1/2,2/10,3/3	
Oxygen Conc. (%)	0.0	0.0		
Temp. (°C) of landfill gas	76.7	76.7	1/2,2/10,3/3	

GW-8

Parameter	Average Value	Maximum Value	Date of Max. Value	Comments
Gauge pressure in gas collection header	-0.8	-0.2	1/2/11	
Nitrogen Conc. (%) or			4/12/11	
Oxygen Conc. (%)	0.0	0.1		
Temp. (°C) of landfill gas	62.5	63.3	1/2/11	

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GW-9

Parameter	Average Value	Maximum Value	Date of Max. Value	Comments
Gauge pressure in gas collection header	-0.6	-0.3	4/26/11	
Nitrogen Conc. (%) or			1/2,1/15,2/10,4/26	
Oxygen Conc. (%)	0.0	0.0		
Temp. (°C) of landfill gas	71.4	72.2	2/10/11	

GW-11

Parameter	Average Value	Maximum Value	Date of Max. Value	Comments
Gauge pressure in gas collection header	-0.4	-0.2	1/15/11	
Nitrogen Conc. (%) or			6/14/11	
Oxygen Conc. (%)	0.1	0.2		
Temp. (°C) of landfill gas	62.1	62.2	1/2,1/15,3/2,4/5,4/46,6/14	

GW-12

Parameter	Average Value	Maximum Value	Date of Max. Value	Comments
Gauge pressure in gas collection header	-0.4	-0.2	1/2,2/10	
Nitrogen Conc. (%) or			1/2,2/10,3/3,4/12	
Oxygen Conc. (%)	0.0	0.0		
Temp. (°C) of landfill gas	64.7	65.6	2/10/11	

GW-13

Parameter	Average Value	Maximum Value	Date of Max. Value	Comments
Gauge pressure in gas collection header	-0.4	-0.4	2/10,3/2	
Nitrogen Conc. (%) or			2/10,3/2,4/25	
Oxygen Conc. (%)	0.0	0.0		
Temp. (°C) of landfill gas	69.6	70.0	2/10,4/25	

GW-14

Parameter	Average Value	Maximum Value	Date of Max. Value	Comments
Gauge pressure in gas collection header	-1.9	-1.6	2/10/11	
Nitrogen Conc. (%) or			2/10,3/3	
Oxygen Conc. (%)	0.0	0.0		
Temp. (°C) of landfill gas	66.1	66.7	2/10/11	

GW-15

Parameter	Average Value	Maximum Value	Date of Max. Value	Comments
Gauge pressure in gas collection header	-0.3	0.0	6/14/11	
Nitrogen Conc. (%) or			2/10,3/2,4/26,6/14	
Oxygen Conc. (%)	0.0	0.0		
Temp. (°C) of landfill gas	65.6	66.7	2/10,6/14	

**MONITORING REPORT FORM
COLLECTION AND CONTROL SYSTEM
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Issuance Date: March 11, 2005

Expiration Date: March 10, 2010

GW-24

Parameter	Average Value	Maximum Value	Date of Max. Value	Comments
Gauge pressure in gas collection header	-1.1	-0.7	2/10/11	
Nitrogen Conc. (%) or			1/2,2/10,3/3	
Oxygen Conc. (%)	0.0	0.0		
Temp. (°C) of landfill gas	73.1	73.9	2/10/11	

GW-25

Parameter	Average Value	Maximum Value	Date of Max. Value	Comments
Gauge pressure in gas collection header	-1.1	-1.0	1/15/11	
Nitrogen Conc. (%) or			1/15,2/10,3/2	
Oxygen Conc. (%)	0.0	0.0		
Temp. (°C) of landfill gas	53.1	53.3	1/15,3/2	

GW-26

Parameter	Average Value	Maximum Value	Date of Max. Value	Comments
Gauge pressure in gas collection header	-0.7	-0.7	2/10/11	
Nitrogen Conc. (%) or			2/10/11	
Oxygen Conc. (%)	0.0	0.0		
Temp. (°C) of landfill gas	57.8	57.8	2/10/11	

GW-27

Parameter	Average Value	Maximum Value	Date of Max. Value	Comments
Gauge pressure in gas collection header	-3.2	-3.0	3/2/11	
Nitrogen Conc. (%) or			4/5/11	
Oxygen Conc. (%)	0.0	0.1		
Temp. (°C) of landfill gas	59.6	60.0	1/15,3/2,4/5	

GW-28

Parameter	Average Value	Maximum Value	Date of Max. Value	Comments
Gauge pressure in gas collection header	-3.2	-2.8	2/28,3/2	
Nitrogen Conc. (%) or			2/28,3/2,4/26	
Oxygen Conc. (%)	0.0	0.0		
Temp. (°C) of landfill gas	61.1	64.4	3/2/11	

GW-30

Parameter	Average Value	Maximum Value	Date of Max. Value	Comments
Gauge pressure in gas collection header	-1.2	-0.8	2/10,3/2	
Nitrogen Conc. (%) or			1/2,2/10,3/2,4/26	
Oxygen Conc. (%)	0.0	0.0		
Temp. (°C) of landfill gas	73.3	75.6	3/2/11	

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GW-31

Parameter	Average Value	Maximum Value	Date of Max. Value	Comments
Gauge pressure in gas collection header	-1.8	-1.1	4/26/11	
Nitrogen Conc. (%) or Oxygen Conc. (%)	0.0	0.0	1/2,2/10,3/2,4/26	
Temp. (°C) of landfill gas	69.2	70.0	3/2/11	

GW-32

Parameter	Average Value	Maximum Value	Date of Max. Value	Comments
Gauge pressure in gas collection header	-0.6	0.0	3/2/11	
Nitrogen Conc. (%) or Oxygen Conc. (%)	0.0	0.0	1/2,1/15,2/10,3/2,4/5	
Temp. (°C) of landfill gas	77.6	77.8	1/2,1/15,2/10,3/2	

GW-33

Parameter	Average Value	Maximum Value	Date of Max. Value	Comments
Gauge pressure in gas collection header	-0.3	0.0	2/10/11	
Nitrogen Conc. (%) or Oxygen Conc. (%)	0.0	0.0	1/2,1/15,2/10,3/3,4/5	
Temp. (°C) of landfill gas	70.7	73.3	2/10/11	

GW-34

Parameter	Average Value	Maximum Value	Date of Max. Value	Comments
Gauge pressure in gas collection header	-23.9	-23.5	1/2/11	
Nitrogen Conc. (%) or Oxygen Conc. (%)	0.0	0.0	1/2,1/15,2/10,3/3,4/5	
Temp. (°C) of landfill gas	54.0	55.6	2/10/11	

GW-35

Parameter	Average Value	Maximum Value	Date of Max. Value	Comments
Gauge pressure in gas collection header	-30.5	-29.7	1/2/11	
Nitrogen Conc. (%) or Oxygen Conc. (%)	0.0	0.0	1/2,2/10,3/2,4/5	
Temp. (°C) of landfill gas	63.6	64.4	1/2,3/2,4/5	

GW-36

Parameter	Average Value	Maximum Value	Date of Max. Value	Comments
Gauge pressure in gas collection header	-29.2	-28.5	1/2/11	
Nitrogen Conc. (%) or Oxygen Conc. (%)	0.0	0.0	1/2,2/10,3/2,4/5	
Temp. (°C) of landfill gas	64.6	65.6	1/2/11	

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GW-37

Parameter	Average Value	Maximum Value	Date of Max. Value	Comments
Gauge pressure in gas collection header	-1.0	-0.4	2/10/11	
Nitrogen Conc. (%) or			1/2,2/10,4/5,4/26	
Oxygen Conc. (%)	0.0	0.0		
Temp. (°C) of landfill gas	59.2	60.0	2/10/11	

GW-38

Parameter	Average Value	Maximum Value	Date of Max. Value	Comments
Gauge pressure in gas collection header	-2.2	-1.8	2/10/11	
Nitrogen Conc. (%) or			1/2,1/15,2/10,3/3,4/5	
Oxygen Conc. (%)	0.0	0.0		
Temp. (°C) of landfill gas	59.1	60.0	2/10/11	

GW-39

Parameter	Average Value	Maximum Value	Date of Max. Value	Comments
Gauge pressure in gas collection header	-30.6	-29.4	1/2/11	
Nitrogen Conc. (%) or			1/2,2/10,3/3	
Oxygen Conc. (%)	0.0	0.0		
Temp. (°C) of landfill gas	41.1	43.3	2/10/11	

GW-40

Parameter	Average Value	Maximum Value	Date of Max. Value	Comments
Gauge pressure in gas collection header	-21.8	-21.4	1/15/11 & 2/10/11	
Nitrogen Conc. (%) or			1/2,1/15,2/10,3/2,4/5	
Oxygen Conc. (%)	0.0	0.0		
Temp. (°C) of landfill gas	53.6	55.6	2/10/11 & 3/2/11	

GW-41

Parameter	Average Value	Maximum Value	Date of Max. Value	Comments
Gauge pressure in gas collection header	-7.1	-6.2	1/2/11 & 2/10/11	
Nitrogen Conc. (%) or			1/2,2/10,4/5,4/26	
Oxygen Conc. (%)	0.0	0.0		
Temp. (°C) of landfill gas	54.7	55.6	1/2/11 & 2/10/11	

GW-42

Parameter	Average Value	Maximum Value	Date of Max. Value	Comments
Gauge pressure in gas collection header	-29.4	-28.6	1/2/11	
Nitrogen Conc. (%) or			1/2,1/15,2/10,3/2,4/5, 4/26	
Oxygen Conc. (%)	0.0	0.0		
Temp. (°C) of landfill gas	50.7	51.1	2/10,3/2,4/5,4/26	

GW-43

Parameter	Average Value	Maximum Value	Date of Max. Value	Comments
Gauge pressure in gas collection header	-7.1	-6.4	2/10/11	
Nitrogen Conc. (%) or			1/2,2/10,3/3	
Oxygen Conc. (%)	0.0	0.0		
Temp. (°C) of landfill gas	54.1	54.4	1/2,2/10	

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GW-44

Parameter	Average Value	Maximum Value	Date of Max. Value	Comments
Gauge pressure in gas collection header	-0.4	0.0	2/10/11	
Nitrogen Conc. (%) or Oxygen Conc. (%)	0.0	0.0	1/2,2/10,3/3	
Temp. (°C) of landfill gas	77.8	77.8	1/2,2/10,3/3	

GW-46

Parameter	Average Value	Maximum Value	Date of Max. Value	Comments
Gauge pressure in gas collection header	-30.5	-29.1	4/5/11	
Nitrogen Conc. (%) or Oxygen Conc. (%)	0.0	0.0	1/2,2/10,4/5,4/26	
Temp. (°C) of landfill gas	55.1	57.2	2/10/11	

GW-47

Parameter	Average Value	Maximum Value	Date of Max. Value	Comments
Gauge pressure in gas collection header	-0.4	0.7	2/10/11	
Nitrogen Conc. (%) or Oxygen Conc. (%)	0.0	0.1	4/5/11	
Temp. (°C) of landfill gas	74.3	75.6	1/2,1/15,3/2,4/5,4/26	

GW-48

Parameter	Average Value	Maximum Value	Date of Max. Value	Comments
Gauge pressure in gas collection header	-0.3	0.8	2/10/11	
Nitrogen Conc. (%) or Oxygen Conc. (%)	0.0	0.0	1/2,1/15,2/10,3/2,4/5,4/26	
Temp. (°C) of landfill gas	75.4	75.6	1/2,1/15,2/10,3/2,4/5,4/26	

GW-49

Parameter	Average Value	Maximum Value	Date of Max. Value	Comments
Gauge pressure in gas collection header	-0.2	0.1	3/2/11	
Nitrogen Conc. (%) or Oxygen Conc. (%)	0.0	0.0	2/10,3/2,4/5,6/14,6/22	
Temp. (°C) of landfill gas	75.6	75.6	6/14/11	

Monthly monitoring data for wellhead temperatures, pressures, and oxygen concentrations were not recorded for a number of wells in several months. As a result, the values reported for the 6-month average and maximum gauge pressures, oxygen concentrations, and temperatures are based on only the values for those wells and sampling events that were actually measured. Attachment 3 identifies the wells and months for which data is available. Attachment 4 presents the available data.

3. Identify the dates, times, duration, reason, and description of all periods when the gas stream is diverted from the control device through a bypass line or the indication of bypass flow. If there were no occurrences, then write 'no occurrences' in the comment column.

Description and Reason	Date	Start-End Time	Duration	Comments
				NO OCCURRENCES

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4. Identify the dates, times, duration, reason, and description of all periods when the control device was not operating for a period exceeding one (1) hour and length of time the control device was not operating. If there were no occurrences, then write 'no occurrences' in the comment column.

Description and Reason	Date	Start-End Time	Duration (hours)	Comments
Power Outage	1/10/11 - 1/11/11	23:08 - 4:10	5.03	Non-scheduled
Power Outage	1/12/11 - 1/13/11	22:06 - 1:34	3.47	Non-scheduled
Air Compressor Malfunction	1/27/11	11:34 - 15:34	4.00	Non-scheduled
Air Compressor Malfunction	1/28/11	14:06 - 17:46	3.67	Non-scheduled
Air Compressor Malfunction	2/4/11	11:46 - 14:04	2.30	Non-scheduled
Air Compressor Malfunction	2/14/11	19:14 - 22:20	3.10	Non-scheduled
Air Compressor Malfunction	2/18/11	10:52 - 13:38	2.77	Non-scheduled
Air Compressor Malfunction	2/19/11	1:08 - 3:12	2.07	Non-scheduled
Sump Malfunction	2/24/11	14:08 - 15:56	1.80	Non-scheduled
Injection system Malfunction	2/25/11	12:20 - 4:16	3.93	Non-scheduled
Sump Malfunction	3/5/11 - 3/6/11	21:40 - 2:08	4.47	Non-scheduled
Air Compressor Malfunction	3/18/11	9:52 - 12:52	3.00	Non-scheduled
Air Compressor Malfunction	3/23/11	1:22 - 5:04	3.70	Non-scheduled

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Description and Reason	Date	Start-End Time	Duration (hours)	Comments
Air Compressor Malfunction	3/23/11	7:38 - 18:08	10.50	Non-scheduled
Sump Malfunction	3/25/11	2:02 - 4:24	2.37	Non-scheduled
Sump Malfunction	3/29/11	14:34 - 16:34	2.00	Non-scheduled
Air Compressor Malfunction	4/14/11	13:14 - 16:22	3.13	Non-scheduled
Sump Malfunction	4/19/11	12:24 - 17:12	4.80	Non-scheduled
Air Compressor Malfunction	4/28/11	13:08 - 16:44	3.60	Non-scheduled
Power Outage	5/3/11	13:02 - 17:30	4.47	Non-scheduled
Power Outage	5/12/11	11:28 - 16:20	4.87	Non-scheduled
Power Outage	5/29/11 - 5/30/11	21:56 - 1:38	3.70	Non-scheduled
Power Outage	6/1/11	1:26 - 2:52	1.43	Non-scheduled
Power Outage	6/3/11	8:54 - 12:40	3.77	Non-scheduled
Power Outage	6/4/11	22:10 - 23:40	1.50	Non-scheduled
Air Compressor Malfunction	6/8/11	7:58 - 12:02	4.07	Non-scheduled

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Description and Reason	Date	Start-End Time	Duration (hours)	Comments
Injection system Malfunction	6/8/11	13:52 - 15:44	1.87	Non-scheduled
Flare Inspection and Maintenance	6/21/11	7:40 - 15:22	7.70	Non-scheduled
Air Compressor Malfunction	6/28/11	14:08 - 15:52	1.73	Non-scheduled

5. Identify all periods when the collection system was not operating in excess of five (5) days, including the dates and times that operation ceased, reason for not operating, actions taken, dates and times that operation resumed, and future operational protocol that will prevent a reoccurrence of the situation. If there were no occurrences, then write 'no occurrences' in the comment column.

Reasons, Actions Taken	Start/End Dates	Start/End Times	Duration	Future Protocol, Comments
				NO OCCURRENCES

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6. Identify the location of each exceedance of the 500 ppm surface methane concentration and the concentration at each location for which an exceedance was recorded in the previous month. Also identify the dates of sampling, sampler's name, and actions taken to address the exceedance. If there were no exceedances, then write 'no occurrence' in the table.

Sampling Date	Location	Conc. (ppm)	Previous Conc. (ppm)	Actions Taken	Sampler's Name
NO OCCURRENCES					

7. Identify the date of installation and the location of each well or collection system expansion added. If no additions were made, then write 'no additions' in the table.

Well ID	Description of Addition	Date of Installation	Coordinates	
			North	East
NO ADDITIONS				

8. Identify any instances when the gas flow has been diverted from the control device, enclosed combustor, or open flare. If there were no occurrences, then write 'no occurrences' in the table.

Description and Reason	Date	Start-End Time	Duration	Comments
NO OCCURRENCES				

**ATTACHMENT 2 –
MONITORING REPORT FORM
“VISIBLE EMISSIONS”**

**MONITORING REPORT FORM
VISIBLE EMISSIONS
COVERED SOURCE PERMIT NO. 0489-01-C**

Issuance Date: March 11, 2005

Expiration Date: March 10, 2010

In accordance with the Hawaii Administrative Rules, Title 11, Chapter 60.1, Air Pollution Control, the permittee shall report to the Department of Health the following information semi-annually:

For Period: January 1, 2011 through June 30, 2011

Date: August 1, 2011

Facility Name: Waimanalo Gulch Sanitary Landfill

Facility Location: Kapolei, HI

I certify that I have knowledge of the facts herein set forth, that the same are true, accurate and complete to the best of my knowledge and belief, and that all information not identified by me as confidential in nature shall be treated by the Department of Health as public record.

Responsible Official (Print): Timothy E. Steinberger, P.E.

Title: Director, Environmental Services Department

Responsible Official (Signature): See cover letter with certification

Visible Emissions:

Report the following on the lines provided below: all date(s) and six (6) minute average opacity reading(s) which the opacity limit was exceeded during the monthly observations; if there were no exceedances during the monthly observations, then write "no exceedances" in the comment column.

EQUIPMENT	SERIAL/ID NO.	DATE	6 MIN. AVG (%)	COMMENTS
				NO EXCEEDANCES

**ATTACHMENT 3 –
AVAILABLE MONITORING DATA**

Attachment 3 - Available Monitoring Data

Well ID	Jan-11	Feb-11	Mar-11	Apr-11	May-11	Jun-11
2		X	X	X		X
6	X	X	X	X		
7	X	X	X			
8	X	X	X	X		
9	X	X		X		
11	X	X	X	X		X
12	X	X	X	X		
13		X	X	X		
14		X	X			
15		X	X	X		X
24	X	X	X			
25	X	X	X			
26		X				
27	X	X	X	X		
29		X	X	X		
30	X	X	X	X		
31	X	X	X	X		
32	X	X	X	X		
33	X	X	X	X		
34	X	X	X	X		
35	X	X	X	X		
36	X	X	X	X		
37	X	X		X		
38	X	X	X	X		
39	X	X	X			
40	X	X	X	X		
41	X	X		X		
42	X	X	X	X		
43	X	X	X			
44	X	X	X			
46	X	X		X		
47	X	X	X	X		
48	X	X	X	X		
49	X	X	X	X		

	No certifiable accurate record
X	Valid record used in calculation of average and maximum.

**ATTACHMENT 4 –
MONITORING DATA**

Attachment 4 - Monitoring Data

Device ID	Date Time	O2 (Oxygen) (%)	Initial Static Pressure ("H2O)	Adjusted Static Pressure ("H2O)	Initial Temperature (Deg F)	Adjusted Temperature (Deg F)	avg. T	Deg C
WGSL0025	1/15/11 12:02 PM	0.00	-1.0	-1.0	128	128	128	53.3
WGSL0025	2/10/11 2:13 PM	0.00	-1.1	-1.1	127	127	127	52.8
WGSL0025	3/2/11 5:27 PM	0.00	-1.1	-1.1	128	128	128	53.3
WGSL0025 Average		0.00	-1.1	-1.1	128	128		53.1
WGSL0026	2/10/11 2:18 PM	0.00	-0.7	-0.7	136	136	136	57.8
WGSL0026 Average		0.00	-0.7	-0.7	136	136		57.8
WGSL0027	1/2/11 10:06 PM	0.00	-3.6	-3.7	138	138	138	58.9
WGSL0027	1/15/11 12:06 PM	0.00	-3.1	-3.1	140	140	140	60.0
WGSL0027	2/10/11 1:01 PM	0.00	-3.2	-3.3	138	138	138	58.9
WGSL0027	3/2/11 3:52 PM	0.00	-3.0	-3.0	140	140	140	60.0
WGSL0027	4/5/11 4:04 PM	0.10	-3.1	-3.1	140	140	140	60.0
WGSL0027 Average		0.02	-3.2	-3.2	139	139		59.6
WGSL0029	2/28/11 5:36 PM	0.00	-3.1	-2.8	140	136	140	60.0
WGSL0029	3/2/11 5:21 PM	0.00	-2.9	-2.8	148	148	148	64.4
WGSL0029	4/26/11 12:49 PM	0.00	-3.9	-3.9	140	140	140	60.0
WGSL0029 Average		0.00	-3.3	-3.2	143	141		61.5
WGSL0030	1/2/11 11:41 PM	0.00	-1.9	-1.9	162	162	162	72.2
WGSL0030	2/10/11 2:43 PM	0.00	-0.8	-0.8	165	165	165	73.9
WGSL0030	3/2/11 5:08 PM	0.00	-0.8	-0.8	168	166	168	75.6
WGSL0030	4/26/11 12:38 PM	0.00	-1.2	-1.2	162	162	162	72.2
WGSL0030 Average		0.00	-1.2	-1.2	164	164		73.5
WGSL0031	1/2/11 11:45 PM	0.00	-2.8	-2.8	156	156	156	68.9
WGSL0031	2/10/11 3:17 PM	0.00	-1.7	-1.7	156	156	156	68.9
WGSL0031	3/2/11 5:02 PM	0.00	-1.7	-1.7	158	158	158	70.0
WGSL0031	4/26/11 12:31 PM	0.00	-1.1	-1.1	156	156	156	68.9
WGSL0031 Average		0.00	-1.8	-1.8	157	157		69.2
WGSL0032	1/2/11 10:27 PM	0.00	-1.1	-1.1	172	172	172	77.8
WGSL0032	1/15/11 11:43 AM	0.00	-1.1	-1.0	172	172	172	77.8
WGSL0032	2/10/11 1:51 PM	0.00	-0.2	-0.3	172	172	172	77.8
WGSL0032	3/2/11 4:27 PM	0.00	0.0	-0.1	172	172	172	77.8
WGSL0032	4/5/11 4:35 PM	0.00	-0.5	-0.6	170	170	170	76.7
WGSL0032 Average		0.00	-0.6	-0.6	172	172		77.6
WGSL0033	1/2/11 11:14 PM	0.00	-0.5	-0.5	158	158	158	70.0
WGSL0033	1/15/11 12:49 PM	0.00	-0.1	-0.1	158	158	158	70.0
WGSL0033	2/10/11 3:29 PM	0.00	0.0	0.0	160	160	160	71.1
WGSL0033	2/10/11 5:49 PM	0.00	-0.1	-0.1	164	164	164	73.3
WGSL0033	3/3/11 10:54 AM	0.00	-0.6	-0.6	158	158	158	70.0
WGSL0033	4/5/11 1:13 PM	0.00	-0.6	-0.6	158	158	158	70.0
WGSL0033 Average		0.00	-0.3	-0.3	159	159		70.7
WGSL0034	1/2/11 11:10 PM	0.00	-23.5	-23.5	130	130	130	54.4
WGSL0034	1/15/11 12:51 PM	0.00	-23.8	-23.8	128	128	128	53.3
WGSL0034	2/10/11 3:32 PM	0.00	-23.6	-23.6	132	132	132	55.6
WGSL0034	3/3/11 10:57 AM	0.00	-24.1	-24.1	128	128	128	53.3
WGSL0034	4/5/11 1:07 PM	0.00	-24.5	-24.4	128	128	128	53.3
WGSL0034 Average		0.00	-23.9	-23.9	129	129		54.0
WGSL0035	1/2/11 10:53 PM	0.00	-29.8	-29.7	148	148	148	64.4
WGSL0035	2/10/11 4:01 PM	0.00	-30.8	-30.8	142	142	142	61.1
WGSL0035	3/2/11 1:35 PM	0.00	-30.5	-30.6	148	148	148	64.4
WGSL0035	4/5/11 12:42 PM	0.00	-30.9	-30.9	148	148	148	64.4
WGSL0035 Average		0.00	-30.5	-30.5	147	147		63.6
WGSL0036	1/2/11 10:57 PM	0.00	-28.5	-28.5	150	150	150	65.6
WGSL0036	2/10/11 3:58 PM	0.00	-29.3	-29.3	145	145	145	62.8

Attachment 4 - Monitoring Data

Device ID	Date Time	O2 (Oxygen) (%)	Initial Static Pressure ("H2O)	Adjusted Static Pressure ("H2O)	Initial Temperature (Deg F)	Adjusted Temperature (Deg F)	avg. T	Deg C
WGSL0036	3/2/11 1:40 PM	0.00	-29.3	-29.3	150	150	150	65.6
WGSL0036	4/5/11 12:45 PM	0.00	-29.7	-29.6	148	148	148	64.4
WGSL0036 Average		0.00	-29.2	-29.2	148	148		64.6
WGSL0037	1/2/11 11:52 PM	0.00	-0.6	-0.6	138	138	138	58.9
WGSL0037	2/10/11 2:32 PM	0.00	-0.4	-0.4	140	140	140	60.0
WGSL0037	4/5/11 1:31 PM	0.00	-1.8	-1.8	138	138	138	58.9
WGSL0037	4/26/11 12:15 PM	0.00	-1.3	-1.3	138	138	138	58.9
WGSL0037 Average		0.00	-1.0	-1.0	139	139		59.2
WGSL0038	1/2/11 11:23 PM	0.00	-2.2	-2.2	138	138	138	58.9
WGSL0038	1/15/11 12:46 PM	0.00	-1.9	-1.9	138	138	138	58.9
WGSL0038	2/10/11 3:23 PM	0.00	-1.8	-1.8	140	140	140	60.0
WGSL0038	3/3/11 10:51 AM	0.00	-2.9	-2.9	138	138	138	58.9
WGSL0038	4/5/11 1:20 PM	0.00	-2.1	-2.1	138	138	138	58.9
WGSL0038 Average		0.00	-2.2	-2.2	138	138		59.1
WGSL0039	1/2/11 11:05 PM	0.00	-29.9	-29.4	100	100	100	37.8
WGSL0039	2/10/11 4:06 PM	0.00	-30.6	-31.1	110	110	110	43.3
WGSL0039	3/3/11 11:01 AM	0.00	-31.2	-31.3	108	108	108	42.2
WGSL0039 Average		0.00	-30.6	-30.6	106	106		41.1
WGSL0040	1/2/11 11:21 PM	0.00	-21.5	-21.5	124	124	124	51.1
WGSL0040	1/15/11 12:57 PM	0.00	-21.4	-21.4	126	126	126	52.2
WGSL0040	2/10/11 3:37 PM	0.00	-21.4	-21.4	132	132	132	55.6
WGSL0040	3/2/11 1:21 PM	0.00	-21.7	-21.7	132	132	132	55.6
WGSL0040	4/5/11 1:02 PM	0.00	-22.6	-23.1	128	128	128	53.3
WGSL0040 Average		0.00	-21.7	-21.8	128	128		53.6
WGSL0041	1/2/11 11:56 PM	0.00	-6.4	-6.4	132	132	132	55.6
WGSL0041	2/10/11 2:28 PM	0.00	-6.3	-6.3	132	132	132	55.6
WGSL0041	4/5/11 1:26 PM	0.00	-7.5	-7.7	130	130	130	54.4
WGSL0041	4/26/11 12:08 PM	0.00	-8.1	-8.1	128	128	128	53.3
WGSL0041 Average		0.00	-7.1	-7.1	131	131		54.7
WGSL0042	1/2/11 11:32 PM	0.00	-28.6	-28.6	122	122	122	50.0
WGSL0042	1/15/11 12:42 PM	0.00	-29.2	-29.2	122	122	122	50.0
WGSL0042	2/10/11 3:41 PM	0.00	-29.1	-29.1	124	124	124	51.1
WGSL0042	3/2/11 1:11 PM	0.00	-29.0	-29.0	124	124	124	51.1
WGSL0042	4/5/11 12:55 PM	0.00	-28.9	-28.9	124	124	124	51.1
WGSL0042	4/26/11 12:00 PM	0.00	-31.8	-31.7	124	124	124	51.1
WGSL0042 Average		0.00	-29.4	-29.4	123	123		50.7
WGSL0043	1/2/11 10:48 PM	0.00	-7.6	-7.6	130	130	130	54.4
WGSL0043	2/10/11 4:13 PM	0.00	-6.4	-6.4	130	130	130	54.4
WGSL0043	3/3/11 11:09 AM	0.00	-7.3	-7.3	128	128	128	53.3
WGSL0043 Average		0.00	-7.1	-7.1	129	129		54.1
WGSL0044	1/2/11 6:17 PM	0.00	-0.3	-0.1	172	172	172	77.8
WGSL0044	2/10/11 4:26 PM	0.00	0.0	0.0	172	172	172	77.8
WGSL0044	2/10/11 5:41 PM	0.00	0.0	-0.1	172	172	172	77.8
WGSL0044	3/3/11 11:25 AM	0.00	-1.3	-1.0	172	172	172	77.8
WGSL0044 Average		0.00	-0.4	-0.3	172	172		77.8
WGSL0046	1/2/11 11:49 PM	0.00	-30.1	-30.1	130	130	130	54.4
WGSL0046	2/10/11 3:11 PM	0.00	-30.9	-30.9	135	135	135	57.2
WGSL0046	4/5/11 1:37 PM	0.00	-29.1	-29.1	130	130	130	54.4
WGSL0046	4/26/11 12:22 PM	0.00	-31.8	-31.8	130	130	130	54.4
WGSL0046 Average		0.00	-30.5	-30.5	131	131		55.1
WGSL0047	1/2/11 10:21 PM	0.00	-0.4	-0.4	168	168	168	75.6
WGSL0047	1/15/11 11:57 AM	0.00	-0.5	-0.5	168	168	168	75.6

Attachment 4 - Monitoring Data

Device ID	Date Time	O2 (Oxygen) (%)	Initial Static Pressure ("H2O)	Adjusted Static Pressure ("H2O)	Initial Temperature (Deg F)	Adjusted Temperature (Deg F)	avg. T	Deg C
WGSL0047	2/10/11 2:48 PM	0.00	0.4	0.3	160	160	160	71.1
WGSL0047	2/10/11 6:09 PM	0.00	0.7	-0.3	160	160	160	71.1
WGSL0047	3/2/11 4:42 PM	0.00	-0.6	-0.7	168	168	168	75.6
WGSL0047	4/5/11 4:18 PM	0.10	-1.1	-1.1	168	168	168	75.6
WGSL0047	4/26/11 2:26 PM	0.00	-0.7	-0.7	168	168	168	75.6
WGSL0047 Average		0.01	-0.3	-0.5	166	166		74.3
WGSL0048	1/2/11 10:35 PM	0.00	-0.2	-0.3	168	168	168	75.6
WGSL0048	1/15/11 11:50 AM	0.00	-0.1	-0.1	168	168	168	75.6
WGSL0048	2/10/11 1:59 PM	0.00	0.4	0.4	166	166	166	74.4
WGSL0048	2/10/11 6:06 PM	0.00	0.8	-0.1	168	168	168	75.6
WGSL0048	3/2/11 4:33 PM	0.00	-0.2	-0.2	168	168	168	75.6
WGSL0048	4/5/11 4:28 PM	0.00	-0.5	-0.5	168	168	168	75.6
WGSL0048	4/26/11 2:09 PM	0.00	-0.4	-0.4	168	168	168	75.6
WGSL0048 Average		0.00	0.0	-0.2	168	168		75.4
WGSL0049	1/15/11 11:37 AM	0.00	-0.5	-0.5	168	168	168	75.6
WGSL0049	2/10/11 1:17 PM	0.00	-0.1	-0.2	168	168	168	75.6
WGSL0049	3/2/11 4:10 PM	0.00	0.1	-0.2	168	168	168	75.6
WGSL0049	3/2/11 4:14 PM	0.00	0.1	-0.1	168	168	168	75.6
WGSL0049	4/5/11 4:45 PM	0.00	-0.2	-0.2	168	168	168	75.6
WGSL0049 Average		0.00	-0.1	-0.2	168	168		75.6
WGSLGW02	2/10/11 1:08 PM	0.00	-0.7	-0.6	168	168	168	75.6
WGSLGW02	3/2/11 4:04 PM	0.00	0.5	-0.2	160	162	162	72.2
WGSLGW02	4/5/11 4:52 PM	0.00	-0.3	-0.2	162	162	162	72.2
WGSLGW02	6/14/11 2:37 PM	0.00	-0.1	-0.1	170	170	170	76.7
WGSLGW02	6/14/11 2:53 PM	0.00	0.0	-0.1	172	172	172	77.8
WGSLGW02	6/22/11 4:02 PM	0.00	-0.1	-0.2	170	170	170	76.7
WGSLGW02 Average		0.00	-0.1	-0.2	167	167		75.2
WGSLGW06	1/15/11 11:39 AM	0.00	-0.2	-0.2	160	160	160	71.1
WGSLGW06	2/10/11 1:23 PM	0.00	0.0	0.1	154	158	158	70.0
WGSLGW06	2/10/11 6:01 PM	0.00	-0.1	-0.1	160	160	160	71.1
WGSLGW06	3/2/11 4:19 PM	0.00	0.0	-0.2	160	160	160	71.1
WGSLGW06	4/5/11 4:41 PM	0.00	-0.2	-0.4	160	160	160	71.1
WGSLGW06 Average		0.00	-0.1	-0.2	159	160		70.9
WGSLGW07	1/2/11 6:31 PM	0.00	-0.7	-0.7	170	170	170	76.7
WGSLGW07	2/10/11 4:34 PM	0.00	-0.4	-0.4	170	170	170	76.7
WGSLGW07	3/3/11 11:35 AM	0.00	-1.0	-1.0	170	170	170	76.7
WGSLGW07 Average		0.00	-0.7	-0.7	170	170		76.7
WGSLGW08	1/2/11 6:25 PM	0.00	-0.2	-0.2	146	146	146	63.3
WGSLGW08	2/28/11 6:24 PM	0.00	-0.4	-0.4	144	144	144	62.2
WGSLGW08	3/3/11 11:32 AM	0.00	-1.3	-1.3	144	144	144	62.2
WGSLGW08	4/12/11 10:20 AM	0.10	-1.3	-1.3	144	144	144	62.2
WGSLGW08 Average		0.03	-0.8	-0.8	145	145		62.5
WGSLGW09	1/2/11 10:33 PM	0.00	-0.8	-0.8	160	160	160	71.1
WGSLGW09	1/15/11 11:47 AM	0.00	-0.8	-0.8	160	160	160	71.1
WGSLGW09	2/10/11 1:55 PM	0.00	-0.4	-0.4	162	162	162	72.2
WGSLGW09	4/26/11 2:00 PM	0.00	-0.3	-0.3	160	160	160	71.1
WGSLGW09 Average		0.00	-0.6	-0.6	161	161		71.4
WGSLGW11	1/2/11 10:16 PM	0.00	-0.3	-0.3	144	144	144	62.2
WGSLGW11	1/15/11 11:53 AM	0.00	-0.2	-0.3	144	144	144	62.2
WGSLGW11	2/10/11 2:51 PM	0.00	-0.3	-0.3	142	142	142	61.1
WGSLGW11	3/2/11 4:37 PM	0.00	-0.4	-0.3	144	144	144	62.2
WGSLGW11	4/5/11 4:23 PM	0.10	-0.5	-0.5	144	144	144	62.2

Attachment 4 - Monitoring Data

Device ID	Date Time	O2 (Oxygen) (%)	Initial Static Pressure ("H2O)	Adjusted Static Pressure ("H2O)	Initial Temperature (Deg F)	Adjusted Temperature (Deg F)	avg. T	Deg C
WGSLGW11	4/26/11 2:18 PM	0.00	-0.3	-0.4	144	144	144	62.2
WGSLGW11	6/14/11 4:03 PM	0.20	-0.7	-0.3	144	144	144	62.2
WGSLGW11	6/14/11 4:09 PM	0.20	-0.3	-0.3	144	144	144	62.2
WGSLGW11 Average		0.06	-0.4	-0.3	144	144		62.1
WGSLGW12	1/2/11 6:20 PM	0.00	-0.2	-0.2	148	148	148	64.4
WGSLGW12	2/10/11 4:29 PM	0.00	-0.2	-0.2	150	150	150	65.6
WGSLGW12	3/3/11 11:28 AM	0.00	-0.5	-0.5	148	148	148	64.4
WGSLGW12	4/12/11 10:25 AM	0.00	-0.6	-0.5	148	148	148	64.4
WGSLGW12 Average		0.00	-0.4	-0.4	149	149		64.7
WGSLGW13	2/10/11 2:56 PM	0.00	-0.4	-0.4	158	158	158	70.0
WGSLGW13	3/2/11 4:49 PM	0.00	-0.4	-0.4	156	156	156	68.9
WGSLGW13	4/25/11 2:39 PM	0.00	-0.5	-0.5	158	158	158	70.0
WGSLGW13 Average		0.00	-0.4	-0.4	157	157		69.6
WGSLGW14	2/10/11 4:22 PM	0.00	-1.6	-1.6	152	152	152	66.7
WGSLGW14	3/3/11 11:22 AM	0.00	-2.2	-2.2	150	150	150	65.6
WGSLGW14 Average		0.00	-1.9	-1.9	151	151		66.1
WGSLGW15	2/10/11 3:03 PM	0.00	-0.1	-0.1	152	152	152	66.7
WGSLGW15	3/2/11 4:56 PM	0.00	-0.1	-0.1	150	150	150	65.6
WGSLGW15	4/26/11 2:50 PM	0.00	-0.5	-0.5	144	144	144	62.2
WGSLGW15	6/14/11 3:34 PM	0.00	0.0	-0.3	150	152	152	66.7
WGSLGW15	6/14/11 3:37 PM	0.00	-0.4	-0.4	152	152	152	66.7
WGSLGW15	6/14/11 3:41 PM	0.00	-0.4	-0.2	152	152	152	66.7
WGSLGW15 Average		0.00	-0.3	-0.3	150	150		65.7
WGSLGW24	1/2/11 6:12 PM	0.00	-1.2	-1.2	162	162	162	72.2
WGSLGW24	2/10/11 4:18 PM	0.00	-0.7	-0.7	165	165	165	73.9
WGSLGW24	3/3/11 11:14 AM	0.00	-1.5	-1.5	164	164	164	73.3
WGSLGW24 Average		0.00	-1.1	-1.1	164	164		73.1
Grand Average		0.01	-6.7	-6.7	149	149		65.2

**ATTACHMENT 5 –
MONITORING DATA (AUGUST 2011)**

Attachment 5 - Monitoring Data (August 2011)

Device ID	Date Time	O2 (Oxygen) (%)	Initial Static Pressure ("H2O)	Adjusted Static Pressure ("H2O)	Initial Temperature (Deg F)	Adjusted Temperature (Deg F)	Initial Temperature (Deg C)	Adjusted Temperature (Deg C)
WGSL0025	8/14/2011 1:29	0	-1.2	-1.2	128	128	53.3	53.3
WGSL0025	8/19/2011 16:26	0	-0.6	-0.6	128	128	53.3	53.3
WGSL0025 Average		0	-0.9	-0.9			53.3	53.3
WGSL0026	8/14/2011 1:13	0	-0.8	-0.8	138	138	58.9	58.9
WGSL0026	8/19/2011 16:21	0	-0.2	-0.2	138	138	58.9	58.9
WGSL0026 Average		0	-0.5	-0.5			58.9	58.9
WGSL0027	8/12/2011 17:04	0	-2.9	-2.9	140	140	60.0	60.0
WGSL0027	8/18/2011 13:21	0	-2.9	-2.9	140	140	60.0	60.0
WGSL0027	8/24/2011 14:38	0	-2.8	-2.9	140	140	60.0	60.0
WGSL0027 Average		0	-2.9	-2.9			60.0	60.0
WGSL0029	8/14/2011 1:20	0	-9.5	-7.8	140	140	60.0	60.0
WGSL0029	8/17/2011 17:48	0	-6.5	-6.4	142	142	61.1	61.1
WGSL0029 Average		0	-8.0	-7.1			60.6	60.6
WGSL0030	8/13/2011 23:01	0	-1.1	-1.1	162	162	72.2	72.2
WGSL0030	8/17/2011 17:40	0	-0.3	-0.3	162	162	72.2	72.2
WGSL0030	8/25/2011 15:53	0	-0.2	-0.2	162	160	72.2	71.1
WGSL0030 Average		0	-0.5	-0.5			72.2	71.9
WGSL0031	8/13/2011 23:06	0	-2.2	-2.2	158	158	70.0	70.0
WGSL0031	8/17/2011 17:31	0	-1.2	-1.3	158	156	70.0	68.9
WGSL0031 Average		0	-1.7	-1.8			70.0	69.4
WGSL0032	8/12/2011 17:26	0	-0.3	-0.2	172	172	77.8	77.8
WGSL0032	8/18/2011 13:58	0	-0.3	-0.4	172	172	77.8	77.8
WGSL0032	8/24/2011 15:08	0	-2.1	-2.0	172	172	77.8	77.8
WGSL0032 Average		0	-0.9	-0.9			77.8	77.8
WGSL0033	8/13/2011 22:32	0	-1.3	-1.3	158	158	70.0	70.0
WGSL0033	8/16/2011 18:22	0	-0.7	-0.7	158	158	70.0	70.0
WGSL0033 Average		0	-1.0	-1.0			70.0	70.0
WGSL0034	8/13/2011 22:27	0	-23.9	-23.9	128	128	53.3	53.3
WGSL0034	8/16/2011 18:28	0	-22.0	-22.0	128	128	53.3	53.3
WGSL0034 Average		0	-23.0	-23.0			53.3	53.3
WGSL0035	8/14/2011 0:10	0	-31.2	-31.2	148	148	64.4	64.4
WGSL0035	8/19/2011 16:12	0	-27.2	-27.2	148	148	64.4	64.4
WGSL0035	8/24/2011 13:30	0	-28.7	-28.7	148	148	64.4	64.4
WGSL0035 Average		0	-29.0	-29.0			64.4	64.4
WGSL0036	8/14/2011 0:13	0	-30.3	-30.4	150	150	65.6	65.6
WGSL0036	8/19/2011 16:15	0	-26.4	-26.4	150	150	65.6	65.6
WGSL0036	8/24/2011 13:24	0	-27.8	-27.8	150	150	65.6	65.6
WGSL0036 Average		0	-28.2	-28.2			65.6	65.6
WGSL0037	8/13/2011 23:15	0	-2.9	-2.9	138	138	58.9	58.9
WGSL0037	8/17/2011 17:17	0	-2.2	-2.2	138	138	58.9	58.9
WGSL0037 Average		0	-2.6	-2.6			58.9	58.9
WGSL0039	8/13/2011 22:23	0.3	-30.0	-30.5	130	130	54.4	54.4
WGSL0039 Average		0.3	-30.0	-30.5			54.4	54.4
WGSL0040	8/16/2011 18:10	0	-17.9	-17.9	128	128	53.3	53.3
WGSL0040 Average		0	-17.9	-17.9			53.3	53.3
WGSL0041	8/13/2011 23:20	0	-9.5	-9.6	128	128	53.3	53.3
WGSL0041	8/17/2011 17:21	0	-8.4	-8.5	128	128	53.3	53.3
WGSL0041 Average		0	-9.0	-9.1			53.3	53.3
WGSL0042	8/13/2011 22:16	0	-29.9	-29.9	124	124	51.1	51.1
WGSL0042	8/16/2011 18:33	0	-26.6	-26.5	124	124	51.1	51.1
WGSL0042 Average		0	-28.3	-28.2			51.1	51.1
WGSL0044	8/14/2011 0:37	0	-1.0	-1.0	172	172	77.8	77.8
WGSL0044	8/19/2011 16:00	0	-0.2	-0.2	172	172	77.8	77.8

Attachment 5 - Monitoring Data (August 2011)

Device ID	Date Time	O2 (Oxygen) (%)	Initial Static Pressure ("H2O)	Adjusted Static Pressure ("H2O)	Initial Temperature (Deg F)	Adjusted Temperature (Deg F)	Initial Temperature (Deg C)	Adjusted Temperature (Deg C)
WGSL0044	8/24/2011 14:04	0	-0.4	-0.4	172	172	77.8	77.8
WGSL0044 Average		0	-0.5	-0.5			77.8	77.8
WGSL0046	8/13/2011 23:11	0	-31.1	-31.1	130	130	54.4	54.4
WGSL0046	8/17/2011 17:26	0	-28.0	-28.0	132	132	55.6	55.6
WGSL0046 Average		0	-29.6	-29.6			55.0	55.0
WGSL0047	8/13/2011 22:52	0	-1.6	-1.6	168	168	75.6	75.6
WGSL0047	8/17/2011 16:59	0	-0.5	-0.5	168	168	75.6	75.6
WGSL0047	8/25/2011 15:06	0	-0.8	-0.7	170	170	76.7	76.7
WGSL0047 Average		0	-1.0	-0.9			75.9	75.9
WGSL0048	8/14/2011 1:45	0	-0.9	-0.7	168	168	75.6	75.6
WGSL0048	8/18/2011 14:09	0	-0.4	-0.4	168	168	75.6	75.6
WGSL0048	8/24/2011 15:17	0	-1.4	-1.4	172	172	77.8	77.8
WGSL0048	8/25/2011 15:12	0	-1.2	-1.2	170	170	76.7	76.7
WGSL0048 Average		0	-1.0	-0.9			76.4	76.4
WGSL0049	8/12/2011 17:17	0	-0.2	-0.2	168	168	75.6	75.6
WGSL0049	8/18/2011 13:42	0	-0.1	-0.1	168	168	75.6	75.6
WGSL0049	8/24/2011 14:53	0	-0.5	-0.5	168	170	75.6	76.7
WGSL0049 Average		0	-0.3	-0.3			75.6	75.9
WGSLGW02	8/12/2011 17:11	0	-0.1	-0.2	168	168	75.6	75.6
WGSLGW02	8/18/2011 13:35	0	-0.4	-0.4	168	168	75.6	75.6
WGSLGW02	8/24/2011 14:46	0	-0.7	-0.4	172	172	77.8	77.8
WGSLGW02 Average		0	-0.4	-0.3			76.3	76.3
WGSLGW06	8/12/2011 17:21	0	0.0	-0.1	160	160	71.1	71.1
WGSLGW06	8/18/2011 13:49	0	-0.3	-0.2	160	160	71.1	71.1
WGSLGW06	8/24/2011 14:58	0	-0.4	-0.3	156	156	68.9	68.9
WGSLGW06 Average		0	-0.2	-0.2			70.4	70.4
WGSLGW07	8/14/2011 0:48	0	-1.2	-1.2	170	172	76.7	77.8
WGSLGW07	8/18/2011 13:07	0	-0.6	-0.6	170	170	76.7	76.7
WGSLGW07	8/24/2011 14:25	0	-0.6	-0.6	170	170	76.7	76.7
WGSLGW07 Average		0	-0.8	-0.8			76.7	77.0
WGSLGW08	8/14/2011 0:45	0	-1.3	-1.3	144	144	62.2	62.2
WGSLGW08	8/19/2011 15:51	0	-0.3	-0.3	144	144	62.2	62.2
WGSLGW08	8/24/2011 14:18	0	-0.8	-0.8	142	144	61.1	62.2
WGSLGW08 Average		0	-0.8	-0.8			61.9	62.2
WGSLGW09	8/14/2011 1:40	0	-0.8	-0.8	160	160	71.1	71.1
WGSLGW09	8/18/2011 14:05	0	-0.3	-0.3	160	160	71.1	71.1
WGSLGW09	8/24/2011 15:13	0	-1.6	-1.6	164	164	73.3	73.3
WGSLGW09 Average		0	-0.9	-0.9			71.9	71.9
WGSLGW11	8/13/2011 22:55	0	-0.6	-0.6	144	144	62.2	62.2
WGSLGW11	8/17/2011 16:56	0	-0.2	-0.2	144	144	62.2	62.2
WGSLGW11	8/25/2011 14:28	0	-0.4	-0.4	146	146	63.3	63.3
WGSLGW11 Average		0	-0.4	-0.4			62.6	62.6
WGSLGW12	8/14/2011 0:40	0	-0.6	-0.6	148	148	64.4	64.4
WGSLGW12	8/19/2011 15:54	0	-0.2	-0.3	148	148	64.4	64.4
WGSLGW12	8/24/2011 14:10	0	-1.0	-0.5	148	148	64.4	64.4
WGSLGW12 Average		0	-0.6	-0.5			64.4	64.4
WGSLGW13	8/13/2011 22:47	0	-0.7	-0.7	158	158	70.0	70.0
WGSLGW13	8/17/2011 17:06	0	-0.2	-0.2	158	158	70.0	70.0
WGSLGW13 Average		0	-0.5	-0.5			70.0	70.0
WGSLGW14	8/14/2011 0:34	0	-2.2	-2.2	148	148	64.4	64.4
WGSLGW14	8/19/2011 15:57	0	-1.4	-1.3	148	148	64.4	64.4
WGSLGW14	8/24/2011 13:58	0	-1.9	-1.9	146	146	63.3	63.3
WGSLGW14 Average		0	-1.8	-1.8			64.1	64.1

Attachment 5 - Monitoring Data (August 2011)

Device ID	Date Time	O2 (Oxygen) (%)	Initial Static Pressure ("H2O)	Adjusted Static Pressure ("H2O)	Initial Temperature (Deg F)	Adjusted Temperature (Deg F)	Initial Temperature (Deg C)	Adjusted Temperature (Deg C)
WGSLGW15	8/13/2011 22:39	0	-0.6	-0.6	144	144	62.2	62.2
WGSLGW15	8/17/2011 17:11	0	-0.2	-0.3	146	146	63.3	63.3
WGSLGW15 Average		0	-0.4	-0.5			62.8	62.8
WGSLGW24	8/14/2011 0:30	0	-1.4	-1.4	162	162	72.2	72.2
WGSLGW24	8/19/2011 16:03	0	-0.3	-0.3	162	162	72.2	72.2
WGSLGW24	8/24/2011 13:51	0	-0.8	-0.8	164	164	73.3	73.3
WGSLGW24 Average		0	-0.8	-0.8			72.6	72.6