

2007 SOURCE TEST REPORT

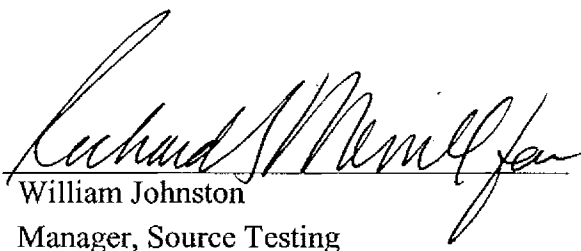
ANNUAL EMISSION MONITORING OF TWO LANDFILL GAS-FIRED FLARES AT THE REDWOOD LANDFILL

LANDFILL GAS CONTROL - FLARES - SOURCES A-50 AND A-51 FACILITY NUMBER A1179

Annual Compliance Test

The material and data in this report were reviewed by the undersigned.




William Johnston
Manager, Source Testing

SUMMARY OF 2007 SOURCE TEST INFORMATION

Source & Location: Enclosed Gas Flares A-50 and A-51
Waste Management, Inc.
8950 Redwood Highway
Novato, CA 94948

Site Contact: Mr. Ramin Khany: 415-892-2851

Source Description: A-50: Power Strategies EV 4000 enclosed ground flare assembly with a total capacity of 4000 scfm
A-51: Perennial Energy Inc., 90 MMBtu/hr, enclosed ground flare assembly with a total capacity of 3000 scfm

BAAQMD NST: NST-1111

Reference: Major Facility Review Permit
Condition Number 19867
Emission Limits:
CO = 0.30 lb/MMBtu (123 ppmv at 15% O₂)
NO_x = 0.6 lb/MMBtu (15 ppmv at 15% O₂)
NMOC = 30 ppmv at 3% O₂

Test Results A-50: CO = 54 ppmv at 15% O₂
NO_x = 10 ppmv at 15% O₂
NMOC = 8 ppmv at 3% O₂

Test Results A-51: CO = 21 ppmv at 15% O₂
NO_x = 10 ppmv at 15% O₂
NMOC = 4 ppmv at 3% O₂

Agency: Bay Area Air Quality Management District
939 Ellis Street, San Francisco, CA 94109

Source Test Contractor: Shaw Environmental, Inc.
2360 Bering Drive, San Jose, CA 95131

Contact: Mr. William Johnston: 408-382-5800

Test Dates: May 30 and 31, 2007, for A-51 and A-50, respectively

Notes:

BAAQMD NST = Bay Area Air Quality Management District notice of source test

scfm = standard cubic feet per minute

MMBtu/hr = million British thermal units per hour

CO = carbon monoxide

lb/MMBtu = pounds per million British thermal units

ppmv = parts per million by volume

O₂ = oxygen

NO_x = oxides of nitrogen

NMOC = non-methane organic compounds

Table of Contents

List of Figures.....	iv
List of Tables.....	iv
List of Appendices.....	v
1.0 Introduction.....	1-1
1.1 Summary.....	1-1
1.2 Overview.....	1-2
1.3 Source Operating Conditions.....	1-2
1.3.1 Source A-50.....	1-2
1.3.2 Source A-51.....	1-2
2.0 Source Test Program.....	2-1
3.0 Source Test Results.....	3-1
4.0 Test Procedures.....	4-1
4.1 Continuous Emissions Monitoring.....	4-1
4.2 Landfill Gas.....	4-2
5.0 Data Review.....	5-1
Limitations.....	5-2

List of Figures

Figure 4-1. Schematic Diagram of the Shaw CEMS

List of Tables

Table 1-1. Compliance Summary Redwood Landfill Flare A-50 Test date: May 31, 2007
Table 1-2. Compliance Summary Redwood Landfill Flare A-51 Test date: May 30, 2007
Table 2-1. Source Test Methods and Instrumentation
Table 3-1. Redwood Landfill, Flare A-50 LFG Analysis Test date: May 31, 2007
Table 3-2. Redwood Landfill, Flare A-51 LFG Analysis Test date: May 30, 2007
Table 3-3. Redwood Landfill Source Test Results — Landfill Flare Exhaust A-50 Test date: May 31, 2007
Table 3-4. Redwood Landfill Source Test Results — Landfill Flare Exhaust A-51 Test date: May 30, 2007
Table 3-5. Summary of Results, Redwood Landfill Landfill Gas Analysis, A-50 Test date: May 31, 2007
Table 3-6. Summary of Results, Redwood Landfill Landfill Gas Analysis, A-51 Test date: May 30, 2007
Table 4-1. CEMS Instrument Specifications

List of Appendices

Appendix A	Test Results
Appendix B	Continuous Emission Monitoring
Appendix C	Process Data
Appendix D	Analytical Results
Appendix E	Source Test Plan and California Air Resources Board Independent Contractor Certification
Appendix F	Major Facility Review Permit
Appendix G	Site Picture

1.0 Introduction

1.1 Summary

Shaw Environmental, Inc. (Shaw) performed the 2007 annual source test of landfill gas (LFG) Flares A-50 and A-51 at the Redwood Landfill located in Novato, California. This report presents the results of the test program. Tables 1-1 and 1-2 summarize the test results for Flares A-50 and A-51, respectively, as compared to the emission limits. The flares met all compliance criteria.

**Table 1-1. Compliance Summary
Redwood Landfill Flare A-50
Test date: May 31, 2007**

Condition	Average Result	Emission Limit	Compliance Status
NOx (ppmv @ 15% O ₂)	10	15	In Compliance
CO (ppmv @ 15% O ₂)	54	123	In Compliance
NMOC (ppmv @ 3% O ₂ , dry as methane)	8	30	In Compliance

Notes:

NOx = oxides of nitrogen

CO = carbon monoxide

NMOC = non-methane organic compounds

ppmv = parts per million by volume

O₂ = oxygen

**Table 1-2. Compliance Summary
Redwood Landfill Flare A-51
Test date: May 30, 2007**

Condition	Average Result	Emission Limit	Compliance Status
NOx (ppmv @ 15% O ₂)	10	15	In Compliance
CO (ppmv @ 15% O ₂)	21	123	In Compliance
NMOC (ppmv @ 3% O ₂ , dry as methane)	4	30	In Compliance

1.2 Overview

Shaw, an approved California Air Resources Board (ARB) source test contractor, performed the source test program. The test program was designed to demonstrate compliance with the Bay Area Air Quality Management District (BAAQMD) Major Facility Review Permit (MFRP) A1179, Condition Number 19867. The source test was performed on the flare exhaust to assess the emissions of NMOC, NO_x, and CO. Additionally, an LFG sample was collected for gas characterization.

The source tests were conducted on May 30 and 31, 2007 for flares A-51 and A-50, respectively. Sampling was performed by Mr. Bill Johnston and Mr. Jeff Snow of Shaw. The BAAQMD was notified of the test procedures and test date on May 15, 2007. The BAAQMD assigned the source test notice of source test number (NST)-1111. The BAAQMD did not have a representative present for the test. The source test program for collecting the required performance data is discussed in Section 2; the source testing results are presented in Section 3; the source test procedures are presented in Section 4; and data review is discussed in Section 5.

Source test data are located in Appendix A. Continuous emission monitoring system (CEMS) data are located in Appendix B. Process data are located in Appendix C. LFG analytical results are presented in Appendix D. Copies of the Source Test Protocol and of Shaw's ARB Independent Contractor Program certification are presented in Appendix E. Redwood Landfill's MFRP is located in Appendix F. A site picture is located in Appendix G.

1.3 Source Operating Conditions

1.3.1 Source A-50

The A-50 flare is a Power Strategies EV 4000 enclosed ground flare assembly with a total capacity of 4000 standard cubic feet per minute (scfm). The flare is utilized as a back-up flare to flare A-51. The LFG volumetric flow rate is measured with a LFG mass flow meter. Three thermocouples are installed at the top, middle, and bottom of the flare exhaust stack to provide temperature indication for control of the combustion temperature. The average flare operating temperature was 1,696 degrees Fahrenheit (°F) measured at the top thermocouple with an average LFG flow rate of 757 scfm. The LFG flow rate and flare operating temperature are continuously recorded on a data acquisition system (DAS) and circular paper chart recorder.

1.3.2 Source A-51

The A-51 flare is a Perennial Energy Inc., 90 million British thermal units per hour (MMBtu/hr), enclosed ground flare assembly with a total capacity of 3,000 scfm. The LFG volumetric flow rate is measured with a mass flow meter. Three thermocouples are located at the top, middle, and

bottom of the flare exhaust stack to provide temperature indication for control of the combustion temperature. The average flare operating temperature was 1,451°F measured at the top thermocouple with an average LFG flow rate of 2,704 scfm. The LFG flow rate and flare operating temperature are continuously recorded on a DAS and digital chart recorder.

2.0 Source Test Program

The objective of the flare source tests was to demonstrate compliance with requirements of MFRP Condition Number 19867 for LFG parameters NO_x, CO, NMOC, and other gaseous constituents.

Measurements of each flare's emissions were conducted at the flare exhausts. LFG was sampled at the inlet headers. Table 2-1 provides a matrix of the source test methods used at each sample location. U.S. Environmental Protection Agency (EPA), American Society for Testing and Materials (ASTM) and BAAQMD test methods were used. The source test program consisted of three 30-minute runs to measure gaseous emissions in each flare exhaust and three integrated concurrent samples taken at the inlet header. The LFG samples were analyzed for NMOC, British thermal units (Btu), F-Factor, and additional fixed gases.

The outlet volumetric flow rate was calculated using the fuel flow rate, Btu, exhaust gas O₂ content, and the F-Factor according to EPA Method 19.

Table 2-1. Source Test Methods and Instrumentation

Method	Inlet (fuel) Analyte	Exhaust Analyte	Instrumentation/ Laboratory	Principle
EPM M-3, ASTM D-1945 EPA Method 25 C EPA Method TO 15 ASTM D5504	Fixed Gases, Btu, F-Factor NMOC VOCs Sulfur Compounds	—	Atmospheric Analysis & Consulting, Inc.	Chromatographic Analysis GC/FID/TCA Analysis GC GC/SCD
BAAQMD Method ST-6 BAAQMD Method ST-7 BAAQMD Method ST-13A BAAQMD Method ST-14 EPA Method 19	—	CO THC/CH ₄ /NMOC NO _x O ₂ Flow rate, dscfm	Horiba VIA 510 TECO Model 51 Ecophysics Model 70E Teledyne —	IR FID Chemiluminescence Fuel Cell Algorithm

Notes:

VOCs = volatile organic compounds

THC = total hydrocarbons

CH₄ = methane

dscfm = dry standard cubic feet per minute

FID = flame ionization detection

GC = gas chromatography

TCA = thermal conductivity analyzer

SCD = sulfur chemiluminescence detector

IR = infrared

3.0 Source Test Results

The source tests were performed on the LFG fuel and of the flare emissions measured at the flare exhausts. Compliance with the NMOC limit was demonstrated by verifying that the concentrations of NMOC were less than 30 ppmv at 3 percent O₂ as methane. The source test demonstrated that the flare operates with criteria pollutant emissions below the BAAQMD emission limits.

Tables 3-1 and 3-2 presents the results of the LFG fuel analysis. Tables 3-3 and 3-4 present the results of the source tests including the flare operating parameters. Triplicate 30-minute runs were performed on the flare exhaust to assess the NMOC, NO_x, and CO emissions. Concurrent with each run, the O₂ content of the exhaust gas was also measured. Concentrations of CO and NO_x are reported in units of ppmv corrected to 15 percent O₂. Concentrations of NMOC are reported in units of ppmv corrected to 3 percent O₂. NMOC is total hydrocarbons (THC) minus methane. Because the THC values were either at or close to the reporting limit of the test method and well below the compliance limits, the methane content of the stack gas was not measured.

The LFG samples were analyzed for compliance with Condition No. 19867, Parts 18 and 31 (the LFG gas characterization). Tables 3-5 and 3-6 present the LFG gas characterization of samples collected during the source test of sources A-50 and A-51, respectively.

Table 3-1. Redwood Landfill, Flare A-50
LFG Analysis
Test date: May 31, 2007

	Run 1	Run 2	Run 3	Average
Heat Input (MMBtu/day)	482	485	514	494
O ₂ (%)	2.1	2.1	1.8	2.0
CO ₂ (%)	33.7	33.8	34.4	34.0
N ₂ (%)	20.1	19.8	18.2	19.4
Methane (%)	44.0	44.4	45.6	44.7
NMOC (ppmv)	445	433	450	443
H ₂ S (ppmv)	171	179	188	179

Notes:

CO₂ = carbon dioxide

N₂ = nitrogen

H₂S = hydrogen sulfide

Table 3-2. Redwood Landfill, Flare A-51

LFG Analysis

Test date: May 30, 2007

	Run 1	Run 2	Run 3	Average
Heat Input (MMBtu/day)	1,737	1,744	1,737	1,739
O ₂ (%)	2.1	1.8	2.0	2.0
CO ₂ (%)	34.0	34.4	34.2	34.2
N ₂ (%)	20.0	19.3	19.8	19.7
Methane (%)	44.0	44.5	44.0	44.2
NMOC (ppmv)	529	546	555	543
H ₂ S (ppmv)	162	146	176	161

Table 3-3. Redwood Landfill
Source Test Results — Landfill Flare Exhaust A-50
Test date: May 31, 2007

	Run 1	Run 2	Run 3	Average	Emission Limit
Time	0951 - 1021	1031 - 1101	1120 - 1150	—	—
Flare Parameters					
Fuel Factor	9,464	9,453	9,428	9,448	—
Flare Temperature (°F)	1,696	1,696	1,697	1,696	—
Landfill Gas Fuel Flow Rate (scfm)	749	749	773	757	—
Exhaust Results					
Exhaust Flow Rate (dscfm)	5,759	5,893	6,173	5,941	—
O ₂ (%)	9.4	9.6	9.5	9.5	—
NO_x					
NO _x (ppmv)	20.2	20.0	20.0	20.1	—
NO _x (ppmv @ 15% O ₂)	10.4	10.4	10.4	10.4	15
NO _x (lb/hr)	0.8	0.8	0.9	0.8	—
NO _x (lb/MMBtu)	0.041	0.042	0.041	0.041	0.06
CO					
CO (ppmv)	94.9	117	103	105	—
CO (ppmv @ 15% O ₂)	48.7	61.1	53.3	54.4	123
CO (lb/hr)	0.0	0.0	0.0	0.0	—
CO (lb/MMBtu)	0.12	0.15	0.13	0.13	0.30
Hydrocarbons as Methane					
NMOC (ppmv)	4.8	5.3	5.5	5.2	—
NMOC (ppmv corrected to 3% O ₂)	7.5	8.4	8.6	8.2	30
NMOC Removal Efficiency (%) ¹	91.7	90.4	90.2	90.8	98 ¹

¹ The efficiency requirement is utilized only if the outlet NMOC concentration is greater than 30 ppmv @ 3% oxygen.

Table 3-4. Redwood Landfill
Source Test Results — Landfill Flare Exhaust A-51
Test date: May 30, 2007

	Run 1	Run 2	Run 3	Average	Emission Limit
Time	0919 - 0949	1003 - 1033	1051 - 1119	—	—
Flare Parameters					
Fuel Factor	9,470	9,485	9,476	9,477	—
Flare Temperature (°F)	1,451	1,450	1,452	1,451	—
Landfill Gas Fuel Flow Rate (scfm)	2,705	2,704	2,704	2,704	—
Exhaust Results					
Exhaust Flow Rate (dscfm)	34,606	33,353	32,718	33,559	—
O ₂ (%)	14.0	13.7	13.6	13.8	—
NO_x					
NO _x (ppmv)	11.5	11.9	12.1	11.8	—
NO _x (ppmv @ 15% O ₂)	9.8	9.8	9.8	9.8	15
NO _x (lb/hr)	2.8	2.8	2.8	2.8	—
NO _x (lb/MMBtu)	0.039	0.039	0.039	0.039	0.06
CO					
CO (ppmv)	29.4	25.1	22.5	25.7	—
CO (ppmv @ 15% O ₂)	25.1	20.6	18.2	21.3	123
CO (lb/hr)	4.4	3.6	3.2	3.2	—
CO (lb/MMBtu)	0.061	0.050	0.044	0.052	0.30
Hydrocarbons as Methane					
NMOC (ppmv)	2.6	1.3	1.1	1.7	—
NMOC (ppmv corrected to 3% O ₂)	6.7	3.2	2.7	4.2	30
NMOC Removal Efficiency (%) ¹	93.7	97.1	97.6	96.1	98 ¹

¹ The efficiency requirement is utilized only if the outlet NMOC concentration is greater than 30 ppmv @ 3% oxygen.

Table 3-5. Summary of Results, Redwood Landfill
Landfill Gas Analysis, A-50
Test date: May 31, 2007

Compound	Measured Concentration (ppbv)				Permit Limit (ppbv)
	Run 1	Run 2	Run 3	Average	
Acrylonitrile	< 1.0	< 1.0	< 1.0	< 1.0	280
Benzene	< 1.0	< 1.0	< 1.0	< 1.0	340
Carbon Tetrachloride	< 1.0	< 1.0	< 1.0	< 1.0	70
Chlorobenzene	< 1.0	< 1.0	< 1.0	< 1.0	—
Chlorodifluoromethane	511	511	485	502	—
Chloroethane	< 1.0	< 1.0	< 1.0	< 1.0	—
Chloroform	< 1.0	< 1.0	< 1.0	< 1.0	70
1,1-Dichloroethane	< 1.0	< 1.0	< 1.0	< 1.0	150
1,1-Dichloroethene	< 1.0	< 1.0	< 1.0	< 1.0	—
1,2-Dichloroethane	< 1.0	< 1.0	< 1.0	< 1.0	70
1,4-Dichlorobenzene	< 1.0	< 1.0	< 1.0	< 1.0	400
Dichlorodifluoromethane	< 1.0	< 1.0	< 1.0	< 1.0	—
Dichlorofluoromethane	< 1.0	< 1.0	< 1.0	< 1.0	—
Ethylbenzene	2,870	2,920	2,980	2,923	—
1,2-Dibromomethane	< 1.0	< 1.0	< 1.0	< 1.0	70
Fluorotrichloromethane	< 1.0	< 1.0	< 1.0	< 1.0	—
Hexane	666	560	541	589	—
Isopropanol	< 1.0	< 1.0	< 1.0	< 1.0	—
Methyl Ethyl Ketone	875	887	948	903	—
Methylene Chloride	< 1.0	< 1.0	< 1.0	< 1.0	320
Perchloroethylene (Tetrachloroethylene)	< 1.0	< 1.0	< 1.0	< 1.0	450
Toluene	4,680	4,570	4,460	4,570	—
1,1,1-Trichloroethane	< 1.0	< 1.0	< 1.0	< 1.0	—
1,1,2,2-Tetrachloroethane	< 1.0	< 1.0	< 1.0	< 1.0	70
Trichloroethylene	< 1.0	< 1.0	< 1.0	< 1.0	250
Vinyl Chloride	< 1.0	< 1.0	< 1.0	< 1.0	880
Xylenes	4,980	5,160	5,300	5,147	—
Compound	Measured Concentration (ppmv)				Permit Limit (ppmv)
Carbon Disulfide	< 0.01	< 0.01	< 0.01	< 0.01	—
Carbonyl Sulfide	< 0.01	< 0.01	< 0.01	< 0.01	—
Dimethyl Sulfide	< 0.01	< 0.01	< 0.01	< 0.01	—
Ethyl Mercaptan	< 0.01	< 0.01	< 0.01	< 0.01	—
Total Reduced Sulfur as Hydrogen Sulfide	171	179	188	179	1,300
Methyl Mercaptan	< 0.01	< 0.01	< 0.01	< 0.01	—
NMOC (as Hexane)	74	72	75	74	750

Notes:

ppbv = parts per billion by volume

ppmv = parts per million by volume

¹For compounds reported as non-detected, a less than (<) sign is used and the method reporting limit value is reported.

Table 3-6. Summary of Results, Redwood Landfill
Landfill Gas Analysis, A-51
Test date: May 30, 2007

Compound	Measured Concentration (ppbv)				Permit Limit (ppbv)
	Run 1	Run 2	Run 3	Average	
Acrylonitrile	< 1.0	< 1.0	< 1.0	< 1.0	280
Benzene	< 1.0	< 1.0	< 1.0	< 1.0	340
Carbon Tetrachloride	< 1.0	< 1.0	< 1.0	< 1.0	70
Chlorobenzene	< 1.0	< 1.0	< 1.0	< 1.0	—
Chlorodifluoromethane	670	659	637	655	—
Chloroethane	< 1.0	< 1.0	< 1.0	< 1.0	—
Chloroform	< 1.0	< 1.0	< 1.0	< 1.0	70
1,1-Dichloroethane	< 1.0	< 1.0	< 1.0	< 1.0	150
1,1-Dichloroethene	< 1.0	< 1.0	< 1.0	< 1.0	—
1,2-Dichloroethane	< 1.0	< 1.0	< 1.0	< 1.0	70
1,4-Dichlorobenzene	< 1.0	< 1.0	< 1.0	< 1.0	400
Dichlorodifluoromethane	< 1.0	< 1.0	< 1.0	< 1.0	—
Dichlorofluoromethane	< 1.0	< 1.0	< 1.0	< 1.0	—
Ethylbenzene	2,580	2,720	2,790	2,697	—
1,2-Dibromomethane	< 1.0	< 1.0	< 1.0	< 1.0	70
Fluorotrichloromethane	< 1.0	< 1.0	< 1.0	< 1.0	—
Hexane	681	705	3,340	1,575	—
Isopropanol	< 1.0	< 1.0	< 1.0	< 1.0	—
Methyl Ethyl Ketone	933	912	1,080	975	—
Methylene Chloride	< 1.0	< 1.0	6,660	< 6,660	320
Perchloroethylene (Tetrachloroethylene)	< 1.0	< 1.0	< 1.0	< 1.0	450
Toluene	4,200	4,400	5,960	4,853	—
1,1,1-Trichloroethane	< 1.0	< 1.0	< 1.0	< 1.0	—
1,1,2,2-Tetrachloroethane	< 1.0	< 1.0	< 1.0	< 1.0	70
Trichloroethylene	< 1.0	< 1.0	< 1.0	< 1.0	250
Vinyl Chloride	< 1.0	< 1.0	< 1.0	< 1.0	880
Xylenes	5,300	4,840	4,910	5,017	—
Compound	Measured Concentration (ppmv)				Permit Limit (ppmv)
Carbon Disulfide	< 0.01	< 0.01	< 0.01	< 0.01	—
Carbonyl Sulfide	< 0.01	< 0.01	< 0.01	< 0.01	—
Dimethyl Sulfide	< 0.01	< 0.01	< 0.01	< 0.01	—
Ethyl Mercaptan	< 0.01	< 0.01	< 0.01	< 0.01	—
Total Reduced Sulfur as Hydrogen Sulfide	162	146	176	161	1,300
Methyl Mercaptan	< 0.01	< 0.01	< 0.01	< 0.01	—
NMOC (as Hexane)	88	91	939	91	750

Note:

¹For compounds reported as non-detected, a less than (<) sign is used and the method reporting limit value is reported.

4.0 Test Procedures

Shaw conducted the source test according to ASTM, BAAQMD and EPA test methods as described below.

4.1 Continuous Emissions Monitoring

Shaw measured stack gas constituent concentrations, using its CEMS sampling van, according to BAAQMD methods for NMOC, NO_x, CO, and O₂. Figure 4-1 is a schematic diagram of the Shaw CEMS.

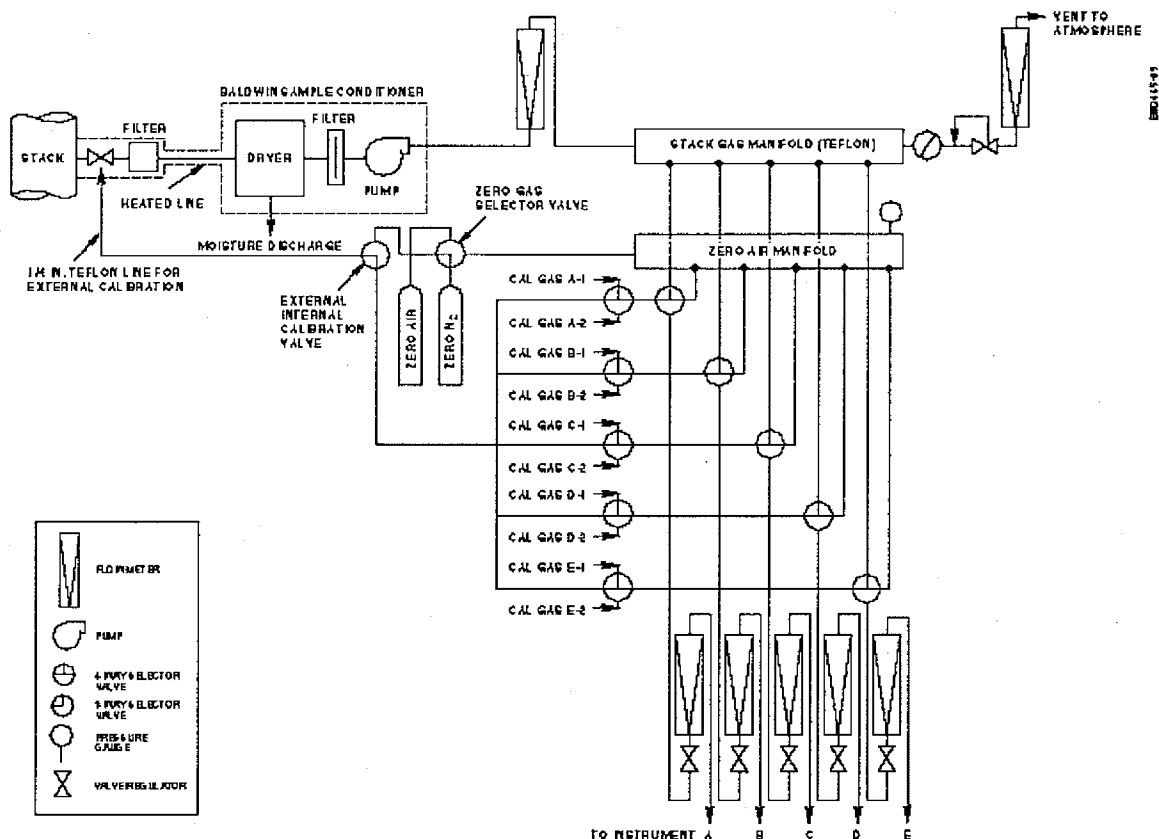


Figure 4-1. Schematic Diagram of the Shaw CEMS

In this source test, a sample pump was used to extract the sample gas continuously from each source through a stainless-steel sampling probe equipped with an in-stack filter, followed by a heated Teflon™ sample line and a Baldwin sample conditioner. The sample line between the sample point and the sample conditioner was heated to 250°F to maintain the gas stream temperatures above the water dew point. Gas flow was controlled with a back-pressure regulator. The sample flow rate to each instrument was controlled with individual rotameters. Instrument output was recorded with a strip chart recorder and a digital data logger, the STRATA data acquisition system. Table 4-1 lists the specifications of the instruments used in the source test.

Table 4-1. CEMS Instrument Specifications

Gas	Analyzer/Manufacturer	Principle of Operation	Operating Range
O ₂	Teledyne 326A	Fuel Cell	0-25%
THC	TECO Model 51	Flame Ionization	0-50 ppmv as CH ₄
NO _x	Ecophysics 70E	Chemiluminescence	0-50 ppmv
CO	Horiba VIA 510	NDIR	0-100 ppmv

Note:

NDIR = nondispersive infrared

Before the start of testing, the sampling system was assembled at the site and leak-checked. Calibrations were performed on each of the instruments using certified calibration gases.

A span drift check was performed at the end of each run to measure analyzer drift. The drift check measurement uses a zero gas (N₂) and a high calibration gas. All of the instrument checks conducted for this source test were within the drift limit criterion of 3 percent, as specified in the test methods. Reported values include a correction for the recorded instrument drift, as specified in EPA Method 7E. Copies of data logger printouts, calibration data sheets, strip charts, and gas certificates of analysis, are presented in Appendix B.

4.2 Landfill Gas

Shaw measured LFG constituent concentrations according to EPA and ASTM test methods. The sample was collected from a sample port located at the inlet header. The sample was collected in a 1-liter Tedlar® bag through Teflon® tubing. The sample line was purged with sample gas prior to sampling. The sample flow rate was controlled with rotameters to collect an integrated sample. The sample was kept out of sunlight and analyzed within the method holding times. Analytical results are presented in Appendix D.

5.0 Data Review

The Air Quality Group within Shaw performed a quality assurance review of the source test data and report. The review included the following activities:

- Review of the general text
- Check of calculation algorithms for correctness
- Review of CEMS data extraction
- Determination that all supporting documentation is present

A detailed manual review of the data was completed. Based on our data review, Shaw concludes the following:

- The source test procedures were followed, and all data were reduced and entered into the reporting spreadsheets properly.
- The instrument drift and other measures of instrument performance were deemed acceptable.

As a result, the data are considered to be acceptable.

Limitations

The services described in this report were performed consistent with generally accepted professional consulting principles and practices. No other warranty, expressed or implied, is made. These services were performed consistent with our agreement with our client. This report is solely for the use and information of our client unless otherwise noted. Any reliance on this report by a third party is at such party's sole risk.

Opinions contained in this report apply to conditions existing when services were performed and are intended only for the client, purposes, locations, time frames, and project parameters indicated. We are not responsible for the impacts of any changes in environmental standards, practices, or regulations subsequent to performance of services. We do not warrant the accuracy of information supplied by others, or the use of segregated portions of this report.

Appendix A

Test Results

- A-50
- A-51

EMISSION RATE CALCULATION

Facility: Redwood Landfill
Source : Flare A-50
Test date: 5/31/2007

Temperature Std: 70
Pressure Std: 29.92
O2% correction: 15
O2% correction: 3
NOx & CO
NMOC

Time	0951-1021		1031-1101		1120-1150		Avg		Permit Limits	
	Inlet	Outlet	Inlet	Outlet	Inlet	Outlet	Inlet	Outlet		
LFG & Flare Operating Parameters										
Flare Temp (F)	1,696		1,696		1,697		1,696			
LFG rate	749		749		773		757			
Fuel factor	9,464		9,453		9,428		9,448			
Exhaust Results										
Oxygen (%)		9.4		9.6		9.5		9.5	15	
Flowrate (dscfm)	749	5,759	749	5,893	773	6,173	757	5,941		
Oxides of Nitrogen										
MW = 46										
NOx, ppm		20.2		20.0		20.0		20.1		
NOx, ppm corrected to 15% O2		10.4		10.4		10.4		10.4	0.06	
NOx, lb/hr		0.8		0.8		0.9		0.9		
NOx, lb/MMBtu		0.041		0.042		0.041		0.041		
Carbon Monoxide										
MW = 28										
CO, ppm		94.9		117.0		103.0		105.0	123	
CO, ppm corrected to 15% O2		48.7		61.1		53.3		54.4		
CO, lb/hr		2.4		3.0		2.8		2.7		
CO, lb/MMBtu		0.118		0.148		0.129		0.132	0.30	
Hydrocarbons as methane										
MW = 16										
THC, ppm		4.8		5.3		5.5		5.2	30	
THC, lb/hr		0.07		0.08		0.08		0.08		
Methane, ppm		NM		NM		NM				
NMOC, ppm	445	4.8	433	5.3	450	5.5	443	5.2		
NMOC, ppm corrected to 3% O2		7.5		8.4		8.6		8.2		
NMOC, lb/hr	0.83	0.069	0.8	0.078	0.86	0.084	0.8	0.08		
Efficiency %										
NMOC	91.7%		90.4%		90.2%		90.8%		98	

Calculations

lb/hr = ppm x MW x Qs x 8.223x10⁻⁵ / (Tstd + 460)

ppm corrected @ O2 = ppm measured x [(20.9 - O2% correction) / (20.9% O2 - O2 measured)]

lb/MMBtu = F-factor x MW x [1.3711x10⁻⁶ / (Tstd + 460)] x [(20.9 / 20.9 - O2%)] x ppm

Efficiency (%) = in (lb/hr) - out (lb/hr) / in (lb/hr) x 100

NM = not measured

Stack Gas Flow Rate ---- Fuel Usage

EPA Method 19

Facility Redwood Landfill

Source Flare A-50

Date 5/31/2007

		Run 1	Run 2	Run 3	Average
Gross Caloric Value (Btu/ft3)	Btu/ft3	447	450	462	453
Stack Oxygen	%	9.4	9.6	9.5	9.5
Fuel factor @ 68 F	DSCF/MMBtu	9,464	9,453	9,428	9,448
Gas Temperature (F)		60	60	60	60
Std Temp (Tstd)		68	68	68	68

Corrected Fuel Rate (SCFM) @ Tstd	SCFM	749	749	773	757
Fuel Flowrate (SCFH) @ Tstd	SCFH	44,940	44,940	46,380	45,420
Million Btu per minute	MMBtu/min	0.335	0.337	0.357	0.343
Heat Input (MMBtu/hr)	MMBtu/hr	20.1	20.2	21.4	20.6
Heat Input (MMBtu/day)	MMBtu/day	482.1	485.4	514.3	493.9

Stack Gas Flow Rate (dscfm)	dscfm	5,759	5,893	6,173	5,941
-----------------------------	-------	-------	-------	-------	-------

Calculations

$$\text{SCFM} = \text{CFM} * (\text{Tstd} + 460) * \text{gas PSIA} / 14.7 / (\text{gas F} + 460)$$

$$\text{SCFH} = \text{SCFM} * 60$$

$$\text{MMBtu/min} = \text{SCFM} * \text{Btu/ft}^3 / 1,000,000$$

$$\text{MMBtu/hr} = \text{MMBtu/min} * 60$$

$$\text{DSCFM} = \text{Fuel factor} * \text{MMBtu/min} * (20.9 / (20.9 - \text{O}_2\%)) * (\text{Tstd} + 460) / 528$$

Notes

Corrected Fuel Rate (SCFM) @ Tstd data is from the system data acquisition

EMISSION RATE CALCULATION

Facility: Redwood Landfill
Source : Flare A-51
Test date: 5/30/2007

Temperature Std: 70
Pressure Std: 29.92
O2% correction: 15
O2% correction: 3
NOx & CO
NMOC

Time	0919-0949 Run 1		1003-1033 Run 2		1051-1119 Run 3		Avg		Permit
	Inlet	Outlet	Inlet	Outlet	Inlet	Outlet	Inlet	Outlet	Limits
LFG & Flare Operating Parameters									
Flare Temp (F)	1,451		1,450		1,452		1,451		
LFG rate	2,705		2,704		2,704		2,704		
Fuel factor	9,470		9,485		9,476		9,477		
Exhaust Results									
Oxygen (%)		14.0		13.7		13.6		13.8	
Flowrate (dscfm)	2,705	34,606	2,704	33,353	2,704	32,718	2,704	33,559	
Oxides of Nitrogen									
MW = 46									
NOx, ppm		11.5		11.9		12.1		11.8	
NOx, ppm corrected to 15% O2		9.8		9.8		9.8		9.8	15
NOx, lb/hr		2.8		2.8		2.8		2.8	
NOx, lb/MMBtu		0.039		0.039		0.039		0.039	0.06
Carbon Monoxide									
MW = 28									
CO, ppm		29.4		25.1		22.5		25.7	
CO, ppm corrected to 15% O2		25.1		20.6		18.2		21.3	123
CO, lb/hr		4.4		3.6		3.2		3.8	
CO, lb/MMBtu		0.061		0.050		0.044		0.052	0.30
Hydrocarbons as methane									
MW = 16									
THC, ppm		2.6		1.3		1.1		1.7	
THC, lb/hr		0.22		0.11		0.09		0.14	
Methane, ppm		NM		NM		NM			
NMOC, ppm	529	2.6	546	1.3	555	1.1	543	1.7	
NMOC, ppm corrected to 3% O2		6.7		3.2		2.7		4.2	30
NMOC, lb/hr	3.6	0.22	3.7	0.11	3.7	0.089	3.6	0.14	
Efficiency %									
NMOC		93.7%		97.1%		97.6%		96.1%	98

Calculations

lb/hr = ppm x MW x Qs x 8.223x10⁻⁵ / (Tstd + 460)
ppm corrected @ O2 = ppm measured x [(20.9 - O2% correction) / (20.9% O2 - O2 measured)]
lb/MMBtu = F-factor x MW x [1.3711x10⁻⁶ / (Tstd + 460)] x [(20.9 / 20.9 - O2%)] x ppm
Efficiency (%) = in (lb/hr) - out (lb/hr) / in (lb/hr) x 100
NM = not measured

Stack Gas Flow Rate ---- Fuel Usage

EPA Method 19

Facility Redwood Landfill

Source Flare A-51

Date 5/30/2007

		Run 1	Run 2	Run 3	Average
Gross Caloric Value (Btu/ft3)	Btu/ft3	446	448	446	447
Stack Oxygen	%	14	13.7	13.6	13.8
Fuel factor @ 68 F	DSCF/MMBtu	9,470	9,485	9,476	9,477

Corrected Fuel Rate (SCFM) @ Tstd	SCFM	2,705	2,704	2,704	2,704
Fuel Flowrate (SCFH) @ Tstd	SCFH	162,300	162,240	162,240	162,260
Million Btu per minute	MMBtu/min	1.206	1.211	1.206	1.208
Heat Input (MMBtu/hr)	MMBtu/hr	72.4	72.7	72.4	72.5
Heat Input (MMBtu/day)	MMBtu/day	1737.3	1744.4	1736.6	1739.4
Stack Gas Flow Rate (dscfm)	dscfm	34,606	33,353	32,718	33,559

Calculations

$$\text{SCFM} = \text{CFM} * (\text{Tstd} + 460) * \text{gas PSIA} / 14.7 / (\text{gas F} + 460)$$

$$\text{SCFH} = \text{SCFM} * 60$$

$$\text{MMBtu/min} = \text{SCFM} * \text{Btu/ft}^3 / 1,000,000$$

$$\text{MMBtu/hr} = \text{MMBtu/min} * 60$$

$$\text{DSCFM} = \text{Fuel factor} * \text{MMBtu/min} * (20.9 / (20.9 - \text{O}_2\%)) * (\text{Tstd} + 460) / 528$$

Notes

Corrected Fuel Rate (SCFM) @ Tstd data is from the system data acquisition

Appendix B

Continuous Emission Monitoring

- Strata™ Data Logger Printout
- Strip Chart Records
- Calibration Gas Certificates of Analysis

Run averages corrected for bias

Operator: B Johnston

Plant Name: Redwood Landfill

Location: Flare A50

Run	O2 %	CO ppm	NOx ppm	THC ppm
1	9.4	94.9	20.2	4.8
2	9.6	117.5	19.9	5.3
3	9.5	102.5	20.0	5.5

Run averages corrected for bias

Operator: B Johnston

Plant Name: Redwood Landfill

Location: Flare A51

Run	O2 %	CO ppm	NOx ppm	THC ppm
1	14.0	29.4	11.5	2.6
2	13.7	25.1	11.9	1.3
3	13.6	22.5	12.1	1.1

Operator: B Johnston
Plant Name: Redwood Landfill
Location: Flare A50
Run Length: 30 minutes
Sample Rate: 40 per minute
Average Calibration Results: 1 minutes
Automatic Sequence, Calibration Error: No
Automatic Sequence, System Bias: No
Max Response Time: Manual
Max Response Time: 1 minutes
Traverse During Run: No

Active	Chan.	Analyte		Span	Span	Offset	
		Name	Units	Units	Volts	Volts	
Yes	1	O2	%	25	1	0	
Yes	3	CO	ppm	500	1	0	
Yes	4	NOx	ppm	50	10	0	
Yes	5	THC	ppm	50/150	10	0	R3

Measurement System Preparation Table

Gas	Reference Cylinder Numbers															
Name	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16
O2	Z	H	M													
CO	Z			H	M											
NOx	Z					H	M									
THC	Z							H	M	L						

A50

R1 0951-1021

R2 1031-1101

R3 ~~##3~~ 1120-1150

THC 0-150 ppm

STRATA Configuration Page 2

Gas Name	Zero Reference Cylinder		Low Reference Cylinder		
	No.	Conc	ID Number	No.	Conc
O2	1	0		99	99
CO	1	0		99	9999
NOx	1	0		99	99
THC	1	0		10	15 Env

Gas Name	Mid Reference Cylinder		High Reference Cylinder	
	No.	Conc	ID Number	No. Conc ID Number
O2	3	9	AAL16767	2 19.04 CC8445
CO	5	40.3	AAAL 7467	4 90.1 AAL19769
NOx	7	19.9	AAL 7479	6 44.8 AAL19769
THC	9	35	Env	8 45 ALM4576

Seq Num	Calibration Error Test Sequence			
	O2	CO	NOx	THC

1
2
3
4
5
6
7
8
9
10
11
12
13
14
15

Seq Num	Calibration Error Valve Sequence															
	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16

1
2
3
4
5
6
7
8
9
10
11
12
13
14
15

STRATA Configuration Page 3

Seq Num	System Bias Check Sequence			
	O2	CO	NOx	THC
1	Zero	Zero	Zero	Zero
2	High	High	High	High
3				
4				
5				
6				
7				
8				
9				
10				
11				
12				
13				
14				
15				

Seq Num	System Bias Valve Sequence															
	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16
1	X															
2		X		X		X		X								
3																
4																
5																
6																
7																
8																
9																
10																
11																
12																
13																
14																
15																

STRATA Configuration End

Initial System Bias Check, Run 1 STRATA Version 1.1

	O2	CO	NOx	THC
	%	ppm	ppm	ppm
05-31-2007 08:48:05	0.119	-0.59	-0.003	-0.092
05-31-2007 08:49:06	-0.023	-0.70	-0.003	-0.090
05-31-2007 08:50:04	-0.031	-0.80	-0.003	-0.090
05-31-2007 08:51:05	5.717	47.11	24.853	24.142
05-31-2007 08:52:04	18.194	89.32	44.510	44.578
05-31-2007 08:53:05	19.145	89.31	44.566	45.088
05-31-2007 08:54:05	18.969	89.17	44.626	45.141

Initial System Bias Check for Run 1

Operator: B Johnston
 Plant Name: Redwood Landfill
 Location: Flare A50

Reference Cylinder Numbers

	Zero	Span
O2		CC8445
CO		AAL19769
NOx		AAL19769
THC		ALM4576

Date/Time	05-31-2007	08:54:42	PASSED
Analyte	O2	CO	NOx
Units	%	ppm	ppm
Zero Ref Cyl	0.000	0.00	0.000
Zero Cal	0.000	0.00	0.000
Zero Avg	-0.038	-0.82	-0.003
Zero Bias%	0.2%	0.2%	0.0%
Zero Drift%			
Span Ref Cyl	19.040	90.10	44.800
Span Cal	19.040	90.10	44.800
Span Avg	18.999	89.10	44.610
Span Bias%	0.2%	0.2%	0.4%
Span Drift%			
System Bias Check End			

Test Run 1 STRATA Version 1.1

	O2 %	CO ppm	NOx ppm	THC ppm
Begin calculating run averages				
05-31-2007 09:52:05	8.882	60.37	22.314	0.833
05-31-2007 09:53:05	8.682	139.32	21.270	6.618
05-31-2007 09:54:04	9.166	84.97	19.857	1.988
05-31-2007 09:55:05	9.774	29.13	19.489	0.170
05-31-2007 09:56:04	9.226	87.30	21.202	3.803
05-31-2007 09:57:05	8.677	90.75	21.429	4.164
05-31-2007 09:58:05	9.584	45.25	19.808	0.173
05-31-2007 09:59:04	9.272	77.19	20.427	3.011
05-31-2007 10:00:05	8.982	163.80*	21.134	13.970*
05-31-2007 10:01:04	9.260	138.66	19.735	6.181
05-31-2007 10:02:05	9.866	97.96	18.823	3.906
05-31-2007 10:03:05	9.856	75.14	18.954	4.008
05-31-2007 10:04:04	9.335	72.52	21.085	5.280
05-31-2007 10:05:05	8.931	102.10	20.716	3.285
05-31-2007 10:06:06	8.802	71.70	21.467	1.316
05-31-2007 10:07:04	9.069	29.59	20.973	1.060
05-31-2007 10:08:05	8.753	220.53	21.512	12.502*
05-31-2007 10:09:04	8.983	120.87	20.282	5.154
05-31-2007 10:10:05	9.360	149.57	20.473	10.448*
05-31-2007 10:11:04	8.746	177.75	21.792	7.513
05-31-2007 10:12:05	9.218	73.15	19.720	1.254
05-31-2007 10:13:05	9.530	81.61	19.659	6.364
05-31-2007 10:14:04	10.683	59.82	16.566	3.245
05-31-2007 10:15:05	10.836	25.32	17.700	0.588
05-31-2007 10:16:05	10.238	6.68	18.214	-0.077
05-31-2007 10:17:04	9.894	32.86	19.417	1.517
05-31-2007 10:18:05	9.423	112.78	20.286	10.949
05-31-2007 10:19:04	8.891	226.23*	21.302	12.370
05-31-2007 10:20:05	9.438	93.45	19.206	1.165
05-31-2007 10:21:05	9.928	69.78	18.722	3.723
Run Averages	O2 %	CO ppm	NOx ppm	THC ppm
05-31-2007 10:21:13	9.382	93.58*	20.106	4.695*

Operator: B Johnston
Plant Name: Redwood Landfill
Location: Flare A50
Test Run 1 End

Final System Bias Check, Run 1 STRATA Version 1.1

	O2 %	CO ppm	NOx ppm	THC ppm
05-31-2007 10:22:19	4.677	51.69	1.381	0.087
05-31-2007 10:23:18	0.274	-0.34	-0.004	-0.077
05-31-2007 10:24:19	0.008	-0.50	-0.004	-0.077
05-31-2007 10:25:19	6.253	49.41	29.228	26.850
05-31-2007 10:26:18	17.857	88.62	44.712	45.360
05-31-2007 10:27:19	18.739	88.67	44.625	45.205
05-31-2007 10:28:18	18.863	88.67	44.689	45.181
05-31-2007 10:29:19	18.898	88.51	44.725	44.971

Final System Bias Check for Run 1

Operator: B Johnston
 Plant Name: Redwood Landfill
 Location: Flare A50

Reference Cylinder Numbers

	Zero	Span
O2		CC8445
CO		AAL19769
NOx		AAL19769
THC		ALM4576

Date/Time	05-31-2007	10:29:22	PASSED
Analyte	O2	CO	NOx
Units	%	ppm	ppm
Zero Ref Cyl	0.000	0.00	0.000
Zero Cal	0.000	0.00	0.000
Zero Avg	-0.006	-0.53	-0.004
Zero Bias%	0.0%	0.1%	0.0%
Zero Drift%	0.1%	0.1%	0.0%
Span Ref Cyl	19.040	90.10	44.800
Span Cal	19.040	90.10	44.800
Span Avg	18.898	88.51	44.726
Span Bias%	0.6%	0.3%	0.1%
Span Drift%	-0.4%	-0.1%	0.2%
Ini Zero Avg	-0.038	-0.82	-0.003
Ini Span Avg	18.999	89.10	44.610
Run Avg	9.382	93.58	20.106
Co	-0.022	-0.68	-0.004
Cm	18.948	88.81	44.668
Correct Avg	9.439	94.91	20.167
System Bias Check End			4.763

Test Run 2 STRATA Version 1.1

	O2 %	CO ppm	NOx ppm	THC ppm
05-31-2007 10:30:23	14.909	119.34	23.826	7.282
05-31-2007 10:31:24	11.676	12.04	15.331	-0.050
Begin calculating run averages				
05-31-2007 10:32:23	11.271	14.81	16.706	-0.078
05-31-2007 10:33:24	10.241	89.56	19.157	4.304
05-31-2007 10:34:23	9.961	47.74	18.750	0.239
05-31-2007 10:35:23	10.516	10.37	17.135	4.327
05-31-2007 10:36:24	9.944	155.22	19.577	6.836
05-31-2007 10:37:23	8.994	167.28	21.046	7.139
05-31-2007 10:38:23	8.909	192.87	20.195	9.391
05-31-2007 10:39:22	9.823	118.74	19.491	6.268
05-31-2007 10:40:23	8.793	92.14	22.158	2.512
05-31-2007 10:41:24	9.115	87.12	19.576	1.346
05-31-2007 10:42:23	10.100	108.90	18.376	13.033
05-31-2007 10:43:23	9.352	157.65*	20.058	3.149
05-31-2007 10:44:22	9.052	77.70*	21.430	5.198
05-31-2007 10:45:23	8.505	163.96*	21.706	3.706
05-31-2007 10:46:24	9.497	47.94	19.221	3.509
05-31-2007 10:47:23	8.566	289.58*	22.707	14.017*
05-31-2007 10:48:24	8.270	90.05	22.080	2.239
05-31-2007 10:49:23	9.259	20.62	20.065	0.157
05-31-2007 10:50:23	8.628	122.72	22.579	5.032
05-31-2007 10:51:24	8.910	98.94	20.450	2.546
05-31-2007 10:52:23	9.420	173.34	19.609	9.393
05-31-2007 10:53:23	9.890	79.93	18.421	3.397
05-31-2007 10:54:23	8.704	207.14*	22.854	8.369
05-31-2007 10:55:23	8.787	138.55	20.615	7.495
05-31-2007 10:56:24	9.510	129.87	19.120	5.317
05-31-2007 10:57:23	9.758	131.34	18.889	10.788
05-31-2007 10:58:23	10.281	113.58	17.764	2.576
05-31-2007 10:59:24	9.364	115.69	20.615	12.233
05-31-2007 11:00:23	9.926	202.68	17.666	2.295
05-31-2007 11:01:24	10.672	27.22	17.191	-0.080
Run Averages	O2 %	CO ppm	NOx ppm	THC ppm
05-31-2007 11:01:43	9.464	115.43*	19.851	5.205*

Operator: B Johnston
Plant Name: Redwood Landfill
Location: Flare A50
Test Run 2 End

Final System Bias Check, Run 2 STRATA Version 1.1

	O2 %	CO ppm	NOx ppm	THC ppm
05-31-2007 11:02:47	4.692	4.64	1.031	0.066
05-31-2007 11:03:47	0.284	-0.38	-0.007	-0.080
05-31-2007 11:04:46	0.000	-0.58	-0.007	-0.080
05-31-2007 11:05:47	2.420	20.39	16.201	12.992
05-31-2007 11:06:48	18.849	88.36	44.350	45.068
05-31-2007 11:07:47	18.861	88.31	44.418	45.165

Final System Bias Check for Run 2

Operator: B Johnston
 Plant Name: Redwood Landfill
 Location: Flare A50

Reference Cylinder Numbers

	Zero	Span
O2		CC8445
CO		AAL19769
NOx		AAL19769
THC		ALM4576

Date/Time	05-31-2007	11:08:44	PASSED
Analyte	O2	CO	NOx
Units	%	ppm	ppm
Zero Ref Cyl	0.000	0.00	0.000
Zero Cal	0.000	0.00	0.000
Zero Avg	-0.034	-0.71	-0.007
Zero Bias%	0.1%	0.1%	0.0%
Zero Drift%	-0.1%	0.0%	0.0%
Span Ref Cyl	19.040	90.10	44.800
Span Cal	19.040	90.10	44.800
Span Avg	18.826	88.29	44.518
Span Bias%	0.9%	0.4%	0.6%
Span Drift%	-0.3%	0.0%	-0.4%
Ini Zero Avg	-0.006	-0.53	-0.004
Ini Span Avg	18.898	88.51	44.726
Run Avg	9.464	115.43	19.851
Co	-0.020	-0.62	-0.006
Cm	18.862	88.40	44.622
Correct Avg	9.563	117.45	19.933
System Bias Check End			5.261

Initial System Bias Check, Run 3 STRATA Version 1.1

	THC
	ppm
05-31-2007 11:16:01	-0.16
05-31-2007 11:17:01	17.04
05-31-2007 11:18:01	44.90

Initial System Bias Check for Run 3
Operator: B Johnston
Plant Name: Redwood Landfill
Location: Flare A50

	Reference Cylinder Numbers
	Zero Span
THC	ALM4576

Date/Time	05-31-2007	11:18:35	PASSED
Analyte	THC		
Units	ppm		
Zero Ref Cyl	0.00		
Zero Cal	0.00		
Zero Avg	-0.16		
Zero Bias%	0.2%		
Zero Drift%			
Span Ref Cyl	45.00		
Span Cal	45.00		
Span Avg	44.89		
Span Bias%	0.1%		
Span Drift%			
System Bias Check End			

Test Run 3 STRATA Version 1.1

	O2 %	CO ppm	NOx ppm	THC ppm
05-31-2007 11:20:04	9.221	82.46	19.781	4.01
Begin calculating run averages				
05-31-2007 11:21:04	10.083	36.18	18.273	1.09
05-31-2007 11:22:03	9.749	44.41	19.261	7.84
05-31-2007 11:23:04	9.983	132.27	18.332	0.81
05-31-2007 11:24:04	10.065	27.71	18.655	-0.13
05-31-2007 11:25:03	9.258	13.92	20.117	20.91
05-31-2007 11:26:04	9.832	281.48	18.941	12.88
05-31-2007 11:27:03	9.584	201.88	18.617	5.36
05-31-2007 11:28:04	9.914	101.29	19.239	0.61
05-31-2007 11:29:04	9.406	41.71	19.203	1.90
05-31-2007 11:30:03	9.667	55.86	19.641	1.46
05-31-2007 11:31:04	9.391	38.63	20.307	0.78
05-31-2007 11:32:04	8.784	41.12	20.983	13.26
05-31-2007 11:33:03	9.055	151.05	20.365	3.42
05-31-2007 11:34:04	8.832	113.05	20.775	3.96
05-31-2007 11:35:03	8.710	98.09	20.893	4.71
05-31-2007 11:36:04	9.222	127.55	19.543	2.43
05-31-2007 11:37:04	9.759	83.13	18.753	7.24
05-31-2007 11:38:03	9.852	98.56	18.428	5.10
05-31-2007 11:39:04	9.787	43.79	19.420	10.87
05-31-2007 11:40:04	9.043	202.37*	19.821	5.17
05-31-2007 11:41:04	10.264	37.53	17.732	10.64
05-31-2007 11:42:04	8.987	155.51*	21.262	2.65
05-31-2007 11:43:03	8.810	97.88	21.003	3.41
05-31-2007 11:44:04	8.884	169.42	20.633	12.44
05-31-2007 11:45:04	9.555	60.03	19.377	2.56
05-31-2007 11:46:03	8.580	110.04	21.956	2.42
05-31-2007 11:47:04	8.614	102.91	21.898	4.88
05-31-2007 11:48:03	8.840	206.38	19.583	8.26
05-31-2007 11:49:04	9.910	89.99	19.081	2.93
05-31-2007 11:50:04	8.986	58.13	21.178	1.87
Run Averages	O2 %	CO ppm	NOx ppm	THC ppm
05-31-2007 11:50:08	9.378	100.88*	19.780	5.39

Operator: B Johnston
Plant Name: Redwood Landfill
Location: Flare A50
Test Run 3 End

Final System Bias Check, Run 3 STRATA Version 1.1

		O2	CO	NOx	THC
		%	ppm	ppm	ppm
05-31-2007	11:51:10	3.985	22.51	2.090	0.31
05-31-2007	11:52:09	0.174	-1.23	-0.010	-0.17
05-31-2007	11:53:10	-0.035	-1.43	-0.010	-0.17
05-31-2007	11:54:09	-0.069	-1.56	1.080	0.50
05-31-2007	11:55:09	12.916	79.93	44.015	44.68
05-31-2007	11:56:10	18.363	89.03	43.974	45.16
05-31-2007	11:57:09	18.686	88.88	44.093	45.26
05-31-2007	11:58:09	18.740	88.82	44.130	45.44

Final System Bias Check for Run 3

Operator: B Johnston
 Plant Name: Redwood Landfill
 Location: Flare A50

Reference Cylinder Numbers

	Zero	Span
O2		CC8445
CO		AAL19769
NOx		AAL19769
THC		ALM4576

Date/Time	05-31-2007		11:58:58		PASSED
Analyte	O2	CO	NOx	THC	
Units	%	ppm	ppm	ppm	
Zero Ref Cyl	0.000	0.00	0.000	0.00	
Zero Cal	0.000	0.00	0.000	0.00	
Zero Avg	-0.071	-1.54	-0.010	-0.17	
Zero Bias%	0.3%	0.3%	0.0%	0.2%	
Zero Drift%	-0.1%	-0.2%	0.0%	0.0%	
Span Ref Cyl	19.040	90.10	44.800	45.00	
Span Cal	19.040	90.10	44.800	45.00	
Span Avg	18.761	88.77	44.145	45.50	
Span Bias%	1.1%	0.3%	1.3%	0.5%	
Span Drift%	-0.3%	0.1%	-0.7%	0.6%	
Ini Zero Avg	-0.034	-0.71	-0.007	-0.16	
Ini Span Avg	18.826	88.29	44.518	44.89	
Run Avg	9.378	100.88	19.780	5.39	
Co	-0.052	-1.12	-0.009	-0.17	
Cm	18.793	88.53	44.331	45.20	
Correct Avg	9.528	102.51	19.994	5.52	
System Bias Check End					

Operator: B Johnston
Plant Name: Redwood Landfill
Location: Flare A51
Run Length: 30 minutes
Sample Rate: 40 per minute
Average Calibration Results: 1 minutes
Automatic Sequence, Calibration Error: No
Automatic Sequence, System Bias: No
Max Response Time: Manual
Max Response Time: 1 minutes
Traverse During Run: No

Active	Chan.	Analyte		Span	Span	Offset
		Name	Units	Units	Volts	Volts
Yes	1	O2	%	25	1	0
Yes	3	CO	ppm	100	1	0
Yes	4	NOx	ppm	50	10	0
Yes	5	THC	ppm	50	10	0

Measurement System Preparation Table

Gas	Reference Cylinder Numbers															
Name	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16
O2	Z	H	M													
CO	Z			H	M											
NOx	Z					H	M									
THC	Z							H	M	L						

CEM leak check 0 c 19"

A51

R1 0919- 0949

R2 1003- 1033

R3 1051- ~~1119~~ 1119

Flare shutdown on Low temp

STRATA Configuration Page 2

Gas Name	Zero Reference Cylinder		Low Reference Cylinder			
	No.	Conc	ID Number	No.	Conc	ID Number
O2	1	0		99	99	
CO	1	0		99	9999	
NOx	1	0		99	99	
THC	1	0		10	15	Env

Gas Name	Mid Reference Cylinder		High Reference Cylinder			
	No.	Conc	ID Number	No.	Conc	ID Number
O2	3	9	AAL16767	2	19.04	CC8445
CO	5	40.3	AAAL 7467	4	90.1	AAL19769
NOx	7	19.9	AAL 7479	6	44.8	AAL19769
THC	9	35	Env	8	45	ALM4576

Seq Num	Calibration Error Test Sequence			
	O2	CO	NOx	THC

1
2
3
4
5
6
7
8
9
10
11
12
13
14
15

Seq Num	Calibration Error Valve Sequence															
	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16

1
2
3
4
5
6
7
8
9
10
11
12
13
14
15

STRATA Configuration Page 3

Seq Num	O2	CO	NOx	THC
1	Zero	Zero	Zero	Zero
2	High	High	High	High
3				
4				
5				
6				
7				
8				
9				
10				
11				
12				
13				
14				
15				

Seq Num	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16
1	X															
2		X		X		X		X								
3																
4																
5																
6																
7																
8																
9																
10																
11																
12																
13																
14																
15																

STRATA Configuration End

Test Run 3 STRATA Version 1.1

	O2 %	CO ppm	NOx ppm	THC ppm
05-30-2007 10:47:42	15.917	40.98	18.849	5.938
05-30-2007 10:48:42	13.606	20.78	12.737	0.534
05-30-2007 10:49:41	13.277	20.15	13.034	0.512
05-30-2007 10:50:42	13.312	21.65	12.120	1.012

Begin calculating run averages

05-30-2007 10:51:41	13.474	27.02	12.373	1.433
05-30-2007 10:52:41	13.341	23.49	11.945	1.644
05-30-2007 10:53:42	13.309	22.25	12.762	0.848
05-30-2007 10:54:41	13.218	20.46	11.996	1.489
05-30-2007 10:55:42	13.332	21.67	12.254	0.585
05-30-2007 10:56:42	13.440	23.53	11.525	1.272
05-30-2007 10:57:41	13.489	24.49	11.931	1.179
05-30-2007 10:58:42	13.284	20.56	12.034	0.552
05-30-2007 10:59:41	13.557	26.79	11.458	1.377
05-30-2007 11:00:41	13.506	24.79	11.688	1.556
05-30-2007 11:01:42	13.388	23.65	12.121	0.951
05-30-2007 11:02:41	13.374	22.44	11.966	0.851
05-30-2007 11:03:42	13.372	22.87	12.044	0.544
05-30-2007 11:04:42	13.545	26.62	11.691	1.196
05-30-2007 11:05:41	13.334	22.44	11.703	1.034
05-30-2007 11:06:42	13.498	24.58	11.470	1.382
05-30-2007 11:07:41	13.325	23.26	12.462	0.633
05-30-2007 11:08:41	13.273	21.82	11.819	0.965
05-30-2007 11:09:42	13.233	21.48	12.808	0.390
05-30-2007 11:10:41	13.135	19.43	11.716	1.191
05-30-2007 11:11:42	13.583	26.41	11.403	1.303
05-30-2007 11:12:42	13.404	22.42	11.823	0.696
05-30-2007 11:13:41	13.195	18.88	12.746	0.173
05-30-2007 11:14:42	12.864	15.18	13.069	0.106
05-30-2007 11:15:41	13.009	18.93	12.937	0.370
05-30-2007 11:16:42	12.932	16.47	12.764	0.378
05-30-2007 11:17:42	12.951	16.62	12.948	0.135
05-30-2007 11:18:41	13.438	26.70	9.890	3.358

Pause

05-30-2007 11:19:42	18.315	9.25	0.674	1.711
05-30-2007 11:20:41	19.948	0.42	0.379	1.684

End Pause

Run Averages

	O2 %	CO ppm	NOx ppm	THC ppm
05-30-2007 11:21:14	13.341	22.35	11.938	0.985

Operator:

B Johnston

Plant Name:

Redwood Landfill

Location:

Flare A51

Test Run 3 End

Initial System Bias Check, Run 1 STRATA Version 1.1

	O2 %	CO ppm	NOx ppm	THC ppm
05-30-2007 09:06:49	0.235	-0.11	-0.002	-0.074
05-30-2007 09:07:50	0.185	-0.11	-0.001	-0.074
05-30-2007 09:08:49	0.140	-0.13	-0.001	-0.074
05-30-2007 09:09:50	0.099	-0.13	-0.001	-0.074
05-30-2007 09:10:49	10.682	71.26	44.091	40.444
05-30-2007 09:11:49	18.208	90.03	45.311	44.851
05-30-2007 09:12:50	18.691	90.00	45.174	44.786
05-30-2007 09:13:49	18.787	90.07	45.298	44.787
05-30-2007 09:14:49	18.829	90.04	45.382	44.848

Initial System Bias Check for Run 1

Operator: B Johnston
 Plant Name: Redwood Landfill
 Location: Flare A51

Reference Cylinder Numbers

	Zero	Span
O2		CC8445
CO		AAL19769
NOx		AAL19769
THC		ALM4576

Date/Time	05-30-2007	09:15:15	PASSED
Analyte	O2	CO	NOx
Units	%	ppm	ppm
Zero Ref Cyl	0.000	0.00	0.000
Zero Cal	0.000	0.00	0.000
Zero Avg	0.101	-0.13	-0.001
Zero Bias%	0.4%	0.1%	0.0%
Zero Drift%			
Span Ref Cyl	19.040	90.10	44.800
Span Cal	19.040	90.10	44.800
Span Avg	18.843	90.04	45.294
Span Bias%	0.8%	0.1%	1.0%
Span Drift%			
System Bias Check End			

Test Run 1 STRATA Version 1.1

	O2 %	CO ppm	NOx ppm	THC ppm
05-30-2007 09:16:16	16.957	61.79	17.072	17.542
05-30-2007 09:17:16	14.595	33.14	11.706	5.082
05-30-2007 09:18:15	14.048	27.23	12.226	3.422
Begin calculating run averages				
05-30-2007 09:19:16	14.160	32.30	11.318	3.152
05-30-2007 09:20:15	14.287	36.49	10.638	4.099
05-30-2007 09:21:16	14.359	58.84*	10.158	14.846*
05-30-2007 09:22:17	14.152	32.02	11.006	3.847
05-30-2007 09:23:16	14.415	38.15	10.503	4.066
05-30-2007 09:24:16	14.543	40.85	9.867	5.762
05-30-2007 09:25:15	14.430	36.81	10.833	3.722
05-30-2007 09:26:16	13.954	29.78	11.324	2.389
05-30-2007 09:27:16	14.176	33.40	10.554	3.651
05-30-2007 09:28:15	13.929	26.15	11.828	1.407
05-30-2007 09:29:16	13.605	24.31	12.215	1.102
05-30-2007 09:30:17	13.610	23.27	12.566	0.507
05-30-2007 09:31:16	13.466	22.67	12.806	0.697
05-30-2007 09:32:16	13.843	30.33	11.143	2.441
05-30-2007 09:33:15	13.742	25.96	12.137	1.635
05-30-2007 09:34:16	13.877	28.80	11.430	1.976
05-30-2007 09:35:16	13.758	26.96	11.815	1.507
05-30-2007 09:36:15	13.621	24.56	12.074	1.419
05-30-2007 09:37:16	13.693	25.11	11.804	1.535
05-30-2007 09:38:15	13.765	28.09	11.680	1.686
05-30-2007 09:39:16	13.939	29.97	10.786	2.780
05-30-2007 09:40:16	13.924	27.76	11.610	1.596
05-30-2007 09:41:15	13.727	24.81	11.954	1.127
05-30-2007 09:42:16	13.696	26.04	11.910	1.352
05-30-2007 09:43:16	13.618	24.29	12.081	1.186
05-30-2007 09:44:15	13.798	29.16	11.079	2.777
05-30-2007 09:45:16	13.831	29.41	11.708	1.906
05-30-2007 09:46:15	13.389	22.01	12.550	1.056
05-30-2007 09:47:16	13.315	20.58	12.597	0.878
05-30-2007 09:48:16	13.627	26.99	11.551	2.015
05-30-2007 09:49:15	13.513	27.48	12.652	1.314
Run Averages	O2 %	CO ppm	NOx ppm	THC ppm
05-30-2007 09:49:15	13.854	29.38*	11.560	2.548*

Operator: B Johnston
 Plant Name: Redwood Landfill
 Location: Flare A51
 Test Run 1 End

Final System Bias Check, Run 1 STRATA Version 1.1

	O2 %	CO ppm	NOx ppm	THC ppm
05-30-2007 09:50:26	6.004	5.00	0.939	0.043
05-30-2007 09:51:25	0.458	0.54	0.000	-0.073
05-30-2007 09:52:25	0.091	0.34	0.000	-0.075
05-30-2007 09:53:26	0.029	0.17	-0.001	-0.074
05-30-2007 09:54:25	0.010	0.08	-0.001	-0.074
05-30-2007 09:55:26	10.075	75.01	41.408	38.476
05-30-2007 09:56:25	18.093	90.09	44.642	45.391
05-30-2007 09:57:25	18.652	90.08	44.870	45.331
05-30-2007 09:58:26	18.817	90.08	44.881	45.276
05-30-2007 09:59:25	18.863	90.05	44.718	45.300

Final System Bias Check for Run 1

Operator: B Johnston
 Plant Name: Redwood Landfill
 Location: Flare A51

Reference Cylinder Numbers

	Zero	Span
O2		CC8445
CO		AAL19769
NOx		AAL19769
THC		ALM4576

Date/Time	05-30-2007	09:59:28	PASSED
Analyte	O2	CO	NOx
Units	%	ppm	ppm
Zero Ref Cyl	0.000	0.00	0.000
Zero Cal	0.000	0.00	0.000
Zero Avg	0.010	0.09	-0.001
Zero Bias%	0.0%	0.1%	0.0%
Zero Drift%	-0.4%	0.2%	0.0%
Span Ref Cyl	19.040	90.10	44.800
Span Cal	19.040	90.10	44.800
Span Avg	18.863	90.04	44.729
Span Bias%	0.7%	0.1%	0.1%
Span Drift%	0.1%	0.0%	-1.1%
Ini Zero Avg	0.101	-0.13	-0.001
Ini Span Avg	18.843	90.04	45.294
Run Avg	13.854	29.38	11.560
Co	0.056	-0.02	-0.001
Cm	18.853	90.04	45.012
Correct Avg	13.976	29.41	11.506
System Bias Check End			

Test Run 2 STRATA Version 1.1

	O2 %	CO ppm	NOx ppm	THC ppm
05-30-2007 10:00:29	15.775	51.75	16.330	4.978
05-30-2007 10:01:30	13.949	24.26	11.580	1.406
05-30-2007 10:02:29	13.959	27.91	11.684	1.518
Begin calculating run averages				
05-30-2007 10:03:30	13.613	22.68	11.794	1.067
05-30-2007 10:04:29	13.801	26.74	11.600	1.124
05-30-2007 10:05:29	13.748	25.49	11.813	0.849
05-30-2007 10:06:30	13.413	20.72	12.839	0.206
05-30-2007 10:07:29	13.223	19.23	13.091	0.465
05-30-2007 10:08:30	13.660	27.97	11.359	1.458
05-30-2007 10:09:29	13.759	26.47	11.310	1.188
05-30-2007 10:10:29	13.695	26.49	11.553	1.285
05-30-2007 10:11:30	13.743	28.41	11.216	2.194
05-30-2007 10:12:29	13.938	34.27	10.507	3.194
05-30-2007 10:13:29	13.813	27.40	11.232	1.691
05-30-2007 10:14:28	14.172	36.24	10.184	3.774
05-30-2007 10:15:29	13.728	27.88	12.001	1.641
05-30-2007 10:16:30	13.755	32.56	10.687	3.459
05-30-2007 10:17:29	13.658	24.04	12.110	1.019
05-30-2007 10:18:29	13.531	25.52	11.527	1.855
05-30-2007 10:19:30	13.640	27.40	11.961	1.441
05-30-2007 10:20:29	13.272	20.22	12.735	0.596
05-30-2007 10:21:29	13.339	22.45	12.480	0.787
05-30-2007 10:22:28	13.311	20.52	12.286	0.189
05-30-2007 10:23:29	13.372	22.38	12.301	0.605
05-30-2007 10:24:30	13.442	24.56	11.774	0.968
05-30-2007 10:25:29	13.261	20.87	12.852	0.201
05-30-2007 10:26:29	13.521	26.80	11.250	1.698
05-30-2007 10:27:30	13.618	27.54	11.519	1.720
05-30-2007 10:28:29	13.548	25.27	11.890	0.995
05-30-2007 10:29:29	13.348	20.91	12.346	0.514
05-30-2007 10:30:28	13.136	18.46	12.786	0.179
05-30-2007 10:31:29	13.363	21.72	11.974	0.949
05-30-2007 10:32:30	13.547	25.34	11.589	1.649
Run Averages	O2 %	CO ppm	NOx ppm	THC ppm
05-30-2007 10:33:10	13.561	25.19	11.843	1.283

Operator: B Johnston
Plant Name: Redwood Landfill
Location: Flare A51
Test Run 2 End

Final System Bias Check, Run 2 STRATA Version 1.1

	O2 %	CO ppm	NOx ppm	THC ppm
05-30-2007 10:34:47	13.454	25.53	11.665	1.741
05-30-2007 10:35:46	13.441	23.41	10.585	1.710
05-30-2007 10:36:47	4.005	1.40	-0.005	-0.079
05-30-2007 10:37:46	0.317	0.21	-0.005	-0.079
05-30-2007 10:38:46	0.059	0.06	-0.005	-0.079
05-30-2007 10:39:47	7.247	59.61	33.713	30.713
05-30-2007 10:40:46	17.609	90.47	44.526	45.138
05-30-2007 10:41:47	18.416	90.40	44.621	45.286
05-30-2007 10:42:46	18.570	90.39	44.570	45.312
05-30-2007 10:43:46	18.619	90.33	44.450	45.352
05-30-2007 10:44:47	18.648	90.27	44.361	45.429
05-30-2007 10:45:46	18.681	90.23	44.439	45.434

Final System Bias Check, Run 2 STRATA Version 1.1

Operator: B Johnston
 Plant Name: Redwood Landfill
 Location: Flare A51

Reference Cylinder Numbers

	Zero	Span
O2		CC8445
CO		AAL19769
NOx		AAL19769
THC		ALM4576

Date/Time	05-30-2007	10:46:41	PASSED
Analyte	O2	CO	NOx
Units	%	ppm	ppm
Zero Ref Cyl	0.000	0.00	0.000
Zero Cal	0.000	0.00	0.000
Zero Avg	0.045	0.04	-0.005
Zero Bias%	0.2%	0.0%	0.0%
Zero Drift%	0.1%	0.0%	0.0%
Span Ref Cyl	19.040	90.10	44.800
Span Cal	19.040	90.10	44.800
Span Avg	18.727	90.23	44.362
Span Bias%	1.3%	0.1%	0.9%
Span Drift%	-0.5%	0.2%	-0.7%
Ini Zero Avg	0.010	0.09	-0.001
Ini Span Avg	18.863	90.04	44.729
Run Avg	13.561	25.19	11.843
Co	0.027	0.06	-0.003
Cm	18.795	90.14	44.546
Correct Avg	13.730	25.13	11.913
System Bias Check End			

Final System Bias Check, Run 3 STRATA Version 1.1

	O2	CO	NOx	THC
	%	ppm	ppm	ppm
05-30-2007 11:22:17	14.316	0.24	0.085	0.708
05-30-2007 11:23:17	1.066	-0.01	-0.009	-0.082
05-30-2007 11:24:16	0.107	-0.24	-0.009	-0.083
05-30-2007 11:25:17	0.711	12.89	10.330	7.148
05-30-2007 11:26:16	15.418	89.90	44.014	45.130
05-30-2007 11:27:17	18.306	89.92	44.031	45.320
05-30-2007 11:28:17	18.600	89.89	43.974	45.493
05-30-2007 11:29:16	18.708	89.94	43.963	45.584

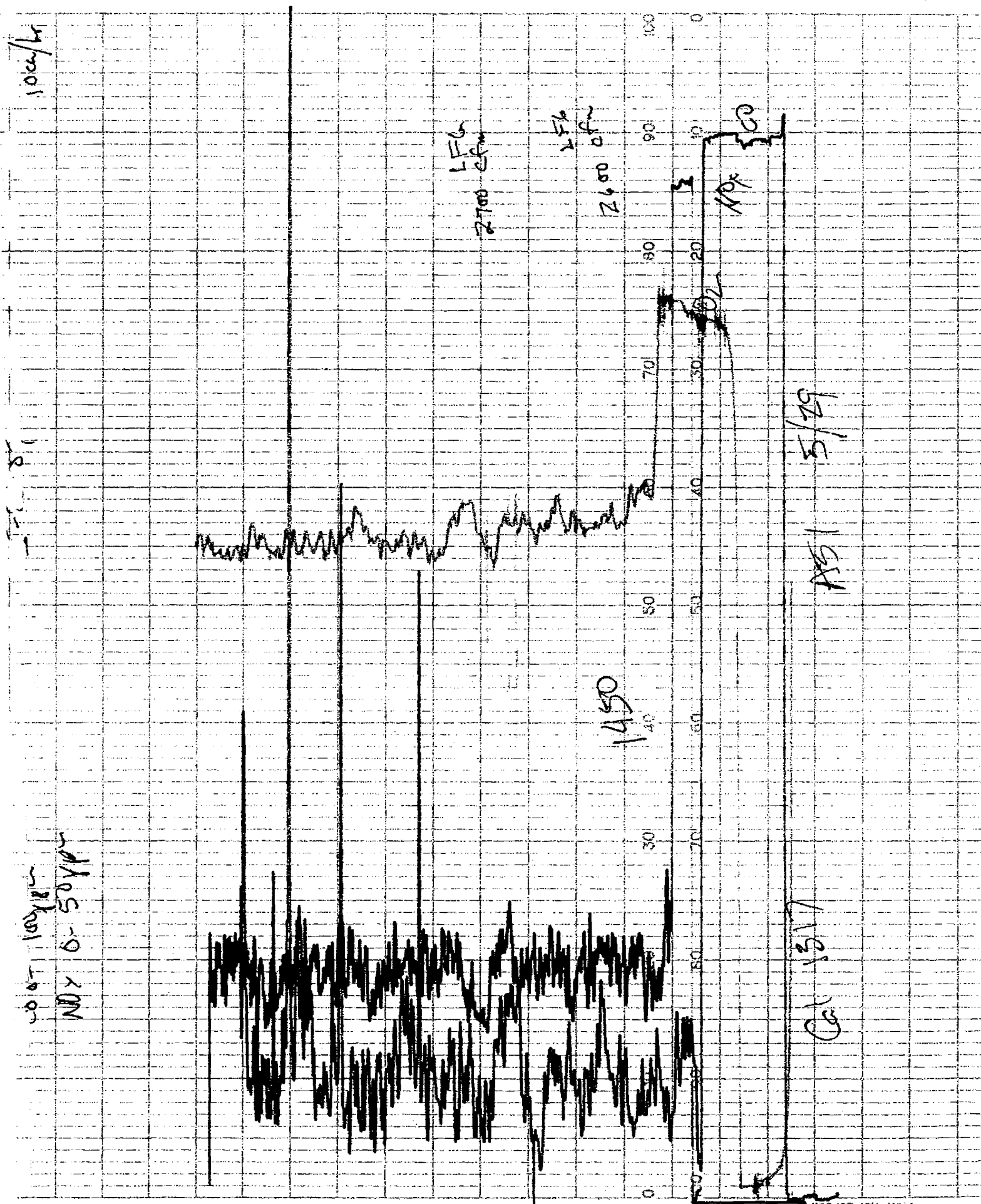
Final System Bias Check for Run 3

Operator: B Johnston
 Plant Name: Redwood Landfill
 Location: Flare A51

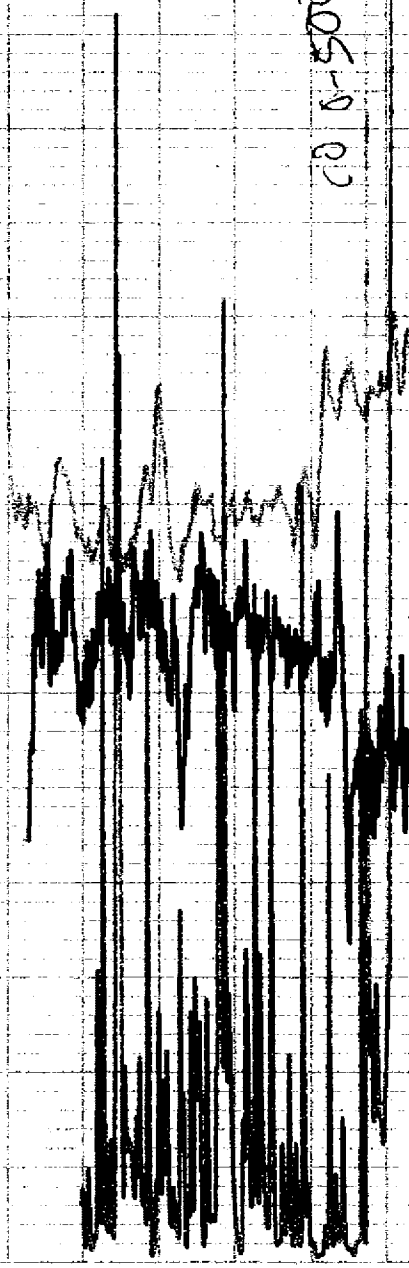
Reference Cylinder Numbers

	Zero	Span
O2		CC8445
CO		AAL19769
NOx		AAL19769
THC		ALM4576

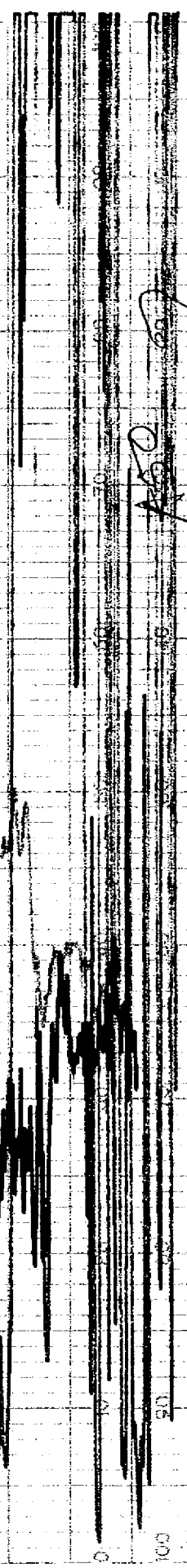
Date/Time	05-30-2007	11:29:45	PASSED
Analyte	O2	CO	NOx
Units	%	ppm	ppm
Zero Ref Cyl	0.000	0.00	0.000
Zero Cal	0.000	0.00	0.000
Zero Avg	0.022	-0.33	-0.010
Zero Bias%	0.1%	0.3%	0.0%
Zero Drift%	-0.1%	-0.4%	0.0%
Span Ref Cyl	19.040	90.10	44.800
Span Cal	19.040	90.10	44.800
Span Avg	18.733	89.93	43.912
Span Bias%	1.2%	0.2%	1.8%
Span Drift%	0.0%	-0.3%	-0.9%
Ini Zero Avg	0.045	0.04	-0.005
Ini Span Avg	18.727	90.23	44.362
Run Avg	13.341	22.35	11.938
Co	0.034	-0.15	-0.007
Cm	18.730	90.08	44.137
Correct Avg	13.551	22.47	12.123
System Bias Check End			1.051



11/11/11
RECEIVED
FBI
LABORATORY
UNIT

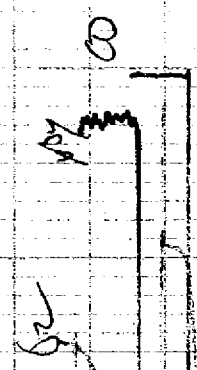


005-0 02



050

007

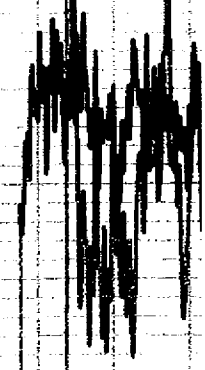


11/11/11

RECEIVED

02

005-0



1033

QZ 1003

5-30-07

R1-0919

Redwood Land (F1)

5-30-07

Plutonium

7-17-0-50114

1000

02/1/20

Recal 0-100 pp

10/1/20

02/1/20

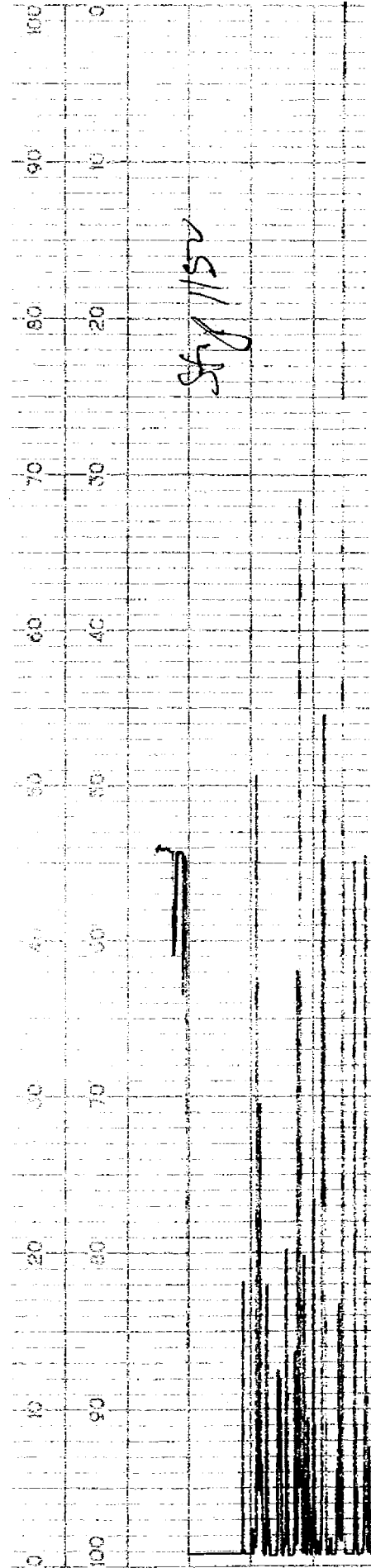
10/1/20

02/1/20

5/31/20

Redwood, Landfill

JHC 0-50 pp
Methan



10-1-78

10/11/85

10/11/85

10/11/85

10/11/85

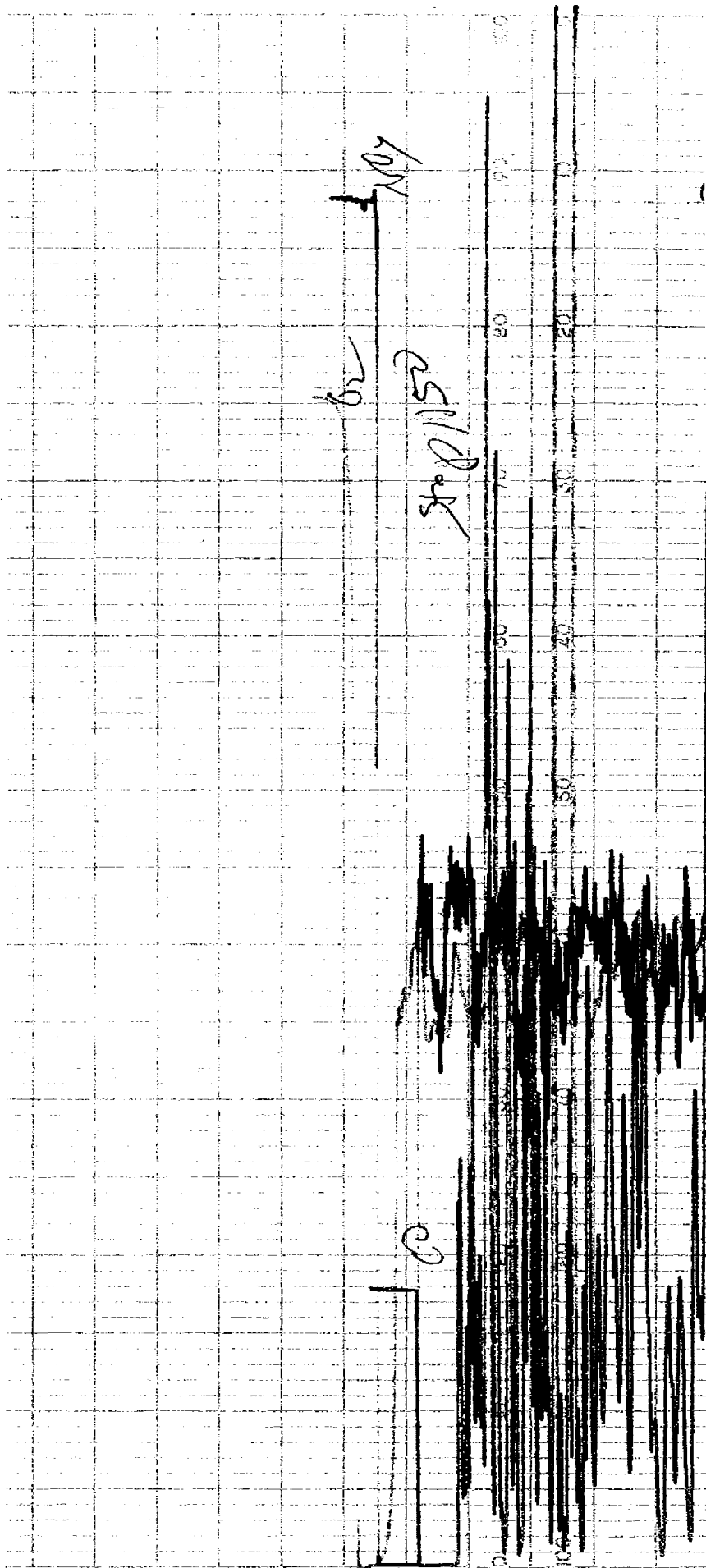
10/11/85

10/11/85

10/11/85

Redwood Landfill
Flare ASD

02 0-500 ppm
NO2 0-50 ppm
O2 0-25%





Scott Specialty Gases

500 WEAVER PARK RD, LONGMONT, CO 80501

RATA CLASS

Dual-Analyzed Calibration Standard

Phone: 888-253-1635

Fax: 303-772-7678

CERTIFICATE OF ACCURACY: Interference Free™ Multi-Component EPA Protocol Gas

Assay Laboratory

SCOTT SPECIALTY GASES
500 WEAVER PARK RD
LONGMONT, CO 80501

P.O. No.: 101520
Project No.: 08-36059-002

Customer

SHAW ENVIRONMENTAL & INFRASTRUCTURE
BILL JOHNSTON
2360 BERING DRIVE
SAN JOSE CA 95131

ANALYTICAL INFORMATION

This certification was performed according to EPA Traceability Protocol For Assay & Certification of Gaseous Calibration Standards; Procedure G-1; September, 1997.

Cylinder Number: **AAL7479** Certification Date: **10May2006** Exp. Date: **09May2008**
Cylinder Pressure***: **1920 PSIG**

COMPONENT	CERTIFIED CONCENTRATION (Moles)	ACCURACY**	TRACEABILITY
CARBON MONOXIDE	40.3 PPM	+/- 1%	Direct NIST and NMI
NITRIC OXIDE	19.8 PPM	+/- 1%	Direct NIST and NMI
NITROGEN - OXYGEN FREE	BALANCE		
TOTAL OXIDES OF NITROGEN	19.9 PPM		Reference Value Only

*** Do not use when cylinder pressure is below 150 psig.

** Analytical accuracy is based on the requirements of EPA Protocol Procedure G1, September 1997.

REFERENCE STANDARD

TYPE/SRM NO.	EXPIRATION DATE	CYLINDER NUMBER	CONCENTRATION	COMPONENT
NTRM 1678	15Aug2009	ALM002681	51.13 PPM	CARBON MONOXIDE
NTRM 2629	15Aug2009	KAL003026	19.83 PPM	NITRIC OXIDE

INSTRUMENTATION

INSTRUMENT/MODEL/SERIAL#	DATE LAST CALIBRATED	ANALYTICAL PRINCIPLE
FTIR//000929062	10May2006	FTIR
FTIR//000929062	08May2006	FTIR

ANALYZER READINGS

(Z=Zero Gas R=Reference Gas T=Test Gas r=Correlation Coefficient)

First Triad Analysis

CARBON MONOXIDE

Date: 02May2006 Response Unit: PPM
Z1 = -0.00626 R1 = 51.25518 T1 = 40.39549
R2 = 51.28341 Z2 = 0.02656 T2 = 40.42246
Z3 = 0.03812 T3 = 40.46782 R3 = 51.29773
Avg. Concentration: 40.31 PPM

Second Triad Analysis

Date: 10May2006 Response Unit: PPM
Z1 = 0.00994 R1 = 51.44870 T1 = 40.50402
R2 = 51.47099 Z2 = 0.01140 T2 = 40.54033
Z3 = 0.02948 T3 = 40.56905 R3 = 51.50014
Avg. Concentration: 40.26 PPM

Calibration Curve

Concentration = A + Bx + Cx2 + Dx3 + Ex4
r = 9.99985E-1
Constants: A = 0.00000E+0
B = 8.33156E-1 C = 4.28000E-4
D = 1.00000E-6 E = 0.00000E+0

NITRIC OXIDE

Date: 02May2006 Response Unit: PPM
Z1 = -0.04110 R1 = 19.79684 T1 = 19.80672
R2 = 19.85916 Z2 = 0.01102 T2 = 19.81543
Z3 = 0.03025 T3 = 19.85722 R3 = 19.89692
Avg. Concentration: 19.81 PPM

Date: 10May2006 Response Unit: PPM
Z1 = -0.11371 R1 = 19.91154 T1 = 19.87877
R2 = 19.93563 Z2 = -0.03538 T2 = 19.89845
Z3 = -0.00917 T3 = 19.93772 R3 = 19.98695
Avg. Concentration: 19.79 PPM

Concentration = A + Bx + Cx2 + Dx3 + Ex4
r = 9.99994E-1
Constants: A = 0.00000E+0
B = 8.05777E-1 C = 1.14000E-4
D = 0.00000E+0 E = 0.00000E+0

Special Notes:

PLEASE REPORT NOX

APPROVED BY:

Jon Witzak



Scott Specialty Gases

500 WEAVER PARK RD, LONGMONT, CO 80501

Dual-Analyzed Calibration Standard

Phone: 888-253-1635

Fax: 303-772-7673

CERTIFICATE OF ACCURACY: Interference Free TM Multi-Component EPA Protocol Gas

Assay Laboratory

SCOTT SPECIALTY GASES
500 WEAVER PARK RD
LONGMONT, CO 80501

P.O. No.: 101520

Project No.: 08-38417-004

Customer

SHAW ENVIRONMENTAL & INFRASTRUCTURE

2360 BERING DRIVE
SAN JOSE CA 95131

ANALYTICAL INFORMATION

This certification was performed according to EPA Traceability Protocol For Assay & Certification of Gaseous Calibration Standards; Procedure G-1; September, 1997.

Cylinder Number: AAL16767 Certification Date: 24Jul2006 Exp. Date: 23Jul2009
Cylinder Pressure***: 2000 PSIG

COMPONENT	CERTIFIED CONCENTRATION (Moles)	ANALYTICAL ACCURACY**	TRACEABILITY
CARBON DIOXIDE	9.98 %	+/- 1%	Direct NIST and NMI
OXYGEN	9.00 %	+/- 1%	Direct NIST and NMI
NITROGEN	BALANCE		

*** Do not use when cylinder pressure is below 150 psig.

** Analytical accuracy is based on the requirements of EPA Protocol Procedure G1, September 1997.

REFERENCE STANDARD

TYPE/SRM NO.	EXPIRATION DATE	CYLINDER NUMBER	CONCENTRATION	COMPONENT
NTRM 1675	04Jul2008	K005063	13.93 %	CARBON DIOXIDE
NTRM 2658	02Oct2006	ALM065037	9.930 %	OXYGEN

INSTRUMENTATION

INSTRUMENT/MODEL/SERIAL#	DATE LAST CALIBRATED	ANALYTICAL PRINCIPLE
FTIR//000929062	19Jul2006	FTIR
HPGC/5890/3115A34624	07Jul2006	TCD

ANALYZER READINGS

(Z = Zero Gas R = Reference Gas T = Test Gas r = Correlation Coefficient)

First Triad Analysis

Second Triad Analysis

Calibration Curve

CARBON DIOXIDE

Date: 24Jul2006 Response Unit: %
Z1 = 0.00352 R1 = 13.94110 T1 = 9.98847
R2 = 13.94426 Z2 = 0.00384 T2 = 9.99031
Z3 = 0.00545 T3 = 9.99857 R3 = 13.96591
Avg. Concentration: 9.977 %

Concentration = A + Bx + Cx2 + Dx3 + Ex4
r = 0.999992E-1
Constants: A = 0.00000E+0
B = 6.35748E-1 C = 5.12500E-3
D = 0.00000E+0 E = 0.00000E+0

OXYGEN

Date: 18Jul2006 Response Unit: %
Z1 = 0.00000 R1 = 208951.0 T1 = 188672.0
R2 = 208656.0 Z2 = 0.00000 T2 = 188637.0
Z3 = 0.00000 T3 = 188726.0 R3 = 208450.0
Avg. Concentration: 8.997 %

Concentration = A + Bx + Cx2 + Dx3 + Ex4
r = 0.999999
Constants: A = -0.00469359
B = 4.58E-05 C = 2.78E-12
D = E =

APPROVED BY:

Jon Witzak

Jon Witzak



Scott Specialty Gases

500 WEAVER PARK RD, LONGMONT, CO 80501

RATA CLASS

Dual-Analyzed Calibration Standard

Phone: 888-253-1635

Fax: 303-772-7678

CERTIFICATE OF ACCURACY: Interference Free™ Multi-Component EPA Protocol Gas

Assay Laboratory

SCOTT SPECIALTY GASES
500 WEAVER PARK RD
LONGMONT, CO 80501

P.O. No.: 101520

Project No.: 08-36059-002

Customer

SHAW ENVIRONMENTAL & INFRASTRUCTURE

BILL JOHNSTON
2360 BERING DRIVE
SAN JOSE CA 95131

ANALYTICAL INFORMATION

This certification was performed according to EPA Traceability Protocol For Assay & Certification of Gaseous Calibration Standards; Procedure G-1; September, 1997.

Cylinder Number: AAL7479

Certification Date: 10May2006

Exp. Date: 09May2008

Cylinder Pressure***: 1920 PSIG

COMPONENT	CERTIFIED CONCENTRATION (Moles)	ACCURACY**	TRACEABILITY
CARBON MONOXIDE	40.3 PPM	+/- 1%	Direct NIST and NMI
NITRIC OXIDE	19.8 PPM	+/- 1%	Direct NIST and NMI
NITROGEN - OXYGEN FREE	BALANCE		
TOTAL OXIDES OF NITROGEN	19.9 PPM		Reference Value Only

*** Do not use when cylinder pressure is below 150 psig.

** Analytical accuracy is based on the requirements of EPA Protocol Procedure G1, September 1997.

REFERENCE STANDARD

TYPE/SRM NO.	EXPIRATION DATE	CYLINDER NUMBER	CONCENTRATION	COMPONENT
NTRM 1678	15Aug2009	ALM002681	51.13 PPM	CARBON MONOXIDE
NTRM 2629	15Aug2009	KAL003026	19.83 PPM	NITRIC OXIDE

INSTRUMENTATION

INSTRUMENT/MODEL/SERIAL#	DATE LAST CALIBRATED	ANALYTICAL PRINCIPLE
FTIR//000929062	10May2006	FTIR
FTIR//000929062	08May2006	FTIR

ANALYZER READINGS

(Z = Zero Gas R = Reference Gas T = Test Gas r = Correlation Coefficient)

First Triad Analysis

CARBON MONOXIDE

Date: 02May2006 Response Unit: PPM
Z1 = -0.00626 R1 = 51.25518 T1 = 40.39549
R2 = 51.28341 Z2 = 0.02656 T2 = 40.42246
Z3 = 0.03812 T3 = 40.46782 R3 = 51.29773
Avg. Concentration: 40.31 PPM

Second Triad Analysis

Date: 10May2006 Response Unit: PPM
Z1 = 0.00994 R1 = 51.44870 T1 = 40.50402
R2 = 51.47099 Z2 = 0.01140 T2 = 40.54033
Z3 = 0.02948 T3 = 40.56905 R3 = 51.50014
Avg. Concentration: 40.26 PPM

Calibration Curve

Concentration = A + Bx + Cx2 + Dx3 + Ex4
r = 9.99985E-1
Constants: A = 0.00000E+0
B = 8.33156E-1 C = 4.28000E-4
D = 1.00000E-6 E = 0.00000E+0

NITRIC OXIDE

Date: 02May2006 Response Unit: PPM
Z1 = -0.04110 R1 = 19.79684 T1 = 19.80672
R2 = 19.85916 Z2 = 0.01102 T2 = 19.81543
Z3 = 0.03025 T3 = 19.85722 R3 = 19.89692
Avg. Concentration: 19.81 PPM

Date: 10May2006 Response Unit: PPM
Z1 = -0.11371 R1 = 19.91154 T1 = 19.87877
R2 = 19.93563 Z2 = -0.03538 T2 = 19.89845
Z3 = -0.00917 T3 = 19.93772 R3 = 19.98695
Avg. Concentration: 19.79 PPM

Concentration = A + Bx + Cx2 + Dx3 + Ex4
r = 9.99994E-1
Constants: A = 0.00000E+0
B = 8.05777E-1 C = 1.14000E-4
D = 0.00000E+0 E = 0.00000E+0

Special Notes:

PLEASE REPORT NOX

APPROVED BY:

Jon Witzak



Scott Specialty Gases

500 WEAVER PARK RD, LONGMONT, CO 80501

CERTIFIED MASTER CLASS

Single-Certified Calibration Standard

Phone: 888-253-1635

Fax: 303-772-7673

CERTIFICATE OF ACCURACY: Certified Master Class Calibration Standard

Product Information

Project No.: 08-24834-001

Item No.: 08022711 PAL

P.O. No.: SUSAN M. POWERS

Cylinder Number: AAL4576

Cylinder Size: AL

Certification Date: 25May2005

Expiration Date: 25May2008

Customer

SHAW ENVIRONMENTAL & INFRASTRUCTURE

2360 BERING DRIVE

SAN JOSE, CA 95131

CERTIFIED CONCENTRATION

<u>Component Name</u>	<u>Concentration (Moles)</u>	<u>Accuracy (+/-%)</u>
METHANE	45.0 PPM	2
AIR	BALANCE	

TRACEABILITY

Traceable To

NIST

APPROVED BY:

JON WITZAK

DATE:

5-25-05

SPECIFICATIONS

Component Name	Requested Concentration (Moles)		Certified Concentration (Moles)		Blend Tolerance Result (+/- %)	Certified Accuracy Result (+/- %)
METHANE AIR	45.	PPM BAL	45.0	PPM BAL	.0	2.00

TRACEABILITY

Traceable To
NIST

PHYSICAL PROPERTIES

Cylinder Size: AL

Pressure: 1924 PSIG
Expiration Date: 25May2008

Valve Connection: 590

SPECIAL HANDLING INSTRUCTIONS

Do not use or store cylinder at or below the stated dew point temperature. Possible condensation of heavier components could result. In the event the cylinder has been exposed to temperatures at or below the dew point, place cylinder in heated area for 24 hours and then roll cylinder for 15 minutes to re-mix.

Use of calibration standards at or below dew point temperature may result in calibration error.

Appendix C

Process Data

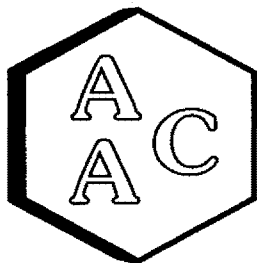
- A-50
- A-51

		NEW FLARE A-51				OLD FLARE A-50			
Date	Time	Temp		Flow		PS Flare Flow		PS Flare Temp	
		DEG. F		SCFM		SCFM		°F	
		MIN	MAX	MIN	MAX	MIN	MAX	MIN	MAX
A-51 run1									
2007/05/30	9:20:00	1440	1460	2688	2720				
2007/05/30	9:22:00	1453	1467	2688	2718				
2007/05/30	9:24:00	1453	1460	2691	2719				
2007/05/30	9:26:00	1442	1457	2693	2716				
2007/05/30	9:28:00	1444	1452	2689	2721				
2007/05/30	9:30:00	1451	1460	2694	2721				
2007/05/30	9:32:00	1448	1454	2689	2718				
2007/05/30	9:34:00	1450	1457	2691	2720				
2007/05/30	9:36:00	1452	1458	2691	2715				
2007/05/30	9:38:00	1445	1452	2693	2730				
2007/05/30	9:40:00	1443	1450	2694	2719				
2007/05/30	9:42:00	1443	1454	2691	2718				
2007/05/30	9:44:00	1443	1454	2691	2714				
2007/05/30	9:46:00	1445	1457	2694	2718				
2007/05/30	9:48:00	1444	1459	2692	2719				
2007/05/30	9:50:00	1437	1447	2688	2716				
average		1446	1456	2691	2719				
combined average		1451		2705					
A-51 run2									
2007/05/30	10:04:00	1445	1451	2690	2719				
2007/05/30	10:06:00	1443	1453	2688	2718				
2007/05/30	10:08:00	1446	1454	2692	2719				
2007/05/30	10:10:00	1449	1459	2689	2717				
2007/05/30	10:12:00	1456	1462	2688	2721				
2007/05/30	10:14:00	1449	1456	2687	2717				
2007/05/30	10:16:00	1442	1450	2686	2722				
2007/05/30	10:18:00	1438	1451	2691	2721				
2007/05/30	10:20:00	1444	1451	2686	2718				
2007/05/30	10:22:00	1443	1452	2689	2721				
2007/05/30	10:24:00	1445	1453	2689	2716				
2007/05/30	10:26:00	1450	1458	2688	2719				
2007/05/30	10:28:00	1446	1454	2685	2719				
2007/05/30	10:30:00	1446	1451	2687	2721				
2007/05/30	10:32:00	1450	1455	2688	2720				
2007/05/30	10:34:00	1451	1458	2690	2724				
average		1446	1454	2688	2720				
combined average		1450		2704					

		NEW FLARE A-51				OLD FLARE A-50			
Date	Time	Temp		Flow		PS Flare Flow		PS Flare Temp	
		DEG. F		SCFM		SCFM		°F	
		MIN	MAX	MIN	MAX	MIN	MAX	MIN	MAX
A-51 run3									
2007/05/30	10:52:00	1458		1463	2688	2721			
2007/05/30	10:54:00	1448		1459	2687	2718			
2007/05/30	10:56:00	1437		1448	2687	2716			
2007/05/30	10:58:00	1436		1446	2689	2717			
2007/05/30	11:00:00	1442		1456	2688	2719			
2007/05/30	11:02:00	1447		1456	2693	2720			
2007/05/30	11:04:00	1444		1457	2689	2718			
2007/05/30	11:06:00	1445		1457	2689	2718			
2007/05/30	11:08:00	1453		1460	2691	2722			
2007/05/30	11:10:00	1444		1454	2684	2718			
2007/05/30	11:12:00	1441		1456	2688	2720			
2007/05/30	11:14:00	1448		1458	2688	2722			
2007/05/30	11:16:00	1442		1458	2691	2718			
2007/05/30	11:18:00	1449		1468	2684	2720			
2007/05/30	11:20:00	1450		1468	2691	2715			
average		1446		1458	2688	2719			
combined average		1452		2704					
A-50 run1									
2007/05/31	9:52:00					735	755	1685	1706
2007/05/31	9:54:00					740	757	1684	1702
2007/05/31	9:56:00					740	753	1685	1711
2007/05/31	9:58:00					738	762	1687	1702
2007/05/31	9:00:00					740	761	1690	1705
2007/05/31	10:02:00					745	763	1686	1709
2007/05/31	10:04:00					737	765	1688	1705
2007/05/31	10:06:00					737	762	1692	1702
2007/05/31	10:08:00					740	761	1685	1698
2007/05/31	10:10:00					738	762	1685	1706
2007/05/31	10:12:00					738	763	1692	1698
2007/05/31	10:14:00					738	756	1693	1701
2007/05/31	10:16:00					735	764	1690	1708
2007/05/31	10:18:00					739	759	1690	1708
2007/05/31	10:20:00					737	758	1686	1706
2007/05/31	10:22:00					733	754	1686	1708
average						738	760	1688	1705
combined average						749		1696	

NEW FLARE A-51						OLD FLARE A-50			
Date	Time	Temp		Flow		PS Flare Flow		PS Flare Temp	
		DEG. F		SCFM		SCFM		°F	
		MIN	MAX	MIN	MAX	MIN	MAX	MIN	MAX
A-50 run2									
2007/05/31	10:32:00					738	760	1680	1706
2007/05/31	10:34:00					740	759	1691	1701
2007/05/31	10:36:00					743	756	1688	1716
2007/05/31	10:38:00					740	761	1684	1700
2007/05/31	10:40:00					739	761	1683	1707
2007/05/31	10:42:00					741	759	1683	1699
2007/05/31	10:44:00					734	765	1681	1703
2007/05/31	10:46:00					750	765	1684	1712
2007/05/31	10:48:00					740	761	1684	1703
2007/05/31	10:50:00					739	761	1688	1702
2007/05/31	10:52:00					744	765	1681	1703
2007/05/31	10:54:00					744	767	1682	1707
2007/05/31	10:56:00					739	766	1683	1706
2007/05/31	10:58:00					745	766	1680	1705
2007/05/31	11:00:00					742	765	1681	1708
2007/05/31	11:02:00					741	761	1691	1709
2007/05/31	11:04:00					741	766	1685	1713
2007/05/31	11:06:00					742	761	1692	1713
2007/05/31	11:08:00					730	760	1682	1705
2007/05/31	11:10:00					729	751	1687	1707
2007/05/31	11:12:00					732	750	1695	1704
2007/05/31	11:14:00					726	749	1691	1698
2007/05/31	11:16:00					729	751	1689	1705
2007/05/31	11:18:00					730	748	1693	1704
average						738	760	1686	1706
combined average						749		1696	
A-50 run3									
2007/05/31	11:20:00					730	751	1686	1712
2007/05/31	11:22:00					730	752	1680	1707
2007/05/31	11:24:00					740	759	1695	1706
2007/05/31	11:26:00					726	763	1689	1709
2007/05/31	11:28:00					728	751	1688	1710
2007/05/31	11:30:00					731	815	1678	1709
2007/05/31	11:32:00					804	848	1695	1708
2007/05/31	11:34:00					783	864	1683	1703
2007/05/31	11:36:00					772	794	1684	1693
2007/05/31	11:38:00					766	793	1692	1700
2007/05/31	11:40:00					767	786	1691	1706
2007/05/31	11:42:00					773	791	1694	1708
2007/05/31	11:44:00					762	790	1681	1708
2007/05/31	11:46:00					769	787	1679	1715
2007/05/31	11:48:00					770	794	1688	1705
2007/05/31	11:50:00					765	784	1687	1700
average						757	789	1687	1706
combined average						773		1697	

Appendix D
Analytical Results



Atmospheric Analysis & Consulting, Inc.

CLIENT : Shaw Environmental, Inc.
PROJECT NAME : RedWood Landfill
AAC PROJECT NO. : 070559
REPORT DATE : 06/11/07

On June 1, 2007, Atmospheric Analysis & Consulting, Inc. received six (6) Tedlar Bags for TNMOC analysis by EPA Method 25C, and BTU analysis which includes: C₁-C₆⁺ analysis by EPA Method 18, TRS analysis by ASTM D-5504 and fixed gases analysis by EPA Method 3C. Upon receipt the samples were assigned unique Laboratory ID numbers as follows:

Client ID	Lab ID
A50 R1	070559-25966
A50 R2	070559-25967
A50 R3	070559-25968
A51 R1	070559-25969
A51 R2	070559-25970
A51 R3	070559-25971

EPA 18 Analysis - Up to a 1 ml aliquot of samples is injected into the GC/FID for analysis following EPA 18 as specified in the SOW.

EPA 3C Analysis - Up to a 1 ml aliquot of samples is injected into the GC/TCD for analysis following EPA 3C as specified in the SOW.

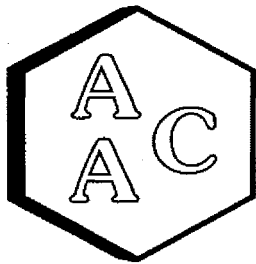
ASTM D-5504 - Up to a 1ml aliquot of sample is injected into the GC/SCD for analysis following ASTM D-5504 as specified in the SOW.

EPA 25C Analysis - Up to a 1 ml aliquot of gaseous sample is injected into the GC/FID for analysis following EPA 25C as specified in the SOW.

No problems were encountered during receiving, preparation and/ or analysis of these samples. The test results included in this report meet all requirements of the NELAC Standards and/or AAC SOP# AACI-ASTM D-5504, EPA 18, EPA 25C, and EPA 3C.

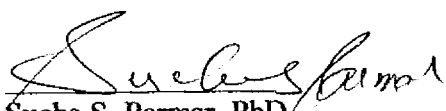
I certify that this data is technically accurate, complete and in compliance with the terms and conditions of the contract. The Laboratory Director or his designee, as verified by the following signature, has authorized the release of the data contained in this hardcopy data package.





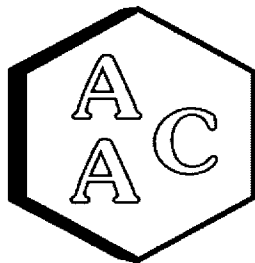
Atmospheric Analysis & Consulting, Inc.

If you have any questions or require further explanation of data results, please contact the undersigned.


Sucha S. Parmar, PhD
Technical Director

This report consists of 18 pages.





Atmospheric Analysis & Consulting, Inc.

Laboratory Analysis Report

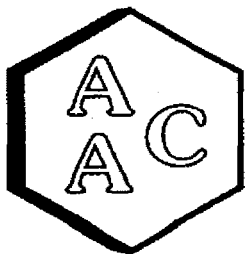
CLIENT : Shaw Environmental, Inc.
PROJECT NO. : 070559
MATRIX : AIR

SAMPLING DATE : 05/31/2007
RECEIVING DATE : 06/01/2007
ANALYSIS DATE : 06/01-02/2007
REPORT DATE : 06/11/2007

Client ID:	A51 R1	A51 R2	A51 R3	Detection Limits
AAC ID:	070559-25969	070559-25970	070559-25971	
Compounds, Units				
H ₂ S, ppmv	162.4	145.5	176.1	0.01 ppmv
Carbonyl Sulfide, ppmv	ND	ND	ND	0.01 ppmv
Methyl Mercaptan, ppmv	ND	ND	ND	0.01 ppmv
Ethyl Mercaptan, ppmv	ND	ND	ND	0.01 ppmv
Propyl Mercaptan, ppmv	ND	ND	ND	0.01 ppmv
Carbon Disulfide, ppmv	ND	ND	ND	0.01 ppmv
Dimethyl sulfide, ppmv	ND	ND	ND	0.01 ppmv
Allyl Sulfide, ppmv	ND	ND	ND	0.01 ppmv
Propyl Sulfide, ppmv	ND	ND	ND	0.01 ppmv
Allyl Disulfide, ppmv	ND	ND	ND	0.01 ppmv
Butyl Sulfide, ppmv	ND	ND	ND	0.01 ppmv
Ethyl Methyl Sulfide, ppmv	ND	ND	ND	0.01 ppmv
Thiophene, ppmv	ND	ND	ND	0.01 ppmv
Dimethyl Disulfide, ppmv	ND	ND	ND	0.01 ppmv
Butyl Mercaptan, ppmv	ND	ND	ND	0.01 ppmv
Allyl mercaptan, ppmv	ND	ND	ND	0.01 ppmv
C1 hydrocarbons, ppmv	439875	442082	439897	0.3 ppmv
C2 hydrocarbons, ppmv	<50	<50	<50	0.3 ppmv
C3 hydrocarbons, ppmv	21.1	21.7	22.7	0.3 ppmv
C4 hydrocarbons, ppmv	16.4	14.8	12.9	0.3 ppmv
C5 hydrocarbons, ppmv	8.7	8.9	8.2	0.3 ppmv
C6 hydrocarbons, ppmv	4.3	4.2	4.1	0.3 ppmv
C6 + hydrocarbons, ppmv	39.8	39.1	37.5	0.3 ppmv
CO ₂ , %	34.0	34.2	34.2	0.1 %
CO, %	ND	ND	ND	0.1 %
O ₂ , %	2.0	1.8	2.0	0.1 %
N ₂ , %	20.0	19.7	19.8	0.1 %
H ₂ , %	ND	ND	ND	0.1 %
F Factor(dscf Exhaust/MM Btu)	9470	9485	9476	
Total Wt.% Adjusted Sp. Gravity	0.9803	0.9804	0.9811	
FUEL GAS BTU per LBM	10507	10559	10507	
FUEL GAS BTU per CU. FT	446.1	448.3	446.1	


Dr. Sucha Parmar
Technical Director





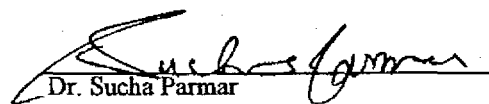
Atmospheric Analysis & Consulting, Inc.

Laboratory Analysis Report

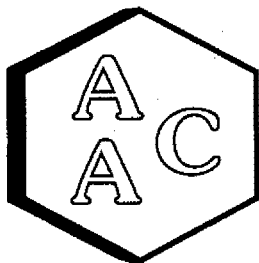
CLIENT : Shaw Environmental, Inc.
PROJECT NO. : 070559
MATRIX : AIR

SAMPLING DATE : 05/31/2007
RECEIVING DATE : 06/01/2007
ANALYSIS DATE : 06/01-02/2007
REPORT DATE : 06/11/2007

Client ID:	A50 R1	A50 R2	A50 R3	Detection Limits
AAC ID:	070559-25966	070559-25967	070559-25968	
Compounds, Units				
H ₂ S, ppmv	171.2	179.0	188.3	0.01 ppmv
Carbonyl Sulfide, ppmv	ND	ND	ND	0.01 ppmv
Methyl Mercaptan, ppmv	ND	ND	ND	0.01 ppmv
Ethyl Mercaptan, ppmv	ND	ND	ND	0.01 ppmv
Propyl Mercaptan, ppmv	ND	ND	ND	0.01 ppmv
Carbon Disulfide, ppmv	ND	ND	ND	0.01 ppmv
Dimethyl sulfide, ppmv	ND	ND	ND	0.01 ppmv
Allyl Sulfide, ppmv	ND	ND	ND	0.01 ppmv
Propyl Sulfide, ppmv	ND	ND	ND	0.01 ppmv
Allyl Disulfide, ppmv	ND	ND	ND	0.01 ppmv
Butyl Sulfide, ppmv	ND	ND	ND	0.01 ppmv
Ethyl Methyl Sulfide, ppmv	ND	ND	ND	0.01 ppmv
Thiophene, ppmv	ND	ND	ND	0.01 ppmv
Dimethyl Disulfide, ppmv	ND	ND	ND	0.01 ppmv
Butyl Mercaptan, ppmv	ND	ND	ND	0.01 ppmv
Allyl mercaptan, ppmv	ND	ND	ND	0.01 ppmv
C1 hydrocarbons, ppmv	440035	443701	455965	0.3 ppmv
C2 hydrocarbons, ppmv	<50	<50	<50	0.3 ppmv
C3 hydrocarbons, ppmv	20.1	17.5	31.2	0.3 ppmv
C4 hydrocarbons, ppmv	10.2	11.6	9.0	0.3 ppmv
C5 hydrocarbons, ppmv	7.1	7.9	6.3	0.3 ppmv
C6 hydrocarbons, ppmv	4.8	8.1	4.3	0.3 ppmv
C6 + hydrocarbons, ppmv	64.4	32.4	38.0	0.3 ppmv
CO ₂ , %	33.7	33.7	34.4	0.1 %
CO, %	0.1	ND	ND	0.1 %
O ₂ , %	2.1	2.1	1.8	0.1 %
N ₂ , %	20.1	19.8	18.2	0.1 %
H ₂ , %	ND	ND	ND	0.1 %
F Factor(dscf Exhaust/MM Btu)	9464	9453	9428	
Total Wt.% Adjusted Sp. Gravity	0.9784	0.9773	0.9754	
FUEL GAS BTU per LBM	10517	10598	10891	
FUEL GAS BTU per CU. FT	446.8	449.9	462.4	


Dr. Sucha Parmar
Technical Director





Atmospheric Analysis & Consulting, Inc.

Page 4

Laboratory Analysis Report

CLIENT: : Shaw Environmental, Inc.
PROJECT NO. : 070559
MATRIX : AIR
UNITS : PPMV

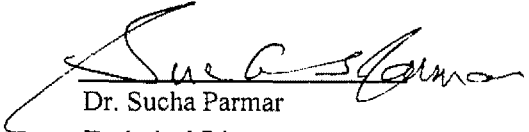
Sampling Date : 05/31/2007
Receiving Date : 06/01/2007
Analysis Date : 06/01-02/2007
Report Date : 06/11/2007

C1 to C6+ Hydrocarbons by EPA Method 18

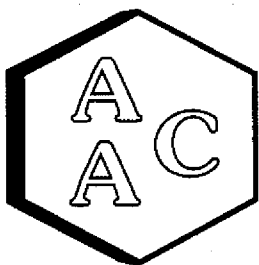
Client ID	AAC ID	ANALYSIS METHOD		EPA Method 18				
		Detection Limit		0.3 ppmv				
		C1 *	C2 **	C3	C4	C5	C6	C6+
A50 R1	070559-25966	NA	<50	20.1	10.2	7.1	4.8	64.4
A50 R2	070559-25967	NA	<50	17.5	11.6	7.9	8.1	32.4
A50 R3	070559-25968	NA	<50	31.2	9.1	6.3	4.3	38.0

* C1 reported off of the EPA 3C report

** Due to the extremely high C1 concentration, the C2 concentration could not be measured below this PQL due to matrix interference.


Dr. Sucha Parmar
Technical Director





Atmospheric Analysis & Consulting, Inc.

Laboratory Analysis Report

CLIENT: : Shaw Environmental, Inc.
PROJECT NO. : 070559
MATRIX : AIR
UNITS : PPMV

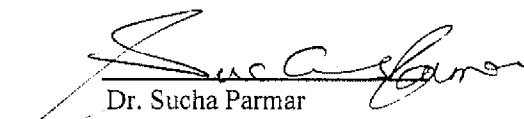
Sampling Date : 05/31/2007
Receiving Date : 06/01/2007
Analysis Date : 06/01-02/2007
Report Date : 06/11/2007

C1 to C6+ Hydrocarbons by EPA Method 18

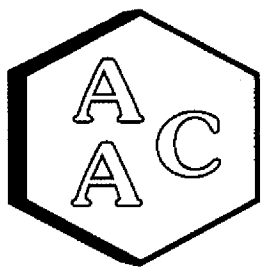
Client ID	AAC ID	ANALYSIS METHOD		EPA Method 18				
		Detection Limit		0.3 ppmv				
		C1 *	C2 **	C3	C4	C5	C6	C6+
A51 R1	070559-25969	NA	<50	21.1	16.4	8.7	4.3	39.8
A51 R2	070559-25970	NA	<50	21.8	14.9	9.0	4.2	39.4
A51 R3	070559-25971	NA	<50	22.7	12.9	8.2	4.1	37.5

* C1 reported off of the EPA 3C report

** Due to the extremely high C1 concentration, the C2 concentration could not be measured below this PQL due to matrix interference.


Dr. Sucha Parmar
Technical Director





Atmospheric Analysis & Consulting, Inc.

Page 6

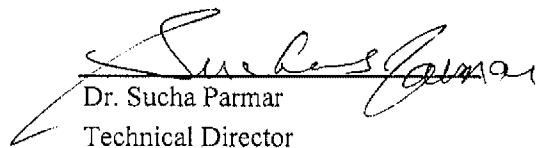
Laboratory Analysis Report

Client: : Shaw Environmental, Inc.
Project No. : 070559
Matrix : Air
Units : %

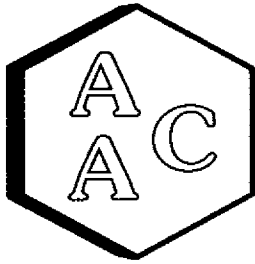
Sampling Date : 05/31/2007
Receiving Date : 06/01/2007
Analysis Date : 06/01-02/2007
Report Date : 06/11/2007

EPA Method 3C

Detection Limit: 0.1 %			Analyte				
Client ID	AAC ID	Hydrogen	Oxygen	Nitrogen	CO	Methane	CO2
A50 R1	070559-25966	<PQL	2.1	20.1	0.1	44.0	33.7
A50 R2	070559-25967	<PQL	2.1	19.8	<PQL	44.4	33.8
A50 R3	070559-25968	<PQL	1.8	18.2	<PQL	45.6	34.4
A51 R1	070559-25969	<PQL	2.1	20.0	<PQL	44.0	34.0
A51 R2	070559-25970	<PQL	1.8	19.3	<PQL	44.5	34.4
A51 R3	070559-25971	<PQL	2.0	19.8	<PQL	44.0	34.2


Dr. Sucha Parmar
Technical Director





Atmospheric Analysis & Consulting, Inc.

Laboratory Analysis Report

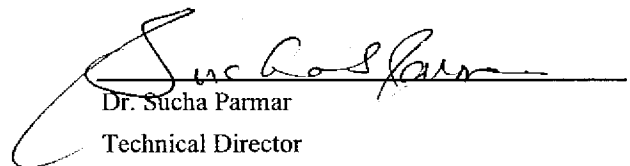
Client : Shaw Environmental, Inc.
Project No. : 070559
Matrix : AIR
Units : ppmv

Sampling Date : 05/31/2007
Receiving Date : 06/01/2007
Analysis Date : 06/01-02/2007
Report Date : 06/11/2007

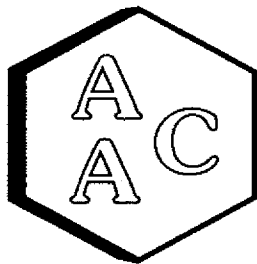
EPA Method 25C

<i>Detection Limit:</i>		1.0 ppmv
Client Sample ID	AAC ID	NMHC**
A50 R1	070559-25966	445
A50 R2	070559-25967	433
A50 R3	070559-25968	450
A51 R1	070559-25969	529
A51 R2	070559-25970	546
A51 R3	070559-25971	555

**Non-Methane Hydrocarbons as Methane


Dr. Sucha Parmar
Technical Director





Atmospheric Analysis & Consulting, Inc.

LABORATORY ANALYSIS REPORT

Client : Shaw Environmental, Inc.
Project No. : 070559
Matrix : Air
Units : ppmv

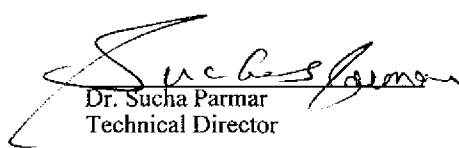
SAMPLING DATE : 05/31/2007
RECEIVING DATE : 06/01/2007
ANALYSIS DATE : 06/01-02/2007
REPORT DATE : 06/11/2007

Total Reduced Sulfur Compounds Analysis by ASTM D-5504

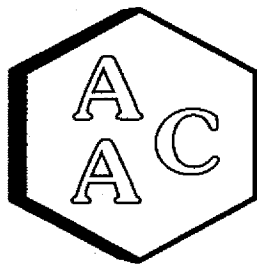
Client ID.	A50 R1	A50 R2	A50 R3	MDL
AAC ID	070559-25966	070559-25967	070559-25968	
Analysis Dilution Factor	1000	1000	1000	
H ₂ S	171.16	179.11	188.36	0.01
Carbonyl Sulfide	<PQL	<PQL	<PQL	0.01
SO ₂	<PQL	<PQL	<PQL	0.01
Methyl Mercaptan	<PQL	<PQL	<PQL	0.01
Ethyl Mercaptan	<PQL	<PQL	<PQL	0.01
Dimethyl Sulfide	<PQL	<PQL	<PQL	0.01
n-Butyl mercaptan	<PQL	<PQL	<PQL	0.01
Carbon Disulfide	<PQL	<PQL	<PQL	0.01
Allyl Sulfide	<PQL	<PQL	<PQL	0.01
Propyl Sulfide	<PQL	<PQL	<PQL	0.01
Allyl disulfide	<PQL	<PQL	<PQL	0.01
Isopropyl Mercaptan	<PQL	<PQL	<PQL	0.01
t-Butyl mercaptan	<PQL	<PQL	<PQL	0.01
Propyl Mercaptan	<PQL	<PQL	<PQL	0.01
Butyl Sulfide	<PQL	<PQL	<PQL	0.01
Ethyl methyl sulfide	<PQL	<PQL	<PQL	0.01
Thiophene	<PQL	<PQL	<PQL	0.01
Isobutyl mercaptan	<PQL	<PQL	<PQL	0.01
Dimethyl disulfide	<PQL	<PQL	<PQL	0.01
Allyl mercaptan	<PQL	<PQL	<PQL	0.01
3-Methylthiophene	<PQL	<PQL	<PQL	0.01
Tetrahydrothiophene	<PQL	<PQL	<PQL	0.01
Diethyl sulfide	<PQL	<PQL	<PQL	0.01
2-Ethylthiophene	<PQL	<PQL	<PQL	0.01
2,5-Dimethylthiophene	<PQL	<PQL	<PQL	0.01
Diethyl disulfide	<PQL	<PQL	<PQL	0.01
Total Unidentified Sulfurs as H ₂ S	<PQL	<PQL	<PQL	0.01
Total Sulfurs as H ₂ S	171.16	179.11	188.36	0.01

PQL = Practical Quantitation Limit (MDL x Analysis Dilution factor)

All compounds concentrations expressed in terms of H₂S.


Dr. Sucha Parmar
Technical Director





Atmospheric Analysis & Consulting, Inc.

LABORATORY ANALYSIS REPORT

Client : Shaw Environmental, Inc.
Project No. : 070559
Matrix : Air
Units : ppmv

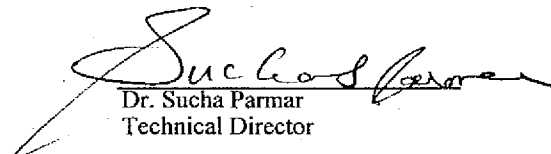
SAMPLING DATE : 05/31/2007
RECEIVING DATE : 06/01/2007
ANALYSIS DATE : 06/01-02/2007
REPORT DATE : 06/11/2007

Total Reduced Sulfur Compounds Analysis by ASTM D-5504

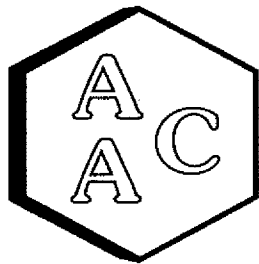
Client ID.	A51 R1	A51 R2	A51 R3	MDL
AAC ID	070559-25969	070559-25970	070559-25971	
Analysis Dilution Factor	1000	1000	1000	
H ₂ S	162.48	146.36	176.10	0.01
Carbonyl Sulfide	<PQL	<PQL	<PQL	0.01
SO ₂	<PQL	<PQL	<PQL	0.01
Methyl Mercaptan	<PQL	<PQL	<PQL	0.01
Ethyl Mercaptan	<PQL	<PQL	<PQL	0.01
Dimethyl Sulfide	<PQL	<PQL	<PQL	0.01
n-Butyl mercaptan	<PQL	<PQL	<PQL	0.01
Carbon Disulfide	<PQL	<PQL	<PQL	0.01
Allyl Sulfide	<PQL	<PQL	<PQL	0.01
Propyl Sulfide	<PQL	<PQL	<PQL	0.01
Allyl disulfide	<PQL	<PQL	<PQL	0.01
Isopropyl Mercaptan	<PQL	<PQL	<PQL	0.01
t-Butyl mercaptan	<PQL	<PQL	<PQL	0.01
Propyl Mercaptan	<PQL	<PQL	<PQL	0.01
Butyl Sulfide	<PQL	<PQL	<PQL	0.01
Ethyl methyl sulfide	<PQL	<PQL	<PQL	0.01
Thiophene	<PQL	<PQL	<PQL	0.01
Isobutyl mercaptan	<PQL	<PQL	<PQL	0.01
Dimethyl disulfide	<PQL	<PQL	<PQL	0.01
Allyl mercaptan	<PQL	<PQL	<PQL	0.01
3-Methylthiophene	<PQL	<PQL	<PQL	0.01
Tetrahydrothiophene	<PQL	<PQL	<PQL	0.01
Diethyl sulfide	<PQL	<PQL	<PQL	0.01
2-Ethylthiophene	<PQL	<PQL	<PQL	0.01
2,5-Dimethylthiophene	<PQL	<PQL	<PQL	0.01
Diethyl disulfide	<PQL	<PQL	<PQL	0.01
Total Unidentified Sulfurs as H ₂ S	<PQL	<PQL	<PQL	0.01
Total Sulfurs as H ₂ S	162.48	146.36	176.10	0.01

PQL = Practical Quantitation Limit (MDL x Analysis Dilution factor)

All compounds concentrations expressed in terms of H₂S.


Dr. Sucha Parmar
Technical Director





Atmospheric Analysis & Consulting, Inc.

Quality Control/Quality Assurance Report

Date Analyzed: 6/1/2007

Analyst: TT/RJ

Instrument ID: TCD#1

Units: %

I - Method Blank-EPA Method 3C

AAC ID	Analyte	MB Concentration
Method Blank	Hydrogen	ND
	Oxygen	ND
	Nitrogen	ND
	CO	ND
	Methane	ND
	CO2	ND

II-Laboratory Control Spike & Duplicate - EPA Method 3C

AAC ID	Analyte	Spike Added	LCS Result	LCSD Result	LCS % Rec *	LCSD % Rec *	% RPD***
Lab Control Standards	Hydrogen	20.0	21.2	20.2	106	101	4.9
	Nitrogen	20.0	21.7	21.1	108	105	3.0
	CO	20.0	20.2	19.3	101	96	4.8
	Methane	20.0	19.7	18.8	98	94	4.8
	CO2	20.0	20.2	19.2	101	96	4.9

III - Duplicate Analysis - EPA Method 3C

AAC ID	Analyte	Sample Concentration	Duplicate Concentration	Mean	% RPD***
070559-25966	Hydrogen	0.0	0.0	0.0	0.0
	Oxygen	1.9	2.0	1.9	6.5
	Nitrogen	18.7	19.1	18.9	2.1
	CO	0.1	0.1	0.1	5.2
	Methane	41.4	41.2	41.3	0.5
	CO2	31.6	31.5	31.6	0.3

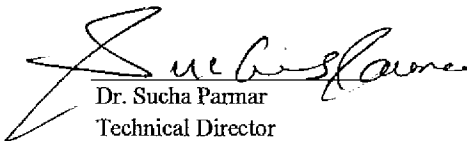
IV-Matrix Spike & Duplicate- EPA Method 3C

AAC ID	Analyte	Sample Concentration	Spike Added	MS Result	MSD Result	MS % Rec **	MSD % Rec **	% RPD***
070559-25966	Hydrogen	0.0	10.0	8.9	8.9	89	89	0.7
	Nitrogen	9.4	10.0	19.9	21.8	105	123	16.0
	CO	0.1	10.0	9.5	9.9	95	99	4.3
	Methane	20.7	10.0	30.2	31.5	95	108	12.7
	CO2	15.8	10.0	25.3	26.5	95	107	12.4

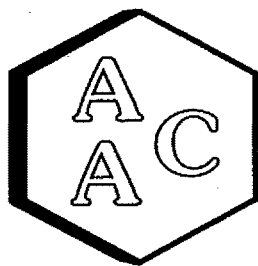
* Must be 85-115%

** Must be 75-125%

*** Must be < 25%


Dr. Sucha Parmar
Technical Director





Atmospheric Analysis & Consulting, Inc.

Quality Control/Quality Assurance Report

Date Analyzed: 6/1/2007

Instrument ID: TCD#1

Analyst: TT/RJ

Calibration Date: 09/27/06

Opening Calibration Verification Standard

Analyte	xLR**	LR	%RPD*
Hydrogen	2128	2294	7.5
Oxygen***	58037	55861	3.8
Nitrogen	62209	67814	8.6
Carbon Monoxide	69067	70747	2.4
Methane	59891	59781	0.2
Carbon Dioxide	93158	95075	2.0

Closing Calibration Verification Standard

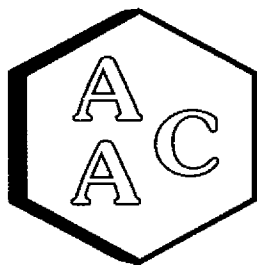
Analyte	xLR**	LR	%RPD*
Hydrogen	2128	2166	1.8
Nitrogen	62209	64939	4.3
Carbon Monoxide	69067	67284	2.6
Methane	59891	57997	3.2
Carbon Dioxide	93158	90967	2.4

* Must be <15%

** Linear Response Factor from Initial Calibration Curve

*** Oxygen from Lab Air





Atmospheric Analysis & Consulting, Inc.

Quality Control/Quality Assurance Report

Analysis Date: 6/2/2007

Analyst: TT

Units: ppmv

Instrument ID: FID#9

Calibration Date: 5/14/2007

I - Opening Calibration Verification Standard - Method 25C

Analyte	xCF	dCF	%RPD*
CO	10552	9588	9.6
CH4	9114	8884	2.6
CO2	9323	10052	7.5
Propane	24376	26681	9.0

II - Method Blank - Method 25C

AAC ID	Analyte	Sample Result
MB	NMEHC	ND

III - Laboratory Control Spike & Duplicate - Method 25C

AAC ID	Analyte	Spike Added	LCS Result	LCSD Result	LCS % Rec **	LCSD % Rec **	% RPD***
LCS/LCSD	NMEHC	50.0	48.5	46.2	97.0	92.4	4.9

IV - Closing Calibration Verification Standard - Method 25C

Analyte	xCF	dCF	%RPD*
CO	10552	10222	3.2
CH4	9114	9703	6.3
CO2	9323	9386	0.7
Propane	24376	24814	1.8

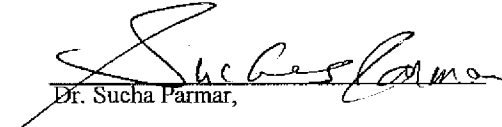
xCF - Average Calibration Factor from Initial Calibration Curve

dCF - Daily Calibration Factor

* Must be <15%

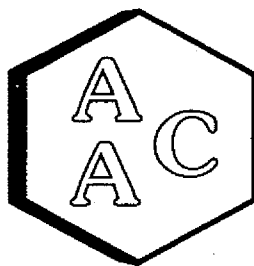
** Must be 90-110 %

*** Must be <20%


Dr. Sucha Parmar,

Technical Director





Atmospheric Analysis & Consulting, Inc.

Quality Control/Quality Assurance Report

Analysis Date: 6/2/2007

Analyst: TT

Units: ppmv

Instrument ID: FID#9

Calibration Date: 5/14/2007

I - Opening Calibration Verification Standard - Method 25C

Analyte	xCF	dCF	%RPD*
CO	10552	10987	4.0
CH4	9114	8855	2.9
CO2	9323	9189	1.4
Propane	24376	23914	1.9

II - Method Blank - Method 25C

AAC ID	Analyte	Sample Result
MB	NMEHC	ND

III - Laboratory Control Spike & Duplicate - Method 25C

AAC ID	Analyte	Spike Added	LCS Result	LCSD Result	LCS % Rec **	LCSD % Rec **	% RPD***
LCS/LCSD	NMEHC	50.0	50.1	51.9	100.1	103.8	3.6

IV - Closing Calibration Verification Standard - Method 25C

Analyte	xCF	dCF	%RPD*
CO	10552	9363	11.9
CH4	9114	9217	1.1
CO2	9323	9057	2.9
Propane	24376	24735	1.5

xCF - Average Calibration Factor from Initial Calibration Curve

dCF - Daily Calibration Factor

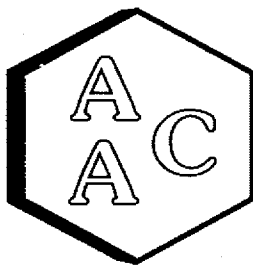
* Must be <15%

** Must be 90-110 %

*** Must be <20%


Dr. Sucha Parmar,
Technical Director





Atmospheric Analysis & Consulting, Inc.

Quality Control/Quality Assurance Report

Date Analyzed: 6/1/2007

Instrument ID: FID#3

Analyst: TT/RJ

Units: PPMV

I - Method Blank-EPA Method 18

AAC ID	Analyte	MB Concentration
Method Blank	Methane	ND
	Ethane	ND
	Propane	ND
	Butane	ND
	Pentane	ND
	Hexane	ND

II-Laboratory Control Spike & Duplicate - EPA Method 18

AAC ID	Analyte	Spike Added	LCS Result	LCSD Result	LCS % Rec *	LCSD % Rec *	% RPD***
Lab Control Standards	Methane	100.4	99.1	104.8	98.7	104.4	5.6
	Ethane	100.2	105.2	107.6	105.0	107.4	2.2
	Propane	100.2	105.4	108.5	105.2	108.3	2.9
	Butane	100.4	105.3	107.4	104.9	107.0	2.0
	Pentane	100.0	102.9	105.8	102.9	105.8	2.8
	Hexane	99.4	104.3	108.6	104.9	109.3	4.1

III - Duplicate Analysis - EPA Method 18

AAC ID	Analyte	Sample Concentration	Duplicate Concentration	Mean	% RPD***
070559-25966 (500x)	Methane	468285.0	484705.7	476495.3	3.4
	Ethane	0.0	0.0	0.0	0.0
	Propane	0.0	0.0	0.0	0.0
	Butane	0.0	0.0	0.0	0.0
	Pentane	0.0	0.0	0.0	0.0
	Hexane	0.0	0.0	0.0	0.0

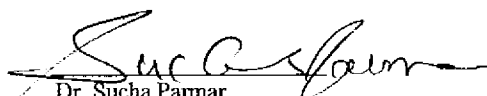
IV-Matrix Spike & Duplicate- EPA Method 18

AAC ID	Analyte	Sample Concentration	Spike Added	MS Result	MSD Result	MS % Rec **	MSD % Rec **	% RPD***
070559-25966 (500x)	Methane	476.5	250.0	743.2	731.8	107	102	4.4
	Ethane	0.0	250.0	262.2	277.4	105	111	5.6
	Propane	0.0	250.0	264.8	258.8	106	104	2.3
	Butane	0.0	250.0	262.0	255.7	105	102	2.4
	Pentane	0.0	250.0	251.4	245.2	101	98	2.5
	Hexane	0.0	250.0	248.5	237.7	99	95	4.5

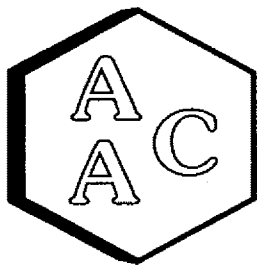
* Must be 85-115%

** Must be 75-125%

*** Must be < 25%


Dr. Sucha Pamar
Technical Director





Atmospheric Analysis & Consulting, Inc.

Quality Control/Quality Assurance Report

Date Analyzed: 6/1/2007

Instrument ID: FID#3

Analyst: TT/RJ

Calibration Date: 03/14/07

Opening Calibration Verification Standard

Analyte	xCF**	CF	%RPD*
C1	691	651	5.9
C2	1275	1266	0.7
C3	1915	1952	1.9
C4	2523	2575	2.1
C5	3101	3236	4.3
C6	3538	3903	9.8

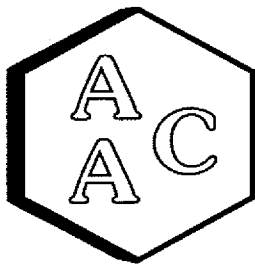
Closing Calibration Verification Standard

Analyte	xCF**	CF	%RPD*
C1	691	689	0.2
C2	1275	1346	5.4
C3	1915	2072	7.9
C4	2523	2712	7.2
C5	3101	3247	4.6
C6	3538	3642	2.9

* Must be <15%

** Average Calibration Factor from Initial Calibration Curve





Atmospheric Analysis & Consulting, Inc.

Quality Control/Quality Assurance Report

Date Analyzed: 06/01/07
Analyst: TT/RJ

Instrument ID: SCD#2
Units: PPMV

I - Method Blank - ASTM D-5504

AAC ID	Analyte	MB Conc.
Method Blank	H2S	ND

II-Laboratory Control Spike & Duplicate - ASTM D-5504

Analyte	Spike Added	LCS Result	LCSD Result	LCS % Rec *	LCSD % Rec *	% RPD***
H2S	0.05	0.05	0.05	94	102	8.2

III-Matrix Spike & Duplicate- ASTM D-5504 (070560-25979 (2000x))

Analyte	Sample Concentration	Spike Added	MS Result	MSD Result	MS % Rec **	MSD % Rec **	% RPD***
H2S	0.02	0.03	0.05	0.05	108	96	6.5

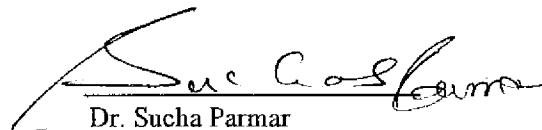
IV - Duplicate Analysis - ASTM D-5504 (070560-25979(2000x))

Analyte	Sample Concentration	Duplicate Concentration	Mean	% RPD***
H2S	84.31	84.51	84.41	0.2

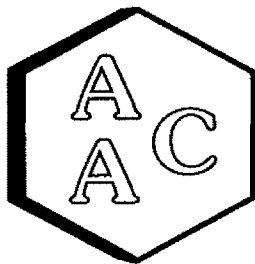
* Must be 90-110%

** Must be 85-115%

*** Must be < 10%


Dr. Sucha Parmar
Technical Director





Atmospheric Analysis & Consulting, Inc.

Quality Control/Quality Assurance Report

Date Analyzed: 6/1/2007
Analyst: TT/RJ
Calibration Date: 5/29/2007

Instrument ID: SCD#2
Units: PPMV

Opening Calibration Verification Standard

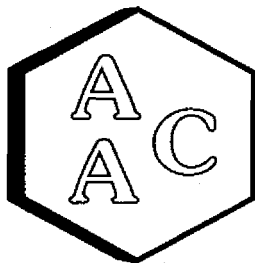
Analyte	Std. Conc.	Result	%Recovery*
H2S	0.05	0.05	94

Closing Calibration Verification Standard

Analyte	Std. Conc.	Result	%Recovery*
H2S	0.05	0.05	90

* Must be 90-110%





Atmospheric Analysis & Consulting, Inc.

CLIENT : Shaw Environmental, Inc.
PROJECT NAME : Redwood Landfill
AAC PROJECT NO. : 070559
REPORT DATE : 06/04/07

On June 1, 2007, Atmospheric Analysis & Consulting, Inc. received six (6) Tedlar Bags for Volatile Organic Compounds analysis by EPA Method TO-15. Upon receipt each sample was assigned unique a Laboratory ID number as follows:

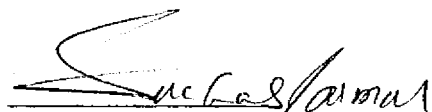
Client ID	Lab ID
A50 R1	070559-25966
A50 R2	070559-25967
A50 R3	070559-25968
A51 R1	070559-25969
A51 R2	070559-25970
A51 R3	070559-25971

TO-15 Analysis - Up to a 500 ml aliquot of samples is concentrated, put through a water and CO₂ management system, cryofocused and injected into the GC/MS (full scan mode) for analysis following EPA Method TO-15 as specified in the SOW.

No problems were encountered during receiving, preparation and/ or analysis of these samples. The test results included in this report meet all requirements of the NELAC Standards and/or AAC SOP# AACI-TO-15. Estimated uncertainty of the test results will be provided upon request.

I certify that this data is technically accurate, complete and in compliance with the terms and conditions of the contract. The Laboratory Director or his designee, as verified by the following signature, has authorized the release of the data contained in this hardcopy data package.

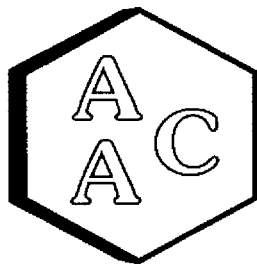
If you have any questions or require further explanation of data results, please contact the undersigned.


Sucha S. Parmar, PhD
Technical Director

15

This report consists of _____ pages.





Atmospheric Analysis & Consulting, Inc.

Laboratory Analysis Report

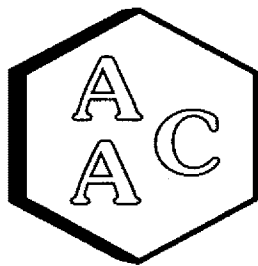
CLIENT : Shaw Environmental, Inc.
PROJECT NO : 070559
MATRIX : AIR
UNITS : PPB (v/v)

DATE RECEIVED : 06/01/07
DATE REPORTED : 06/04/07

VOLATILE ORGANIC COMPOUNDS BY EPA TO-15

Client ID	A50 R1			Sample Reporting Limit (RLxDF's)	A50 R2			Sample Reporting Limit (RLxDF's)	Method Reporting Limit
AAC ID	070559-25966				070559-25967				
Date Sampled	5/31/2007				5/31/2007				
Date Analyzed	6/1/2007				6/1/2007				
Can Dilution Factor	1.00				1.00				
	Result	Qualifier	Dil. Fac.		Result	Qualifier	Dil. Fac.		
Chlorodifluoromethane	511		500	500	511		500	500	1.0
Propylene	6070		500	500	6380		500	500	1.0
Dichlorodifluoromethane	ND	U	500	500	ND	U	500	500	1.0
Chloromethane	ND	U	500	500	ND	U	500	500	1.0
1,2-Dichloro-1,1,2,2-Tetrafluoroethane	ND	U	500	500	ND	U	500	500	1.0
Vinyl Chloride	ND	U	500	500	ND	U	500	500	1.0
Methanol	ND	U	500	2500	ND	U	500	2500	5.0
1,3-Butadiene	ND	U	500	500	ND	U	500	500	1.0
Bromomethane	ND	U	500	500	ND	U	500	500	1.0
Chloroethane	ND	U	500	500	ND	U	500	500	1.0
Dichlorofluoromethane	ND	U	500	500	ND	U	500	500	1.0
Ethanol	1430		500	1000	1450		500	1000	2.0
Vinyl Bromide	ND	U	500	500	ND	U	500	500	1.0
Acetone	1230		500	1000	905	J	500	1000	2.0
Trichlorofluoromethane	ND	U	500	500	ND	U	500	500	1.0
Isopropyl Alcohol	ND	U	500	1000	ND	U	500	1000	2.0
Acrylonitrile	ND	U	500	500	ND	U	500	500	1.0
1,1-Dichloroethylene	ND	U	500	500	ND	U	500	500	1.0
Methylene Chloride	ND	U	500	500	ND	U	500	500	1.0
Allyl Chloride (Chloroprene)	ND	U	500	500	ND	U	500	500	1.0
Carbon Disulfide	ND	U	500	500	ND	U	500	500	1.0
1,1,2-Trichloro-1,2,2-Trifluoroethane	ND	U	500	500	ND	U	500	500	1.0
t-1,2-Dichloroethylene	ND	U	500	500	ND	U	500	500	1.0
1,1-Dichloroethane	ND	U	500	500	ND	U	500	500	1.0
MTBE	ND	U	500	500	ND	U	500	500	1.0
Vinyl Acetate	ND	U	500	500	ND	U	500	500	1.0
2-Butanone (MEK)	875		500	500	887		500	500	1.0
cis-1,2-Dichloroethene	ND	U	500	500	ND	U	500	500	1.0
Hexane	666		500	500	560		500	500	1.0
Chloroform	ND	U	500	500	ND	U	500	500	1.0
Ethyl Acetate	ND	U	500	500	ND	U	500	500	1.0
Tetrahydrofuran	1340		500	500	1440		500	500	1.0
1,2-Dichloroethane	ND	U	500	500	ND	U	500	500	1.0
1,1,1-Trichloroethane	ND	U	500	500	ND	U	500	500	1.0





Atmospheric Analysis & Consulting, Inc.

Laboratory Analysis Report

CLIENT : Shaw Environmental, Inc.
PROJECT NO : 070559
MATRIX : AIR
UNITS : PPB (v/v)

DATE RECEIVED : 06/01/07
DATE REPORTED : 06/04/07

VOLATILE ORGANIC COMPOUNDS BY EPA TO-15

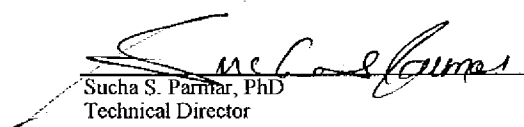
Client ID AAC ID Date Sampled Date Analyzed Can Dilution Factor	A50 R1			Sample Reporting Limit (RLxDF's)	A50 R2			Sample Reporting Limit (RLxDF's)	Method Reporting Limit
	Result	Qualifier	Dil. Fac.		Result	Qualifier	Dil. Fac.		
Benzene	ND	U	500	500	ND	U	500	500	1.0
Carbon Tetrachloride	ND	U	500	500	ND	U	500	500	1.0
Cyclohexane	ND	U	500	500	ND	U	500	500	1.0
1,2-Dichloropropane	ND	U	500	500	ND	U	500	500	1.0
Bromodichloromethane	ND	U	500	500	ND	U	500	500	1.0
1,4-Dioxane	ND	U	500	500	ND	U	500	500	1.0
Trichloroethene	ND	U	500	500	ND	U	500	500	1.0
2,2,4-Trimethylpentane	ND	U	500	500	ND	U	500	500	1.0
Heptane	1080		500	500	1050		500	500	1.0
cis-1,3-Dichloropropene	ND	U	500	500	ND	U	500	500	1.0
4-Methyl-2-Pentanone (MiBK)	ND	U	500	500	ND	U	500	500	1.0
t-1,3-Dichloropropene	ND	U	500	500	ND	U	500	500	1.0
1,1,2-Trichloroethane	ND	U	500	500	ND	U	500	500	1.0
Toluene	4680		500	500	4570		500	500	1.0
2-Hexanone	ND	U	500	500	ND	U	500	500	1.0
Dibromochloromethane	ND	U	500	500	ND	U	500	500	1.0
1,2-Dibromoethane	ND	U	500	500	ND	U	500	500	1.0
Tetrachloroethylene	ND	U	500	500	ND	U	500	500	1.0
Chlorobenzene	ND	U	500	500	ND	U	500	500	1.0
Ethylbenzene	2870		500	500	2920		500	500	1.0
m- & p-Xylenes	3760		500	1000	3890		500	1000	2.0
Bromoform	ND	U	500	1500	ND	U	500	1500	3.0
Styrene	ND	U	500	500	ND	U	500	500	1.0
1,1,2,2-Tetrachloroethane	ND	U	500	500	ND	U	500	500	1.0
o-Xylene	1220		500	500	1270		500	500	1.0
4-Ethyltoluene	ND	U	500	500	ND	U	500	500	1.0
1,3,5-Trimethylbenzene	ND	U	500	500	ND	U	500	500	1.0
1,2,4-Trimethylbenzene	726		500	500	796		500	500	1.0
Benzyl Chloride	ND	U	500	2500	ND	U	500	2500	5.0
1,3-Dichlorobenzene	ND	U	500	500	ND	U	500	500	1.0
1,4-Dichlorobenzene	ND	U	500	500	ND	U	500	500	1.0
1,2-Dichlorobenzene	ND	U	500	500	ND	U	500	500	1.0
1,2,4-Trichlorobenzene	ND	U	500	500	ND	U	500	500	1.0
Hexachlorobutadiene	ND	U	500	500	ND	U	500	500	1.0
BFB-Surrogate Std. % Recovery	102%				99%				70-130%

J- Analyte was detected. However the analyte concentration is an estimated value, which is between the Method Detection Limit (MDL) and the Reporting Limit (RL).

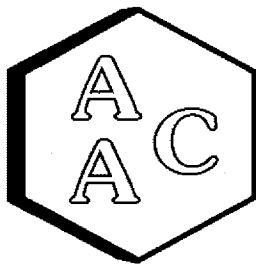
E - Estimated value, result outside linear range of instrument.

U - Compound was analyzed for, but was not detected.

!! - Estimated


Sucha S. Parihar, PhD
Technical Director





Atmospheric Analysis & Consulting, Inc.

Laboratory Analysis Report

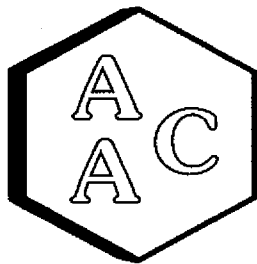
CLIENT : Shaw Environmental, Inc.
PROJECT NO : 070559
MATRIX : AIR
UNITS : PPB (v/v)

DATE RECEIVED : 06/01/07
DATE REPORTED : 06/04/07

VOLATILE ORGANIC COMPOUNDS BY EPA TO-15

Client ID	A50 R3			Sample Reporting Limit (RLxDF's)	A51 R1			Sample Reporting Limit (RLxDF's)	Method Reporting Limit
AAC ID	070559-25968				070559-25969				
Date Sampled	5/31/2007				5/31/2007				
Date Analyzed	6/1/2007				6/1/2007				
Can Dilution Factor	1.00				1.00				
	Result	Qualifier	Dil. Fac.		Result	Qualifier	Dil. Fac.		
Chlorodifluoromethane	485	J	500	500	670		500	500	1.0
Propylene	5780		500	500	7100		500	500	1.0
Dichlorodifluoromethane	ND	U	500	500	ND	U	500	500	1.0
Chloromethane	ND	U	500	500	ND	U	500	500	1.0
1,2-Dichloro-1,1,2,2-Tetrafluoroethane	ND	U	500	500	ND	U	500	500	1.0
Vinyl Chloride	ND	U	500	500	ND	U	500	500	1.0
Methanol	ND	U	500	2500	ND	U	500	2500	5.0
1,3-Butadiene	ND	U	500	500	ND	U	500	500	1.0
Bromomethane	ND	U	500	500	ND	U	500	500	1.0
Chloroethane	ND	U	500	500	ND	U	500	500	1.0
Dichlorofluoromethane	ND	U	500	500	ND	U	500	500	1.0
Ethanol	1650		500	1000	1480		500	1000	2.0
Vinyl Bromide	ND	U	500	500	ND	U	500	500	1.0
Acetone	1030		500	1000	1290		500	1000	2.0
Trichlorofluoromethane	ND	U	500	500	ND	U	500	500	1.0
Isopropyl Alcohol	ND	U	500	1000	ND	U	500	1000	2.0
Acrylonitrile	ND	U	500	500	ND	U	500	500	1.0
1,1-Dichloroethylene	ND	U	500	500	ND	U	500	500	1.0
Methylene Chloride	ND	U	500	500	ND	U	500	500	1.0
Allyl Chloride (Chloroprene)	ND	U	500	500	ND	U	500	500	1.0
Carbon Disulfide	ND	U	500	500	ND	U	500	500	1.0
1,1,2-Trichloro-1,2,2-Trifluoroethane	ND	U	500	500	ND	U	500	500	1.0
t-1,2-Dichloroethylene	ND	U	500	500	ND	U	500	500	1.0
1,1-Dichloroethane	ND	U	500	500	ND	U	500	500	1.0
MTBE	ND	U	500	500	ND	U	500	500	1.0
Vinyl Acetate	ND	U	500	500	ND	U	500	500	1.0
2-Butanone (MEK)	948		500	500	933		500	500	1.0
cis-1,2- Dichloroethene	ND	U	500	500	ND	U	500	500	1.0
Hexane	541		500	500	681		500	500	1.0
Chloroform	ND	U	500	500	ND	U	500	500	1.0
Ethyl Acetate	ND	U	500	500	ND	U	500	500	1.0
Tetrahydrofuran	1450		500	500	1370		500	500	1.0
1,2-Dichloroethane	ND	U	500	500	ND	U	500	500	1.0
1,1,1-Trichloroethane	ND	U	500	500	ND	U	500	500	1.0





Atmospheric Analysis & Consulting, Inc.

Laboratory Analysis Report

CLIENT : Shaw Environmental, Inc.
PROJECT NO : 070559
MATRIX : AIR
UNITS : PPB (v/v)

DATE RECEIVED : 06/01/07
DATE REPORTED : 06/04/07

VOLATILE ORGANIC COMPOUNDS BY EPA TO-15

Client ID	A50 R3			Sample Reporting Limit (RLxDf's)	A51 R1			Sample Reporting Limit (RLxDf's)	Method Reporting Limit
AAC ID	070559-25968				070559-25969				
Date Sampled	5/31/2007				5/31/2007				
Date Analyzed	6/1/2007				6/1/2007				
Can Dilution Factor	1.00				1.00				
	Result	Qualifier	Dil. Fac.		Result	Qualifier	Dil. Fac.		
Benzene	ND	U	500	500	ND	U	500	500	1.0
Carbon Tetrachloride	ND	U	500	500	ND	U	500	500	1.0
Cyclohexane	ND	U	500	500	531		500	500	1.0
1,2-Dichloropropane	ND	U	500	500	ND	U	500	500	1.0
Bromodichloromethane	ND	U	500	500	ND	U	500	500	1.0
1,4-Dioxane	ND	U	500	500	ND	U	500	500	1.0
Trichloroethene	ND	U	500	500	ND	U	500	500	1.0
2,2,4-Trimethylpentane	ND	U	500	500	ND	U	500	500	1.0
Heptane	1040		500	500	1220		500	500	1.0
cis-1,3-Dichloropropene	ND	U	500	500	ND	U	500	500	1.0
4-Methyl-2-Pentanone (MiBK)	ND	U	500	500	ND	U	500	500	1.0
trans-1,3-Dichloropropene	ND	U	500	500	ND	U	500	500	1.0
1,1,2-Trichloroethane	ND	U	500	500	ND	U	500	500	1.0
Toluene	4460		500	500	4200		500	500	1.0
2-Hexanone	ND	U	500	500	ND	U	500	500	1.0
Dibromochloromethane	ND	U	500	500	ND	U	500	500	1.0
1,2-Dibromoethane	ND	U	500	500	ND	U	500	500	1.0
Tetrachloroethylene	ND	U	500	500	ND	U	500	500	1.0
Chlorobenzene	ND	U	500	500	ND	U	500	500	1.0
Ethylbenzene	2980		500	500	2580		500	500	1.0
m- & p-Xylenes	3990		500	1000	3410		500	1000	2.0
Bromoform	ND	U	500	1500	ND	U	500	1500	3.0
Styrene	ND	U	500	500	ND	U	500	500	1.0
1,1,2,2-Tetrachloroethane	ND	U	500	500	ND	U	500	500	1.0
o-Xylene	1310		500	500	1090		500	500	1.0
4-Ethyltoluene	ND	U	500	500	ND	U	500	500	1.0
1,3,5-Trimethylbenzene	ND	U	500	500	ND	U	500	500	1.0
1,2,4-Trimethylbenzene	844		500	500	645		500	500	1.0
Benzyl Chloride	ND	U	500	2500	ND	U	500	2500	5.0
1,3-Dichlorobenzene	ND	U	500	500	ND	U	500	500	1.0
1,4-Dichlorobenzene	ND	U	500	500	ND	U	500	500	1.0
1,2-Dichlorobenzene	ND	U	500	500	ND	U	500	500	1.0
1,2,4-Trichlorobenzene	ND	U	500	500	ND	U	500	500	1.0
Hexachlorobutadiene	ND	U	500	500	ND	U	500	500	1.0
BFB-Surrogate Std. % Recovery	101%				100%				70-130%

J - Analyte was detected. However the analyte concentration is an estimated value, which is between the Method

Detection Limit (MDL) and the Reporting Limit (RL).

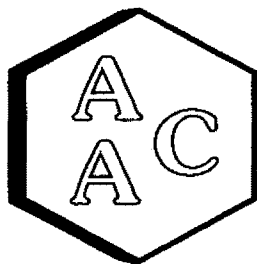
E - Estimated value, result outside linear range of instrument.

U - Compound was analyzed for, but was not detected.

!! - Estimated

Sucha S. Parmar, PhD
Technical Director





Atmospheric Analysis & Consulting, Inc.

Laboratory Analysis Report

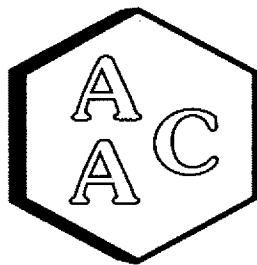
CLIENT : Shaw Environmental, Inc.
PROJECT NO : 070559
MATRIX : AIR
UNITS : PPB (v/v)

DATE RECEIVED : 06/01/07
DATE REPORTED : 06/04/07

VOLATILE ORGANIC COMPOUNDS BY EPA TO-15

Client ID	A51 R2			Sample Reporting Limit (RLxDf's)	A51 R3			Sample Reporting Limit (RLxDf's)	Method Reporting Limit
AAC ID	070559-25970				070559-25971				
Date Sampled	5/31/2007				5/31/2007				
Date Analyzed	6/1/2007				6/1/2007				
Can Dilution Factor	1.00				1.00				
	Result	Qualifier	Dil. Fac.		Result	Qualifier	Dil. Fac.		
Chlorodifluoromethane	659		500	500	637		500	500	1.0
Propylene	7030		500	500	6810		500	500	1.0
Dichlorodifluoromethane	ND	U	500	500	ND	U	500	500	1.0
Chloromethane	ND	U	500	500	ND	U	500	500	1.0
1,2-Dichloro-1,1,2,2-Tetrafluoroethane	ND	U	500	500	ND	U	500	500	1.0
Vinyl Chloride	ND	U	500	500	ND	U	500	500	1.0
Methanol	ND	U	500	2500	3300		500	2500	5.0
1,3-Butadiene	ND	U	500	500	ND	U	500	500	1.0
Bromomethane	ND	U	500	500	ND	U	500	500	1.0
Chloroethane	ND	U	500	500	ND	U	500	500	1.0
Dichlorofluoromethane	ND	U	500	500	ND	U	500	500	1.0
Ethanol	404	J	500	1000	2060		500	1000	2.0
Vinyl Bromide	ND	U	500	500	ND	U	500	500	1.0
Acetone	992	J	500	1000	4260		500	1000	2.0
Trichlorofluoromethane	ND	U	500	500	ND	U	500	500	1.0
Isopropyl Alcohol	ND	U	500	1000	ND	U	500	1000	2.0
Acrylonitrile	ND	U	500	500	ND	U	500	500	1.0
1,1-Dichloroethylene	ND	U	500	500	ND	U	500	500	1.0
Methylene Chloride	ND	U	500	500	6660		500	500	1.0
Allyl Chloride (Chloroprene)	ND	U	500	500	ND	U	500	500	1.0
Carbon Disulfide	ND	U	500	500	ND	U	500	500	1.0
1,1,2-Trichloro-1,2,2-Trifluoroethane	ND	U	500	500	ND	U	500	500	1.0
t-1,2-Dichloroethylene	ND	U	500	500	ND	U	500	500	1.0
1,1-Dichloroethane	ND	U	500	500	ND	U	500	500	1.0
MTBE	ND	U	500	500	ND	U	500	500	1.0
Vinyl Acetate	ND	U	500	500	ND	U	500	500	1.0
2-Butanone (MEK)	912		500	500	1080		500	500	1.0
cis-1,2- Dichloroethene	ND	U	500	500	ND	U	500	500	1.0
Hexane	705		500	500	3340		500	500	1.0
Chloroform	ND	U	500	500	ND	U	500	500	1.0
Ethyl Acetate	ND	U	500	500	ND	U	500	500	1.0
Tetrahydrofuran	1450		500	500	1470		500	500	1.0
1,2-Dichloroethane	ND	U	500	500	ND	U	500	500	1.0
1,1,1-Trichloroethane	ND	U	500	500	ND	U	500	500	1.0





Atmospheric Analysis & Consulting, Inc.

Laboratory Analysis Report

CLIENT : Shaw Environmental, Inc.
PROJECT NO : 070559
MATRIX : AIR
UNITS : PPB (v/v)

DATE RECEIVED : 06/01/07
DATE REPORTED : 06/04/07

VOLATILE ORGANIC COMPOUNDS BY EPA TO-15

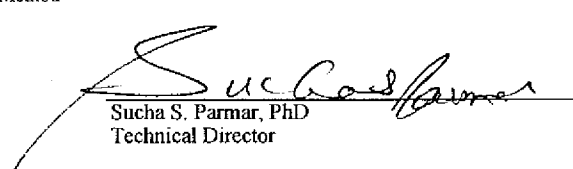
Client ID	A51 R2			Sample Reporting Limit (RLxDf's)	A51 R3			Sample Reporting Limit (RLxDf's)	Method Reporting Limit
AAC ID	070559-25970				070559-25971				
Date Sampled	5/31/2007				5/31/2007				
Date Analyzed	6/1/2007				6/1/2007				
Can Dilution Factor	1.00				1.00				
	Result	Qualifier	Dil. Fac.		Result	Qualifier	Dil. Fac.		
Benzene	ND	U	500	500	ND	U	500	500	1.0
Carbon Tetrachloride	ND	U	500	500	ND	U	500	500	1.0
Cyclohexane	523		500	500	546		500	500	1.0
1,2-Dichloropropane	ND	U	500	500	ND	U	500	500	1.0
Bromodichloromethane	ND	U	500	500	ND	U	500	500	1.0
1,4-Dioxane	ND	U	500	500	ND	U	500	500	1.0
Trichloroethene	ND	U	500	500	ND	U	500	500	1.0
2,2,4-Trimethylpentane	ND	U	500	500	ND	U	500	500	1.0
Heptane	1240		500	500	1310		500	500	1.0
cis-1,3-Dichloropropene	ND	U	500	500	ND	U	500	500	1.0
4-Methyl-2-Pentanone (MiBK)	ND	U	500	500	ND	U	500	500	1.0
t-1,3-Dichloropropene	ND	U	500	500	ND	U	500	500	1.0
1,1,2-Trichloroethane	ND	U	500	500	ND	U	500	500	1.0
Toluene	4400		500	500	5960		500	500	1.0
2-Hexanone	ND	U	500	500	ND	U	500	500	1.0
Dibromochloromethane	ND	U	500	500	ND	U	500	500	1.0
1,2-Dibromoethane	ND	U	500	500	ND	U	500	500	1.0
Tetrachloroethylene	ND	U	500	500	ND	U	500	500	1.0
Chlorobenzene	ND	U	500	500	ND	U	500	500	1.0
Ethylbenzene	2720		500	500	2790		500	500	1.0
m- & p-Xylenes	3640		500	1000	3710		500	1000	2.0
Bromoform	ND	U	500	1500	ND	U	500	1500	3.0
Styrene	ND	U	500	500	ND	U	500	500	1.0
1,1,2,2-Tetrachloroethane	ND	U	500	500	ND	U	500	500	1.0
o-Xylene	1200		500	500	1200		500	500	1.0
4-Ethyltoluene	ND	U	500	500	ND	U	500	500	1.0
1,3,5-Trimethylbenzene	ND	U	500	500	ND	U	500	500	1.0
1,2,4-Trimethylbenzene	735		500	500	765		500	500	1.0
Benzyl Chloride	ND	U	500	2500	ND	U	500	2500	5.0
1,3-Dichlorobenzene	ND	U	500	500	ND	U	500	500	1.0
1,4-Dichlorobenzene	ND	U	500	500	ND	U	500	500	1.0
1,2-Dichlorobenzene	ND	U	500	500	ND	U	500	500	1.0
1,2,4-Trichlorobenzene	ND	U	500	500	ND	U	500	500	1.0
Hexachlorobutadiene	ND	U	500	500	ND	U	500	500	1.0
BFB-Surrogate Std. % Recovery	99%				99%				70-130%

J - Analyte was detected. However the analyte concentration is an estimated value, which is between the Method Detection Limit (MDL) and the Reporting Limit (RL).

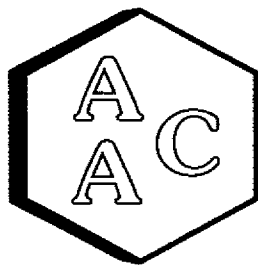
E - Estimated value, result outside linear range of instrument.

U - Compound was analyzed for, but was not detected.

!! - Estimated


Sucha S. Parmar, PhD
Technical Director





Atmospheric Analysis & Consulting, Inc.

ANALYSIS DATE : 06/01/07
ANALYST : JJG

INSTRUMENT ID : GC/MS-01
STD ID : PS040407-01

VOLATILE ORGANIC COMPOUNDS BY EPA METHOD TO-14/TO-15

Continuing Calibration Verification of the 05/03/07 Calibration

Compounds	Conc	Daily Conc	%REC
BENZENE**	10	11.02	110
CARBON TETRACHLORIDE**	10	10.40	104
Cyclohexane**	10	10.79	108
1,2-DICHLOROPROPANE**	10	11.30	113
Bromodichloromethane**	10	10.98	110
1,4-Dioxane**	10	11.59	116
TRICHLOROETHENE**	10	10.72	107
2,2,4-Trimethylpentane**	10	11.35	114
Heptane**	10	12.04	120
cis- 1,3 DICHLOROPROPENE**	10	9.42	94
MiBK**	10	11.82	118
trans 1,3 DICHLOROPROPENE**	10	8.97	90
1,1,2-TRICHLOROETHANE**	10	10.75	108
TOLUENE**	10	9.83	98
2-Hexanone**	10	12.30	123
Dibromochloromethane**	10	11.55	116
1,2 DIBROMOETHANE**	10	11.27	113
TETRACHLOROETHYLENE**	10	10.82	108
CHLOROBENZENE***	10	10.72	107
ETHYLBENZENE***	10	10.58	106
m-, & p- XYLENES***	20	20.22	101
Bromoform***	10	9.60	96
STYRENE***	10	9.76	98
1,1, 2,2- TETRACHLORETHANE**	10	11.25	113
o- XYLENE***	10	10.20	102
Ethyltoluene***	10	10.61	106
1,3,5- TRIMETHYLBENZENE***	10	9.99	100
1,2,4- TRIMETHYLBENZENE***	10	10.06	101
Benzyl Chloride***	10	9.64	96
1,3- DICHLOROBENZENE***	10	11.46	115
1,4- DICHLOROBENZENE***	10	11.63	116
1,2-DICHLOROBENZENE***	10	11.79	118
1,2,4-TRICHLOROBENZENE***	10	9.38	94
HEXACHLOROBUTADIENE***	10	9.71	97

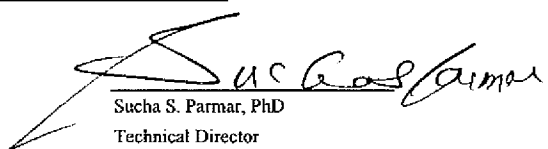
* Internal std calculation IS1 : Bromochloromethane

** Internal std calculation IS2 : 1,4-Difluorobenzene

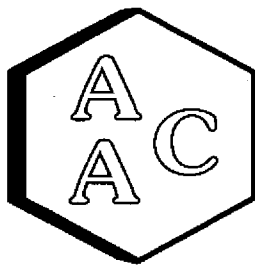
*** Internal std calculation IS3 : Chlorobenzene-d5

%REC should be 70-130%

!! Compound failed criteria and results should be considered estimated.


Sucha S. Parmar, PhD
Technical Director





Atmospheric Analysis & Consulting, Inc.

Quality Control/Quality Assurance Report

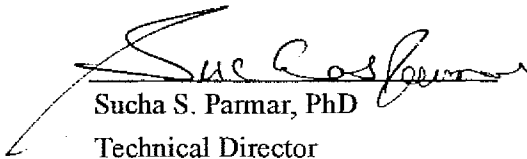
CLIENT ID : Laboratory Control Spike DATE ANALYZED : 06/01/07
AAC ID : LCS/LCSD DATE REPORTED : 06/01/07
MEDIA : Air UNITS : ppbv

TO-14/15 Laboratory Control Spike Recovery

Compound	Sample Conc.	Spike Added	Spike Res	Dup Spike Res	Spike % Rec *	Spike Dup % Rec *	RPD** %
1,1-DICHLOROETHYLENE	0.0	10.00	9.71	9.14	97	91	6.0
METHYLENE CHLORIDE	0.0	10.00	9.50	9.06	95	91	4.7
BENZENE	0.0	10.00	11.02	10.72	110	107	2.8
TRICHLOROETHENE	0.0	10.00	10.72	10.10	107	101	6.0
TOLUENE	0.0	10.00	9.83	9.20	98	92	6.6
TETRACHLOROETHYLENE	0.0	10.00	10.82	10.07	108	101	7.2
CHLOROBENZENE	0.0	10.00	10.72	10.14	107	101	5.6
ETHYLBENZENE	0.0	10.00	10.58	9.76	106	98	8.1
m-, & p- XYLENES	0.0	20.00	20.22	18.60	101	93	8.3
o- XYLENE	0.0	10.00	10.20	9.44	102	94	7.7

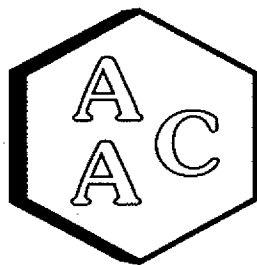
* Must be 70-130%

** Must be < 25%


Sucha S. Parmar, PhD

Technical Director





Atmospheric Analysis & Consulting, Inc.

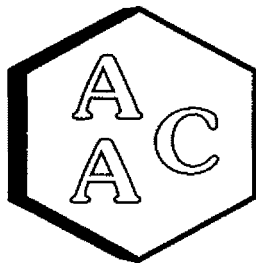
Method Blank Analysis Report

MATRIX : AIR ANALYSIS DATE : 06/01/07
 UNITS : ppbv REPORT DATE : 06/01/07

VOLATILE ORGANIC COMPOUNDS BY EPA TO-14/TO-15

Client ID AAC ID	Method Blank MB 060107	RL
Chlorodifluoromethane*	<RL	1.0
Propylene*	<RL	1.0
DiCIDIFMethane*	<RL	1.0
CHLOROMETHANE*	<RL	1.0
1,2 DiCl-1,1,2,2-TetraFEthane*	<RL	1.0
VINYL CHLORIDE*	<RL	1.0
Methanol*	<RL	5.0
1,3-Butadiene*	<RL	1.0
BROMOMETHANE*	<RL	1.0
CHLOROETHANE*	<RL	1.0
Dichlorofluoromethane	<RL	1.0
Ethanol*	<RL	2.0
Vinyl Bromide*	<RL	1.0
Acetone*	<RL	2.0
TRICHLOROFLUOROMETHANE*	<RL	1.0
Isopropyl Alcohol*	<RL	2.0
Acrylonitrile*	<RL	1.0
1,1 DICHLOROETHENE*	<RL	1.0
METHYLENE CHLORIDE*	<RL	1.0
Allyl CHLORIDE*	<RL	1.0
Carbon disulfide*	<RL	1.0
1,1,2-TRICHLORO-1,2,2-TRIFLUOROETHANE*	<RL	1.0
trans-1,2- DICHLOROETHYLENE*	<RL	1.0
1,1- DICHLOROETHANE*	<RL	1.0
MTBE*	<RL	1.0
Vinyl Acetate*	<RL	1.0
MEK*	<RL	1.0
cis-1,2- DICHLOROETHYLENE*	<RL	1.0
Hexane*	<RL	1.0
CHLOROFORM*	<RL	1.0
Ethyl Acetate*	<RL	1.0
Tetrahydrofuran*	<RL	1.0
1,2-DICHLOROETHANE*	<RL	1.0
1,1,1-TRICHLOROETHANE*	<RL	1.0
BENZENE**	<RL	1.0
CARBON TETRACHLORIDE**	<RL	1.0
Cyclohexane**	<RL	1.0
1,2-DICHLOROPROPANE**	<RL	1.0
Bromodichloromethane**	<RL	1.0
1,4-Dioxane**	<RL	1.0
TRICHLOROETHENE**	<RL	1.0
2,2,4-Trimethylpentane**	<RL	1.0
Heptane**	<RL	1.0





Atmospheric Analysis & Consulting, Inc.

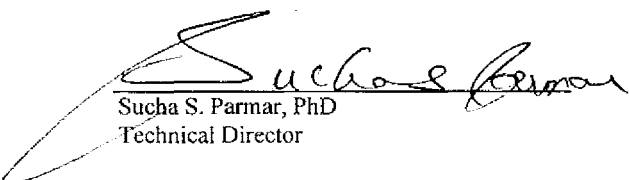
Method Blank Analysis Report

MATRIX : AIR ANALYSIS DATE : 06/01/07
UNITS : ppbv REPORT DATE : 06/01/07

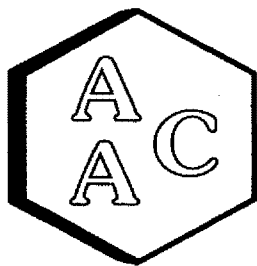
VOLATILE ORGANIC COMPOUNDS BY EPA TO-14/TO-15

Client ID AAC ID	Method Blank MB 060107	RL
cis- 1,3 DICHLOROPROPENE**	<RL	1.0
MIBK**	<RL	1.0
trans 1,3 DICHLOROPROPENE**	<RL	1.0
1,1,2- TRICHLOROETHANE**	<RL	1.0
TOLUENE**	<RL	1.0
2-Hexanone**	<RL	1.0
Dibromochloromethane**	<RL	1.0
1,2 DIBROMOETHANE**	<RL	1.0
TETRACHLOROETHYLENE**	<RL	1.0
CHLOROBENZENE***	<RL	1.0
ETHYLBENZENE***	<RL	1.0
m-, & p- XYLENES***	<RL	2.0
Bromoform***	<RL	3.0
STYRENE***	<RL	1.0
1,1, 2,2- TETRACHLOROETHANE***	<RL	1.0
o- XYLENE***	<RL	1.0
Ethyltoluene***	<RL	1.0
1,3,5- TRIMETHYLBENZENE***	<RL	1.0
1,2,4- TRIMETHYLBENZENE***	<RL	1.0
Benzyl Chloride***	<RL	5.0
1,3- DICHLOROBENZENE***	<RL	1.0
1,4- DICHLOROBENZENE***	<RL	1.0
1,2-DICHLOROBENZENE***	<RL	1.0
1,2,4 TRICHLOROBENZENE***	<RL	1.0
HEXACHLOROBUTADIENE***	<RL	1.0
System Monitoring Compounds		
BFB-Surrogate Std. % Recovery	92%	--

RL - Reporting Limit


Sucha S. Parmar, PhD
Technical Director





Atmospheric Analysis & Consulting, Inc.

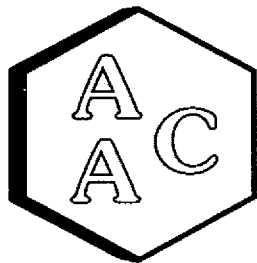
Quality Control/Quality Assurance Report

AAC ID : 070559-25966 DATE ANALYZED : 06/01/07
 MATRIX : Air DATE REPORTED : 06/01/07
 UNITS : ppbv

TO-14/TO-15 Duplicate Analysis

Compound	Sample Conc	Duplicate Conc	% RPD
Chlorodifluoromethane*	480	511	6.3
Propylene*	5620	6070	7.7
DiC1D1FMethane*	<RL	<RL	0.0
CHLOROMETHANE*	<RL	<RL	0.0
1,2 DiCl-1,1,2,2-TetraFBthane*	<RL	<RL	0.0
VINYL CHLORIDE*	<RL	<RL	0.0
Methanol*	<RL	<RL	0.0
1,3-Butadiene*	<RL	<RL	0.0
BROMOMETHANE*	<RL	<RL	0.0
CHLOROETHANE*	<RL	<RL	0.0
Dichlorofluoromethane	<RL	<RL	0.0
Ethanol*	1330	1430	7.2
Vinyl Bromide*	<RL	<RL	0.0
Acetone*	1150	1230	6.7
TRICHLOROFLUOROMETHANE*	<RL	<RL	0.0
Isopropyl Alcohol*	<RL	<RL	0.0
Acrylonitrile*	<RL	<RL	0.0
1,1 DICHLOROETHENE*	<RL	<RL	0.0
METHYLENE CHLORIDE*	<RL	<RL	0.0
Allyl CHLORIDE*	<RL	<RL	0.0
Carbon disulfide*	<RL	<RL	0.0
1,1,2-TRICHLORO-1,2,2-TRIFLUOROETHANE*	<RL	<RL	0.0
trans-1,2- DICHLOROETHYLENE*	<RL	<RL	0.0
1,1- DICHLOROETHANE*	<RL	<RL	0.0
MTBE*	<RL	<RL	0.0
Vinyl Acetate*	<RL	<RL	0.0
MEK*	858	875	2.0
cis-1,2- DICHLOROETHYLENE*	<RL	<RL	0.0
Hexane*	648	666	2.7
CHLOROFORM*	<RL	<RL	0.0
Ethyl Acetate*	<RL	<RL	0.0
Tetrahydrofuran*	1290	1340	3.8
1,2-DICHLOROETHANE*	<RL	<RL	0.0
1,1,1-TRICHLOROETHANE*	<RL	<RL	0.0
BENZENE**	<RL	<RL	0.0
CARBON TETRACHLORIDE**	<RL	<RL	0.0





Atmospheric Analysis & Consulting, Inc.

Quality Control/Quality Assurance Report

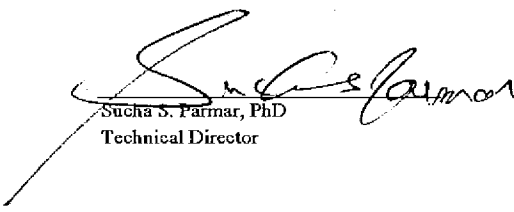
AAC ID : 070559-25966
MATRIX : Air

DATE ANALYZED : 06/01/07
DATE REPORTED : 06/01/07
UNITS : ppbv

TO-14/TO-15 Duplicate Analysis

Compound	Sample Conc	Duplicate Conc	% RPD
Cyclohexane**	<RL	<RL	0.0
1,2-DICHLOROPROPANE**	<RL	<RL	0.0
Bromodichloromethane**	<RL	<RL	0.0
1,4-Dioxane**	<RL	<RL	0.0
TRICHLOROETHENE**	<RL	<RL	0.0
2,2,4-Trimethylpentane**	<RL	<RL	0.0
Heptane**	1040	1080	3.8
cis- 1,3 DICHLOROPROPENE**	<RL	<RL	0.0
MIBK**	<RL	<RL	0.0
trans 1,3 DICHLOROPROPENE**	<RL	<RL	0.0
1,1,2-TRICHLOROETHANE**	<RL	<RL	0.0
TOLUENE**	4380	4680	6.6
2-Hexanone**	<RL	<RL	0.0
Dibromochloromethane**	<RL	<RL	0.0
1,2 DIBROMOETHANE**	<RL	<RL	0.0
TETRACHLOROETHYLENE**	<RL	<RL	0.0
CHLOROBENZENE***	<RL	<RL	0.0
ETHYLBENZENE***	2640	2870	8.3
m-, & p- XYLENES***	3450	3760	8.6
Bromoform***	<RL	<RL	0.0
STYRENE***	<RL	<RL	0.0
1,1,2,2-TETRACHLOROETHANE***	<RL	<RL	0.0
o- XYLENE***	1120	1220	8.5
Ethyltoluene***	<RL	<RL	0.0
1,3,5- TRIMETHYLBENZENE***	<RL	<RL	0.0
1,2,4- TRIMETHYLBENZENE***	681	726	6.4
Benzyl Chloride***	<RL	<RL	0.0
1,3- DICHLOROBENZENE***	<RL	<RL	0.0
1,4- DICHLOROBENZENE***	<RL	<RL	0.0
1,2-DICHLOROBENZENE***	<RL	<RL	0.0
1,2,4 TRICHLOROBENZENE***	<RL	<RL	0.0
Hexachlorobutadiene***	<RL	<RL	0.0
System Monitoring Compounds			
BFB-Surrogate Std. % Recovery	101%	102%	1.0

RL - Reporting Limit


Sucha S. Parmar, PhD
Technical Director



070554

REDWOOD LANDFILL

DATE: 05/31/07

PAGE: 1 of 1

【例题】

SITE ADDRESS (Street and City):

EDF DELIVERABLE TO (Responsible Party or Designee):

PHONE NO. _____

E-MAIL:

CONSULTANT PROJECT NO. _____

ADDRESS:

2380 Bering San Jose, CA 95131

PROJECT CONTACT (Hardcopy or PDF Report to):

Bill Johnston

1997, 1998, 1999, 2000, 2001, 2002, 2003, 2004, 2005, 2006, 2007, 2008, 2009, 2010, 2011, 2012, 2013, 2014, 2015, 2016, 2017, 2018, 2019, 2020, 2021, 2022, 2023, 2024, 2025, 2026, 2027, 2028, 2029, 2030, 2031, 2032, 2033, 2034, 2035, 2036, 2037, 2038, 2039, 2040, 2041, 2042, 2043, 2044, 2045, 2046, 2047, 2048, 2049, 2050, 2051, 2052, 2053, 2054, 2055, 2056, 2057, 2058, 2059, 2060, 2061, 2062, 2063, 2064, 2065, 2066, 2067, 2068, 2069, 2070, 2071, 2072, 2073, 2074, 2075, 2076, 2077, 2078, 2079, 2080, 2081, 2082, 2083, 2084, 2085, 2086, 2087, 2088, 2089, 2090, 2091, 2092, 2093, 2094, 2095, 2096, 2097, 2098, 2099, 2100, 2101, 2102, 2103, 2104, 2105, 2106, 2107, 2108, 2109, 2110, 2111, 2112, 2113, 2114, 2115, 2116, 2117, 2118, 2119, 2120, 2121, 2122, 2123, 2124, 2125, 2126, 2127, 2128, 2129, 2130, 2131, 2132, 2133, 2134, 2135, 2136, 2137, 2138, 2139, 2140, 2141, 2142, 2143, 2144, 2145, 2146, 2147, 2148, 2149, 2150, 2151, 2152, 2153, 2154, 2155, 2156, 2157, 2158, 2159, 2160, 2161, 2162, 2163, 2164, 2165, 2166, 2167, 2168, 2169, 2170, 2171, 2172, 2173, 2174, 2175, 2176, 2177, 2178, 2179, 2180, 2181, 2182, 2183, 2184, 2185, 2186, 2187, 2188, 2189, 2190, 2191, 2192, 2193, 2194, 2195, 2196, 2197, 2198, 2199, 2200, 2201, 2202, 2203, 2204, 2205, 2206, 2207, 2208, 2209, 2210, 2211, 2212, 2213, 2214, 2215, 2216, 2217, 2218, 2219, 2220, 2221, 2222, 2223, 2224, 2225, 2226, 2227, 2228, 2229, 2230, 2231, 2232, 2233, 2234, 2235, 2236, 2237, 2238, 2239, 2240, 2241, 2242, 2243, 2244, 2245, 2246, 2247, 2248, 2249, 2250, 2251, 2252, 2253, 2254, 2255, 2256, 2257, 2258, 2259, 2260, 2261, 2262, 2263, 2264, 2265, 2266, 2267, 2268, 2269, 2270, 2271, 2272, 2273, 2274, 2275, 2276, 2277, 2278, 2279, 2280, 2281, 2282, 2283, 2284, 2285, 2286, 2287, 2288, 2289, 2290, 2291, 2292, 2293, 2294, 2295, 2296, 2297, 2298, 2299, 2300, 2301, 2302, 2303, 2304, 2305, 2306, 2307, 2308, 2309, 2310, 2311, 2312, 2313, 2314, 2315, 2316, 2317, 2318, 2319, 2320, 2321, 2322, 2323, 2324, 2325, 2326, 2327, 2328, 2329, 2330, 2331, 2332, 2333, 2334, 2335, 2336, 2337, 2338, 2339, 2340, 2341, 2342, 2343, 2344, 2345, 2346, 2347, 2348, 2349, 2350, 2351, 2352, 2353, 2354, 2355, 2356, 2357, 2358, 2359, 2360, 2361, 2362, 2363, 2364, 2365, 2366, 2367, 2368, 2369, 2370, 2371, 2372, 2373, 2374, 2375, 2376, 2377, 2378, 2379, 2380, 2381, 2382, 2383, 2384, 2385, 2386, 2387, 2388, 2389, 2390, 2391, 2392, 2393, 2394, 2395, 2396, 2397, 2398, 2399, 2400, 2401, 2402, 2403, 2404, 2405, 2406, 2407, 2408, 2409, 2410, 2411, 2412, 2413, 2414, 2415, 2416, 2417, 2418, 2419, 2420, 2421, 2422, 2423, 2424, 2425, 2426, 2427, 2428, 2429, 2430, 2431, 2432, 2433, 2434, 2435, 2436, 2437, 2438, 2439, 2440, 2441, 2442, 2443, 2444, 2445, 2446, 2447, 2448, 2449, 2450, 2451, 2452, 2453, 2454, 2455, 2456, 2457, 2458, 2459, 2460, 2461, 2462, 2463, 2464, 2465, 2466, 2467, 2468, 2469, 2470, 2471, 2472, 2473, 2474, 2475, 2476, 2477, 2478, 2479, 2480, 2481, 2482, 2483, 2484, 2485, 2486, 2487, 2488, 2489, 2490, 2491, 2492, 2493, 2494, 2495, 2496, 2497, 2498, 2499, 2500, 2501, 2502, 2503, 2504, 2505, 2506, 2507, 2508, 2509, 2510, 2511, 2512, 2513, 2514, 2515, 2516, 2517, 2518, 2519, 2520, 2521, 2522, 2523, 2524, 2525, 2526, 2527, 2528, 2529, 2530, 2531, 2532, 2533, 2534, 2535, 2536, 2537, 2538, 2539, 2540, 2541, 2542, 2543, 2544, 2545, 2546, 2547, 2548, 2549, 2550, 2551, 2552, 2553, 2554, 2555, 2556, 2557, 2558, 2559, 2560, 2561, 2562, 2563, 2564, 2565, 2566, 2567, 2568, 2569, 2570, 2571, 2572, 2573, 2574, 2575, 2576, 2577, 2578, 2579, 2580, 2581, 2582, 2583, 2584, 2585, 2586, 2587, 2588, 2589, 2590, 2591, 2592, 2593, 2594, 2595, 2596, 2597, 2598, 2599, 2600, 2601, 2602, 2603, 2604, 2605, 2606, 2607, 2608, 2609, 2610, 2611, 2612, 2613, 2614, 2615, 2616, 2617, 2618, 2619, 2620, 2621, 2622, 2623, 2624, 2625, 2626, 2627, 2628, 2629, 2630, 2631, 2632, 2633, 2634, 2635, 2636, 2637, 2638, 2639, 2640, 2641, 2642, 2643, 2644, 2645, 2646, 2647, 2648, 2649, 2650, 2651, 2652, 2653, 2654, 2655, 2656, 2657, 2658, 2659, 2660, 2661, 2662, 2663, 2664, 2665, 2666, 2667, 2668, 2669, 2670, 2671, 2672, 2673, 2674, 2675, 2676, 2677, 2678, 26

FAX:

NAME

405.382.6800

408.433.1912

SAMPLER NAME(S) (PTW):

REQUESTED ANALYSIS

TURNAROUND TIME (BUSINESS DAYS):

☐ 10 DAYS ☐ 5 DAYS ☐ 72 HOURS ☐ 48 HOURS ☐ 24 HOURS ☐ LESS THAN 24 HOURS

SPECIAL INSTRUCTIONS OR NOTES:

Report NMOC as Methane

FIELD NOTES:

Container/Preservative
or PID Readings
or Laboratory Notes

LANDFILL
GAS
SAMPLES

LAB USE ONLY	Field Sample Identification	SAMPLING		MATRIX	NO. OF CONT.	C ₁	HHV &	Fixed	VOCs	Sulfur	H ₂ S	LEG N			EPA to exception		
		DATE	TIME														
	ASD , R1	05/31	1000	BAG	1	X	X	X	X	X		X					SEE ATTACHED LIST FOR ORGANIC & SULFUR COMPS
	ASD , R2	05/31		BAG	1	X	X	X	X	X		X					
	ASD , R3	05/31		BAG	1	X	X	X	X	X		X					
	AS1 , R1	05/30	1000	BAG	1	X	X	X	X	X		X					
	AS1 , R2	05/30		BAG	1	X	X	X	X	X		X					
	AS1 , R3	05/30		BAG	1	X	X	X	X	X		X					

Relinquished by: (Signature)	Received by: (Signature)	Date:	Time:
Relinquished by: (Signature)	Received by: (Signature)	Date:	Time:
Relinquished by: (Signature)	Received by: (Signature)	Date:	Time:

Shaw Environmental Chain Of Custody Record

RAC

1534 Eastman Ave

Ventura, CA 93003

CLIENT

REDWOOD LANDFILL

DATE: 05/31/07

PAGE: 1 of 1

Page 18

SAMPLING COMPANY:

Shaw Environmental, Inc.

LOG CODE:

SITE ADDRESS (Street and City):

ADDRESS:

2380 Bering San Jose, CA 95131

EPC DELIVERABLE TO (Responsible Party or Designee):

PHONE NO.:

E-MAIL:

CONSULTANT PROJECT NO.:

PROJECT CONTACT (Hardcopy or PDF Report to):

Bill Johnston

SAMPLER NAME(S) (Print):

TELEPHONE:

408.382.5800

FAX:

408.433.1912

E-MAIL:

070554

TURNAROUND TIME (BUSINESS DAYS):

☐ 10 DAYS ☐ 5 DAYS ☐ 72 HOURS ☐ 48 HOURS ☐ 24 HOURS ☐ LESS THAN 24 HOURS

REQUESTED ANALYSIS

SPECIAL INSTRUCTIONS OR NOTES:

Report NMOC as Methane

FIELD NOTES:

Container/Preservative
or PID Readings
or Laboratory NotesLANDFILL
GAS
SAMPLES

LAB USE ONLY	Field Sample Identification	SAMPLING		MATRIX	NO. OF CONT.	CFCs	HHV & F-factor	Fixed gases O ₂ , CO ₂ , H ₂	VOCs, TO 16	Sulfur, ASTM D6504	H ₂ S	LFG NMOC, EPA 25C	EPA table 2.4-1 list of compounds except acetone and mercury		
		DATE	TIME												
	ASD, R1	05/31	1000	BAG	1	X	X	X	X	X		X		254	66
	ASD, R2	05/31		BAG	1	X	X	X	X	X		X		254	67
	ASD, R3	05/31		BAG	1	X	X	X	X	X		X		254	68
	AS1, R1	05/30	1000	BAG	1	X	X	X	X	X		X		254	69
	AS1, R2	05/30		BAG	1	X	X	X	X	X		X		254	70
	AS1, R3	05/30		BAG	1	X	X	X	X	X		X		254	71

Relinquished by: (Signature)

Received by: (Signature)

Date:

Time:

Relinquished by: (Signature)

Received by: (Signature)

Date:

Time:

Relinquished by: (Signature)

Received by: (Signature)

Date:

Time:

05/31/07

05/31/07

Appendix E
Source Test Plan and
California Air Resources Board Independent
Contractor Certification



Shaw Environmental, Inc.
2360 Bering Drive
San Jose, California 95131
408-382-5800
FAX: 408-433-1912

To: Tim Underwood, BAAQMD
Subject: Source Test Protocol & Test Notification

Date: May 15, 2007

**SOURCE TEST PROTOCOL
FOR
REDWOOD LANDFILL
FLARES, A-50 & A-51**

Shaw Environmental, Inc. (Shaw) will perform compliance testing on landfill gas flares A-50 and A-51 located at the Redwood Landfill in Novato, California. The purpose of the test is to demonstrate the performance of the landfill gas flare as specified by the Bay Area Air Quality Management District (BAAQMD) Major Facility Review (MFR) Title V permits and Regulation 8, Rule 34. This protocol is to inform the BAAQMD of the planned test date and testing procedures. This protocol is at least fourteen (14) days in advance of the source test as required by the MFR. Shaw is approved by the California Air Resources Board (ARB) as an independent contractor to conduct compliance emission testing.

Source Test Information, Redwood Landfill

Test Location:	Redwood Landfill, Inc. 8950 Redwood Highway Novato, CA 94948 BAAQMD MFR Number A1179	Contact: Mr. Ramin Khany Te: 415-892-2851
Source to be Tested:	Flares A-50 and A-51	
Test Objective:	Determine compliance with Title V Permit and Regulation 8, Rule 34 Flare: Permit Condition Number 19867	Emission Limits: NO _x : 15 ppm @3% O ₂ CO: 123 ppmv @3% O ₂ NMOC: > 98% destruction efficiency or < 30 ppm as methane at 3% O ₂
Test to be Performed By:	Shaw Environmental, Inc. 2360 Bering Drive San Jose, CA 95131	Contact: Bill Johnston Tel: (408) 382-5822 <i>BJ</i>
Test date:	May 30&31, 2007 (one flare per day)	
Test Parameters:	Inlet O ₂ , CO ₂ , N ₂ , HHV THC, CH ₄ , NMOC, Sulfur Species, VOCs, landfill gas flow rate	Outlet NMOC, NO _x , CO, Volumetric flow rate

SCOPE OF WORK

A source test will be performed on flares A-50 and A-51 located at the Redwood Landfill. The flare source test shall determine the following parameters as specified in the facility's Title V permit condition number 19867 and BAAQMD Regulation 8, Rule 34. The following items in the condition will be met.

- Determine landfill gas flow rate (dry basis);
- The landfill gas shall be analyzed for higher heating value (HHV), carbon dioxide (CO₂), nitrogen (N₂), oxygen (O₂), total hydrocarbons (THC), methane (CH₄), non-methane organic compounds (NMOC), speciated organic and sulfur compounds. All concentrations shall be reported on a dry basis;
- Stack gas flow rate from the flare;
- Concentrations (dry basis) of NMOC, CO, NO_x, and O₂ in the flare stack gas;
- NO_x and CO emission rates will be reported in units of lbs/MMBTU;
- NMOC destruction efficiency achieved by the flare, if the outlet NMOC is greater than 30 parts per million by volume (ppmv), expressed as methane at 3 percent oxygen on a dry basis.
- The average combustion temperature in the flare during the test period.
- A characterization of the landfill gas for all the compounds listed below, as identified in Part 31a of the condition.

The source test will demonstrate the following limits.

- Emissions of NO_x shall not exceed 0.06 pounds per million BTU (lb/MMBtu) or exceed 15 ppmv corrected to 15 percent O₂.
- Emissions of CO shall not exceed 0.30 lb/MMBtu or exceed 123 ppmv corrected to 15 percent O₂.
- The flare destruction efficiency of NMOC shall not be less than 98 percent by weight, unless the outlet NMOC concentration is less than 30 ppmv, expressed as methane at 3 percent oxygen on a dry basis.
- Concentrations of selected organic and sulfur compounds, as identified in Part 18, a and b of the condition.

TEST PROCEDURES

The source test matrix identified below presents the test parameters and source test methods (each compliant with the requirements of the BAAQMD) that will be utilized to determine the emissions from the flare.

Landfill Gas Fuel Analysis

Integrated Tedlar bag samples will be collected at the inlet to the flare. Samples will be collected concurrently with the outlet sampling. Samples will be analyzed within 72 hours (48 hrs for sulfur). One of the samples will be analyzed for speciated organics and sulfur compounds.

Continuous Emission Monitoring

Single point sampling will be performed at the center of the stack. All analyzers will be checked for calibration before and after each run. Emission monitoring data will be recorded on strip charts and a data logger. Methane concentrations will be determined by passing sample gas through an activated carbon scrubber prior to the hydrocarbon analyzer. Hydrocarbon emissions will be measured and reported as methane.

Process Parameters

Flare process parameters including the fuel gas flow rate and the flare operating temperature will be measured and recorded during each run using the flare gas measurement system.

Test Matrix Redwood Landfill LFG and Flares A-50 & A-51

Sample Parameter	Test Method	Runs	Test Duration
LFG Parameters- Flare Inlet			
Gas flow rate	Flow meter	3	30 Minutes
Fuel factor	EPA Method 19	3	30 Minutes
Fixed gases ¹	ASTM D1945, EPA Method 18	3	30 Minutes
Volatile Organic Compounds	EPA Method TO 15	3	30 Minutes
Sulfur compounds	ASTM D5504	3	30 Minutes
NMOC	EPA Method 25 C	3	30 Minutes
Source Parameters-Flare Exhaust			
Volumetric flow rate	EPA Method 19	3	30 Minutes
O ₂	BAAQMD ST-14	3	30 Minutes
NMOC	BAAQMD ST-7	3	30 Minutes
CO	BAAQMD ST-6	3	30 Minutes
NOx	BAAQMD ST-13A	3	30 Minutes

¹ Fixed gases include HHV, CO₂, N₂, O₂, THC and CH₄.

REPORT

The final report is due to the BAAQMD 60 days after testing has occurred. The report will describe the tests that were conducted, the operating conditions of the source during the test, and the emission results reported in units of the appropriate standard. All raw data and sample calculations used to obtain the reported results will be included so that the accuracy of the reported results can be verified from the report. The flare process information will be submitted in the report.

Johnston, William

From: Tim Underwood [tunderwood@baaqmd.gov]
Sent: Wednesday, May 16, 2007 12:52 PM
To: Johnston, William
Subject: NST-1111: Test Notification for Redwood Landfill

NST-1111 has been assigned the pending work referred to below.

From: Johnston, William [mailto:william.johnston@shawgrp.com]
Sent: Tuesday, May 15, 2007 5:15 PM
To: Tim Underwood
Subject: Test Notification for Redwood Landfill

Test notification for Redwood Landfill, annual flare tests

Thanks

Bill Johnston
Shaw Environmental, Inc.
2360 Bering Drive
San Jose, CA 95131
Tel 408-382-5822
Fax 408-433-1912
e-mail william.johnston@shawgrp.com

****Internet Email Confidentiality Footer**** Privileged/Confidential Information may be contained in this message. If you are not the addressee indicated in this message (or responsible for delivery of the message to such person), you may not copy or deliver this message to anyone. In such case, you should destroy this message and notify the sender by reply email. Please advise immediately if you or your employer do not consent to Internet email for messages of this kind. Opinions, conclusions and other information in this message that do not relate to the official business of The Shaw Group Inc. or its subsidiaries shall be understood as neither given nor endorsed by it.

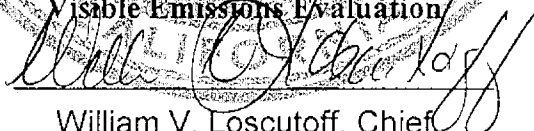
The Shaw Group Inc. <http://www.shawgrp.com>

5/18/2007

State of California
Air Resources Board
Approved Independent Contractor
Shaw Environmental, Inc.

This is to certify that the company listed above has been approved
by the Air Resources Board to conduct compliance testing
pursuant to section 91207, title 17, California Code of Regulations,
until June 30, 2007 for those test methods listed below:

ARB Source Test Methods:
1, 2, 3, 4, 5, 8, 100 (CO, CO₂, NO_x, O₂, SO₂, THC)
Visible Emissions Evaluation


William V. Loscutt, Chief
Monitoring and Laboratory Division

Appendix F
Major Facility Review Permit

Bay Area Air Quality Management District

939 Ellis Street
San Francisco, CA 94109
(415) 771-6000

Final

MAJOR FACILITY REVIEW PERMIT

Issued To:
Redwood Landfill, Inc.
Facility #A1179

Facility Address:
8950 Redwood Highway
Novato, CA 94948

Mailing Address:
P. O. Box 793
Novato, CA 94948

Responsible Official
Ramin Khany
Landfill Manager
415-892-2851

Facility Contact
Beth Shiverdecker
Environmental Compliance Specialist
415-892-2851

Type of Facility:	Landfill for Solid Waste Disposal	BAAQMD Engineering Division Contact:
Primary SIC:	4953	Carol S. Allen
Product:	Refuse and Sludge Disposal	

ISSUED BY THE BAY AREA AIR QUALITY MANAGEMENT DISTRICT

Signed by Jack P. Broadbent
Jack P. Broadbent, Executive Officer/Air Pollution Control Officer

September 20, 2006
Date

VI. Permit Conditions

Condition # 19867

FOR: S-5 REDWOOD LANDFILL WITH GAS COLLECTION SYSTEM; A-18 WATER SPRAYS; A-50 LANDFILL GAS FLARE; AND A-51 LANDFILL GAS FLARE

- vi. Summarize the total amount of contaminated soil disposed of at this site on a monthly and calendar year basis to demonstrate compliance with subpart g.

All records shall be retained for at least 5 years from the date of entry and shall be made available for District inspection upon request.

(Basis: Offsets and Regulation 8-40-301, 8-40-304 and 8-40-305)

- 16. During all times that the landfill gas collection system is operating, all collected landfill gas shall be vented to one of the following control system configurations: A-50 Landfill Gas Flare and A-51 Landfill Gas Flare operating concurrently or A-51 operating alone. In order to assure compliance with this condition, A-50 and A-51 shall be equipped with local and remote alarms and auto restart capabilities. (Basis: 8-34-301.1, 8-34-301.3, and 40 CFR 60.752(b)(2)(iii))

- 17. The landfill gas collection system described in subpart a below shall be operated continuously as defined in Regulation 8-34-219. Wells, collectors, and adjustment valves shall not be shut off, disconnected, or removed from operation without written authorization from the District, unless the Permit Holder complies with all applicable requirements of Regulation 8, Rule 34, Sections 113, 116, 117, and 118. The Permit Holder shall apply for and receive an Authority to Construct before modifying the landfill gas collection system described in subpart a below. Increasing or decreasing the number of wells or collectors, or significantly changing the length of collectors or the locations of wells or collectors are modifications that are subject to the Authority to Construct requirement. Adding or modifying risers, laterals, or header pipes are not subject to this Authority to Construct requirement. The authorized number of landfill gas collection system components is the baseline count listed below plus any components added and minus any components decommissioned pursuant to Part 17b as evidenced by start-up/shut-down notification letters submitted to the District.

- a. The Permit Holder has been issued a Permit to Operate for the landfill gas collection system components listed below. Well and collector locations, depths, and lengths are as described in detail in Permit Application # 13027.

Required Components	
Total Number of Vertical Wells:	86
Total Number of Horizontal Collectors:	8

VI. Permit Conditions

Condition # 19867

FOR: S-5 REDWOOD LANDFILL WITH GAS COLLECTION SYSTEM; A-18 WATER SPRAYS; A-50 LANDFILL GAS FLARE; AND A-51 LANDFILL GAS FLARE

- b. The Permit Holder has been issued an Authority to Construct for the landfill gas collection system components listed below. Specific well and collector locations, depths, and lengths of associated piping are as described in detail in Permit Application # 13027.

	Minimum	Maximum
Install New Vertical Wells:	0	30
Decommission Vertical Wells:	0	18
Install New Horizontal Collectors	0	10
Decommission Horizontal Collectors	0	4
Replace Vertical Wells *	0	15

* one-for-one well replacement at new optimal locations

Wells installed or shutdown pursuant to subpart b shall be added to or removed from subpart a in accordance with the procedures identified in Regulations 2-6-414 or 2-6-415. The Permit Holder shall maintain records of the decommissioning date for each well that is shut down and the initial operation date for each new well.

(Basis: Regulations 2-1-301, 8-34-301.1, 8-34-304, 8-34-305, and 2-6-413)

18. If a gas characterization test indicates that this site's landfill gas contains organic compounds in excess of any of the concentrations listed in Parts 18a or 18b below, then the Permit Holder shall submit an application for a Change of Permit Conditions, within no later than 30 days from receipt of the test results.

- a. Total Non-Methane Organic Compounds: 750 ppmv
(calculated as hexane equivalent)
(Basis: Cumulative Increase)

VI. Permit Conditions

Condition # 19867

FOR: S-5 REDWOOD LANDFILL WITH GAS COLLECTION SYSTEM; A-18 WATER
SPRAYS; A-50 LANDFILL GAS FLARE; AND A-51 LANDFILL GAS FLARE

*b. For toxic air contaminants (TACs):

<u>Compound</u>	<u>Concentration</u>
Acrylonitrile	280 ppbv
Benzene	340 ppbv
Carbon Tetrachloride	70 ppbv
Chloroform	70 ppbv
1,4 Dichlorobenzene	400 ppbv
1,1 Dichloroethane	150 ppbv
Ethylene Dibromide	70 ppbv
Ethylene Dichloride	70 ppbv
Methylene Chloride	320 ppbv
Perchloroethylene	450 ppbv
1,1,2,2 Tetrachloroethane	70 ppbv
Trichloroethylene	250 ppbv
Vinyl Chloride	880 ppbv

(Basis: Toxic Risk Management Policy)

- c. The concentration of total reduced sulfur compounds (TRS) in collected landfill gas shall not exceed a peak of 1300 ppmv (calculated as H₂S) and shall not exceed an annual average of 425 ppmv (calculated as H₂S). The peak and annual average TRS concentrations shall be measured and calculated in accordance with Parts 31a and 31b. (Basis: Cumulative Increase, RACT, and Regulation 9-1-302)
19. The A-50 and A-51 Landfill Gas Flares shall be fired on landfill gas. (Basis: RACT and Regulation 2-2-112)
20. The total combined throughput of landfill gas (with an HHV of 500 BTU/scf) to the A-50 Landfill Gas Flare and the A-51 Landfill Gas Flare shall not exceed 1,490,000,000 scf during any consecutive 12-month period and shall not exceed 5,760,000 scf during any one day. In order to demonstrate compliance with this condition, the A-50 and A-51 Flares shall be equipped with a one or more properly operating continuous gas flow meters. (Basis: Cumulative Increase, 40 CFR 60.756(b)(2)(i))
21. [deleted]

VI. Permit Conditions

Condition # 19867

FOR: S-5 REDWOOD LANDFILL WITH GAS COLLECTION SYSTEM; A-18 WATER SPRAYS; A-50 LANDFILL GAS FLARE; AND A-51 LANDFILL GAS FLARE

22. The temperature in the combustion zone of each flare shall be maintained at the minimum temperature listed below, averaged over any 3-hour period. In order to demonstrate compliance with this condition, A-50 and A-51 shall each be equipped with a continuous temperature monitor and recorder. If a source test demonstrates compliance with all applicable requirements at a different temperature, the APCO may revise these temperature limits, in accordance with the procedures identified in Regulation 2-6-414 or 2-6-415, based on the following criteria. The minimum combustion zone temperature for the flare shall be equal to the average combustion zone temperature determined during the most recent complying source test minus 50 degrees F, provided that the minimum combustion zone temperature is not less than 1400 degrees F. (Basis: Toxic Risk Management Policy, Regulations 8-34-301.3 and 8-34-501.3, and 40 CFR 60.756(b)(1))
 - a. The minimum combustion zone temperature for A-50 is 1475 degrees F, averaged over any 3-hour period.
 - b. The minimum combustion zone temperature for A-51 is 1422 degrees F, averaged over any 3-hour period.
23. The A-50 and A-51 Landfill Gas Flares shall comply with the NMOC emission limit in Regulation 8-34-301.3. (Basis: Cumulative Increase, 8-34-301.3, and 40 CFR 60.752(b)(2)(iii)(B))
- *24. The A-50 and A-51 Landfill Gas Flares shall each achieve a minimum destruction efficiency of 83% by weight for any EPA Hazardous Air Pollutants or any District toxic compounds that are determined to be present in the landfill gas or leachate vapors. (Basis: Toxic Risk Management Policy)
25. Nitrogen oxides (NO_x) emissions from each enclosed flare (A-50 and A-51) shall not exceed 0.06 pounds of NO_x, calculated as NO₂, per million BTU. Compliance with this emission limit may be demonstrated by not exceeding the following flue gas concentration limit: 15 ppmv of NO_x, corrected to 15% oxygen, dry basis. (Basis: RACT and Offsets)
26. Carbon monoxide (CO) emissions from each enclosed flare (A-50 and A-51) shall not exceed 0.30 pounds of CO per million BTU. Compliance with this emission limit may be demonstrated by not exceeding the following flue gas concentration limit: 123 ppmv of CO, corrected to 15% oxygen, dry basis. (Basis: RACT and Cumulative Increase)

VI. Permit Conditions

Condition # 19867

FOR: S-5 REDWOOD LANDFILL WITH GAS COLLECTION SYSTEM; A-18 WATER SPRAYS; A-50 LANDFILL GAS FLARE; AND A-51 LANDFILL GAS FLARE

27. [deleted]
28. [deleted]
29. The Permit Holder shall maintain records of all planned and unanticipated shut downs of the A-50 and A-51 Flares and of any temperature excursions. The records shall include the date, time, duration, and reason for any shut down or excursion. Any unanticipated shut downs or temperature excursions shall be reported to the Enforcement Division immediately. All inspection and maintenance records, records of shut downs and excursions, gas flow records, temperature records, analytical results, source test results, and any other records required to demonstrate compliance with the above permit conditions, Regulation 8 Rule 34, or 40 CFR Part 60 Subpart WWW shall be retained on site for a minimum of five years and shall be made available to District staff upon request. (Basis: 2-6-501, 8-34-501, 40 CFR 60.758)
30. In order to demonstrate compliance with Parts 23, 25, and 26 above, Regulation 8, Rule 34, Sections 301.3 and 412, and 40 CFR 60.8 and 60.752(b)(2)(iii)(B), the Permit Holder shall ensure that a District approved source test is conducted annually on the A-50 Landfill Gas Flare and the A-51 Landfill Gas Flare. Each annual source test shall determine the following:
 - a. landfill gas flow rate to the flare (dry basis);
 - b. concentrations (dry basis) of carbon dioxide (CO₂), nitrogen (N₂), oxygen (O₂), total hydrocarbons (THC), methane (CH₄), and total non-methane organic compounds (NMOC) in the landfill gas;
 - c. stack gas flow rate from the flare (dry basis);
 - d. concentrations (dry basis) of NO_x, CO, NMOC, and O₂ in the flare stack gas;
 - e. NMOC destruction efficiency achieved by the flare;
 - f. NO_x and CO emission rates from the flare in units of pounds per MM BTU,
 - g. average combustion zone temperature in the flare during the test period.

VI. Permit Conditions

Condition # 19867

FOR: S-5 REDWOOD LANDFILL WITH GAS COLLECTION SYSTEM; A-18 WATER SPRAYS; A-50 LANDFILL GAS FLARE; AND A-51 LANDFILL GAS FLARE

The first source test for A-51 shall be conducted no later than 60 days after the initial start-up date for A-51. Each annual source test shall be conducted no earlier than 9 months and no later than 12 months after the previous annual source test. The Source Test Section of the District shall be contacted to obtain approval of the source test procedures at least 14 days in advance of each source test. The Source Test Section shall be notified of the scheduled test date at least 7 days in advance of each source test. The source test report shall be submitted to the Compliance and Enforcement Division and the Source Test Section within 60 days of the test date. (Basis: Cumulative Increase, Toxic Risk Management Policy, RACT, Offsets, Regulations 8-34-301.3, 8-34-412, 40 CFR 60.8 and 40 CFR 60.752(b)(2)(iii)(B))

31. **Landfill Gas Testing:**

- a. The Permit Holder shall conduct a characterization of the landfill gas on a quarterly basis with one test concurrent with one of the annual source tests required by Part 30 above. The landfill gas sample shall be drawn from the main landfill gas header. Each quarterly landfill gas sample shall be analyzed for the sulfur compounds listed below. Once per year (concurrent with a Part 30 annual source test) the landfill gas shall be analyzed for all the organic and sulfur compounds listed below. All concentrations shall be reported on a dry basis. The laboratory analysis report for the annual organic and sulfur compound gas characterization test shall be included with the Part 30 source test report and shall be submitted to the Compliance and Enforcement Division and the Source Test Section within 60 days of the test date. (Basis: Toxic Risk Management Policy and Regulations 8-34-412 and 9-1-302)

VI. Permit Conditions

Condition # 19867

FOR: S-5 REDWOOD LANDFILL WITH GAS COLLECTION SYSTEM; A-18 WATER SPRAYS; A-50 LANDFILL GAS FLARE; AND A-51 LANDFILL GAS FLARE

<u>Organic Compounds</u>	<u>Organic Compounds</u>	<u>Sulfur Compounds</u>
acrylonitrile	ethylene dibromide	carbon disulfide
benzene	fluorotrichloromethane	carbonyl sulfide
carbon tetrachloride	hexane	dimethyl sulfide
chlorobenzene	isopropyl alcohol	ethyl mercaptan
chlorodifluoromethane	methyl ethyl ketone	hydrogen sulfide
chloroethane	methylene chloride	methyl mercaptan
chloroform	perchloroethylene	
1,1 dichloroethane	toluene	
1,1 dichlorethene	1,1,1 trichloroethane	
1,2 dichlorethene	1,1,2,2 tetrachloroethane	
1,4 dichlorbenzene	trichloroethylene	
dichlorodifluoromethane	vinyl chloride	
dichlorofluoromethane	xylene	
ethylbenzene		

- b. Once per week, beginning no later than March 31, 2005, the Permit Holder shall analyze the landfill gas for hydrogen sulfide (H₂S) concentration using a Draeger tube to further demonstrate compliance with Part 18c and Regulation 9-1-302. The landfill gas sample shall be drawn from the main landfill gas header. The Permit Holder shall follow the manufacturer's procedures for using the Draeger tube and interpreting the results. The total reduced sulfur (TRS) content of the landfill gas shall be calculated using the average ratio of TRS/H₂S for this site according to the following equation: $TRS = 1.015 * H_2S$ measured by Draeger tube. The Permit Holder shall maintain records of all Draeger tube test dates and test results and shall summarize the average H₂S concentrations and the calculated TRS content of the landfill gas on a quarterly basis. Each Draeger tube test result (after conversion to TRS content) and the quarterly laboratory analysis in Part 31a shall be compared to the Peak TRS Limit in Part 18c. On a rolling quarterly basis, the Permit Holder shall determine the annual average TRS content for comparison to the Annual Average TRS Limit in Part 18c. (Basis: Cumulative Increase, RACT, and Regulation 9-1-302).

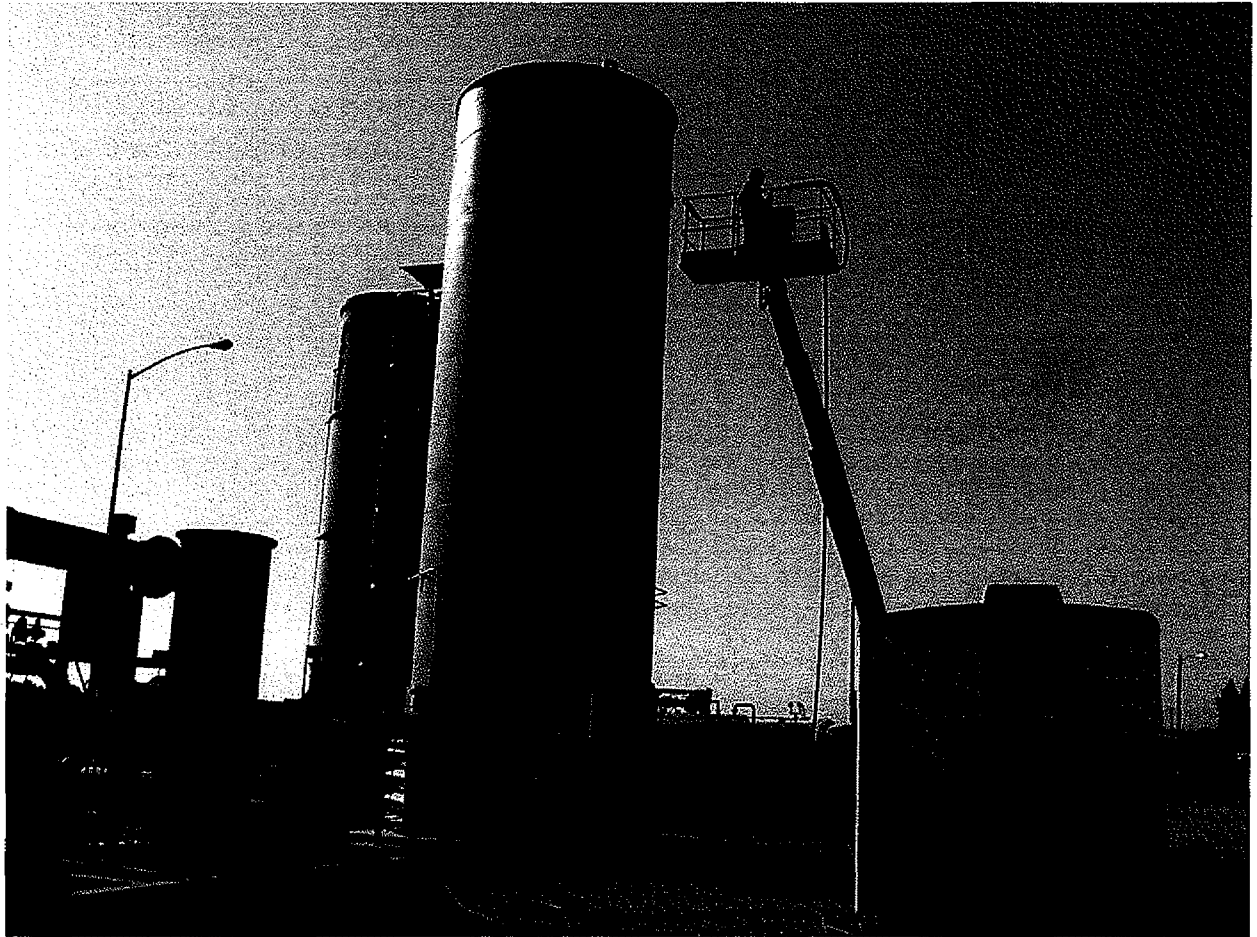
VI. Permit Conditions

Condition # 19867

FOR: S-5 REDWOOD LANDFILL WITH GAS COLLECTION SYSTEM; A-18 WATER SPRAYS; A-50 LANDFILL GAS FLARE; AND A-51 LANDFILL GAS FLARE

32. The annual report required by BAAQMD Regulation 8-34-411 shall be submitted in two semi-annual increments. The reporting period for the first increment of the Regulation 8-34-411 annual report that is submitted subsequent to the issuance of the MFR Permit for this site shall be from December 1, 2003 through April 30, 2004. This first increment report shall be submitted by May 31, 2004. The reporting periods and report submittal due dates for all subsequent increments of the Regulation 8-34-411 report shall be synchronized with the reporting periods and report submittal due dates for the semi-annual MFR Permit monitoring reports that are required by Section I.F of the MFR Permit for this site. A single report may be submitted to satisfy the requirements of Section I.F, Regulation 8-34-411, and 40 CFR Part 63.1980(a), provided that all items required by each applicable reporting requirement are included in the single report. (Basis: Regulation 8-34-411 and 40 CFR Part 63.1980(a))

Appendix G
Site Picture



Redwood Landfill
Flares A-50 and A-51



Redwood Landfill
Flares A-50 and A-51