

**Compliance Test Report  
Determination of  
Tier 2  
Non-methane Organic Compound Concentrations**

**Whitefeather Landfill  
Pinconning, Michigan**

*Prepared for:*

Republic Services of Michigan, IV  
Whitefeather Landfill  
2401 East Whitefeather Road  
Pinconning, MI 48650

*Prepared by:*

Environmental Information Logistics, LLC  
130 E. Main Street  
Caledonia, MI 49316

*September, 2015*



MICHIGAN DEPARTMENT OF ENVIRONMENTAL QUALITY  
AIR QUALITY DIVISION

**RENEWABLE OPERATING PERMIT  
REPORT CERTIFICATION**

Authorized by 1994 P.A. 451, as amended. Failure to provide this information may result in civil and/or criminal penalties.

Reports submitted pursuant to R 336.1213 (Rule 213), subrules (3)(c) and/or (4)(c), of Michigan's Renewable Operating Permit (ROP) program must be certified by a responsible official. Additional information regarding the reports and documentation listed below must be kept on file for at least 5 years, as specified in Rule 213(3)(b)(ii), and be made available to the Department of Environmental Quality, Air Quality Division upon request.

Source Name Whitefeather Landfill County Bay  
Source Address 2401 East Whitefeather Road City Pinconning  
AQD Source ID (SRN) N5985 ROP No. N5985-2013 ROP Section No. 1

Please check the appropriate box(es):

Annual Compliance Certification (Pursuant to Rule 213(4)(c))

Reporting period (provide inclusive dates): From \_\_\_\_\_ To \_\_\_\_\_

- 1. During the entire reporting period, this source was in compliance with ALL terms and conditions contained in the ROP, each term and condition of which is identified and included by this reference. The method(s) used to determine compliance is/are the method(s) specified in the ROP.
- 2. During the entire reporting period this source was in compliance with all terms and conditions contained in the ROP, each term and condition of which is identified and included by this reference, EXCEPT for the deviations identified on the enclosed deviation report(s). The method used to determine compliance for each term and condition is the method specified in the ROP, unless otherwise indicated and described on the enclosed deviation report(s).

Semi-Annual (or More Frequent) Report Certification (Pursuant to Rule 213(3)(c))

Reporting period (provide inclusive dates): From \_\_\_\_\_ To \_\_\_\_\_

- 1. During the entire reporting period, ALL monitoring and associated recordkeeping requirements in the ROP were met and no deviations from these requirements or any other terms or conditions occurred.
- 2. During the entire reporting period, all monitoring and associated recordkeeping requirements in the ROP were met and no deviations from these requirements or any other terms or conditions occurred, EXCEPT for the deviations identified on the enclosed deviation report(s).

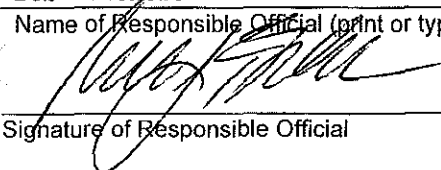
Other Report Certification

Reporting period (provide inclusive dates): From N/A To \_\_\_\_\_

Additional monitoring reports or other applicable documents required by the ROP are attached as described:

Tier 2 Test Report for NSPS Five Year Retest

I certify that, based on information and belief formed after reasonable inquiry, the statements and information in this report and the supporting enclosures are true, accurate and complete

<u>Bob Borchers</u>	<u>General Manager</u>	<u>810-768-2222</u>
Name of Responsible Official (print or type)	Title	Phone Number
		<u>9/9/15</u>
Signature of Responsible Official		Date

\* Photocopy this form as needed.

## **1.0 INTRODUCTION**

In accordance with the New Source Performance Standards for Municipal Solid Waste Landfills (Landfill NSPS), 40 CFR 60, Subpart WWW, Tier 2 landfill gas sampling and analysis was conducted at the Whitefeather Landfill in Pinconning, Michigan. The facility is owned by Republic Services of Michigan IV (Republic). 40 CFR 60.754(a)(3)(iii) requires the landfill owner to retest the site-specific NMOC concentration every five years. The purpose of this report is to document the results of the five year NMOC retest program at the landfill. The tests were performed on August 21, 2015.

A Tier 2 testing workplan was submitted to the Michigan Department of Environmental Quality (MDEQ) on July 14, 2015. The facility had originally proposed a test date of August 18, 2015. However, the landfill gas to energy plant (where the samples were to be taken) was unexpectedly shut down for new pump installations. Robb Moore of Republic contacted Ms. Gina McCann of MDEQ to see if the sampling could be postponed until the plant was brought back on-line on Friday, August 21, 2015. She responded that this was acceptable.

## **2.0 REGULATORY BACKGROUND**

The Whitefeather Landfill began accepting waste in 1991. Approximately 44.6 acres of waste (18.05 hectares) have been in place for at least two years and were suitable for Tier 2 sampling.

To comply with the NSPS the facility submitted an Initial Design Capacity Report and an NSPS Tier 1 calculation report as required by 40 CFR 60.752. Whitefeather Landfill decided to improve the accuracy of the emission calculation by performing Tier 2 landfill gas sampling and analysis to show the facility NMOC emissions may be less than the 50 Mg/year NSPS emission threshold. The Tier 2 NMOC value must be retested every five years in accordance with 40 CFR 60.754(a)(3)(iii).

Based on the sampling results provided in this report, gas collection and control requirements are still not applicable to the facility, since NMOC emissions using the new Tier 2 value do not exceed 50 Mg/yr. The measured site-specific NMOC concentration was determined to be 256 ppm NMOC as hexane. This value was used in the NSPS equation to calculate NMOC emissions of 20.62 Mg/year in 2015.

NMOC emissions are not estimated to exceed 50 Mg/yr for the next five years, using an assumed MSW waste intake rate of 180,000 tons/year. The five year projection is provided in Appendix A of this report. Pursuant to 40 CFR 60.757(b)(1)(ii), the landfill owner or operator may submit a five year report in lieu of annual reports, as long as the actual waste volumes received in subsequent years are less than the estimated projections.

The Tier 2 testing results are valid for five years according to 40 CFR 60.754. A new site-specific NMOC concentration will have to be obtained in 2020.

### **3.0 SAMPLING AND ANALYTICAL PROCEDURES**

#### **3.1 Sample Locations**

The NSPS requires collection of two samples per hectare of landfill surface area in which waste has been in-place for a minimum of two years. At the Whitefeather Landfill, approximately 44.6 acres met the two-year age criteria. These include Cells 1 – 7.

As shown in Figure 1, the existing gas collection system (GCS), consisting of vertical gas extraction wells, provides coverage for the entire 44.6 acres eligible for Tier 2 sampling. The required three samples from the main header in the Landfill Gas to Energy Plant were collected for Tier 2 sampling. An additional sample was collected as a spare.

Actual sampling locations at the header pipe in the gas plant are shown on the map on Figure 1.

#### **3.2 Analysis**

The samples were collected from the header at a flow rate of less than 500 ml/min. A six liter summa canister was utilized for each of the main header samples. Each summa canister was half filled with helium so that the samples could be safely shipped as non-hazardous. The methane, carbon dioxide, and oxygen levels were measured with an Elkins Earthworks Envision meter. The balance gas level was estimated by difference from 100% of the other constituents to assure the samples were valid in the field (less than 5 percent O<sub>2</sub> or 20 percent N<sub>2</sub>). Ambient temperature and barometric pressure was also measured with a portable weather station prior to sampling, and recorded (see Table 1).

Analysis was performed at the Triangle Environmental Services, Inc. laboratory in Research Triangle Park, North Carolina. All three samples were analyzed for oxygen and nitrogen (following Method 3C). The three initial header samples collected from the active system showed concentrations of oxygen below 5% and nitrogen concentrations below 20%; thus they were all suitable for Method 25C analysis and were all included in the final average for the landfill. The fourth canister was therefore not analyzed. Each sample was also analyzed for methane, carbon dioxide and NMOC (following Method 25C). NMOC results are reported as carbon, and must be divided by six to obtain NMOC values as hexane for use in the emissions equation. A schematic of the Method 25C sampling train is found in Figure 2.

#### **4.0 RESULTS**

Samples cannot contain oxygen and nitrogen above the acceptable thresholds (i.e. greater than 5% oxygen or greater than 20% nitrogen). All samples were acceptable for use in the calculations. Laboratory analytical data is provided in Appendix B. A summary of laboratory results is shown in Table 2.

The average NMOC value for the site was 256 parts per million (ppm) as hexane for the areas of the landfill older than two years and covered by the active gas collection system. The equation provided in 40 CFR 60.754(b) was used to calculate Tier 2 emissions (Appendix A). Actual values for degradable wastes such as MSW and yard waste were utilized for annual waste receipts. The NSPS allows facilities to exclude non-degradable wastes from Tier 2 calculations, as long as the volume of material is documented.

The NMOC emission rate of 20.62 Mg/yr for the year 2015 is below the 50 Mg/year trigger for installation of gas collection and control systems. The Tier 2 sampling results (Appendix B) are valid for five years (until 2020). At that time, a new Tier 2 value will need to be obtained.

Appendix A also contains the calculations for projected yearly uncontrolled NMOC emissions for the next five years, as permitted by 40 CFR 60.757(b)(1)(ii). Again, based on the projected waste intake rates, emissions of NMOC stay below 50 Mg/year for the next five years at 27.38 Mg/year in 2020. The facility will compare actual MSW waste received each year against the projected volume of 180,000 tons/year to verify that the five year calculation is still valid.

These emissions are also below the control trigger value of 34 Mg/year NMOC proposed by USEPA in a recently published draft change to the Landfill EG rules on August 14, 2015 (note – Landfill EG sites, per the revised draft rule, would be those that have not received landfill expansions after July 17, 2014, such as Whitefeather). The Tier 2 test results should therefore remain valid until August 21, 2020.

# ***TABLES***

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**Table 1: Whitefeather Landfill  
Tier 2 Sampling Field Data Collected August 21, 2015  
Pinconning, Michigan**

Sample #	Canister #	Barometric Pressure (inches w.c.)	Ambient Temperature (°F)	Weather	Sample Temperature (°F)	Plant Flow During Sampling	
						Time	Plant Flow (scfm)
1	6102	29.93	70	Clear	60		
Gas Quality Check	Time	%CH4	%CO2	%O2	% Bal. Gas	10:43	794
	10:39	53.2	37.4	0.6	8.8	10:48	773
Leak Check	Vac.	Time	Vac.	Time		10:51	787
	-9.5	10:40	-9.5	10:42		10:54	782
Sample	Sample Date	Sample Time	Initial Vac. (inches w.c.)	Sample End Time	End Vac. (inches w.c.)	10:58	784
	8/21/2015	10:43	-16.5	11:02	-4	11:02	787

Sample #	Canister #	Barometric Pressure (inches w.c.)	Temperature (°F)	Weather	Sample Temperature (°F)	Plant Flow During Sampling	
						Time	Plant Flow (scfm)
2	6124	29.93	70	Clear	60		
Gas Quality Check	Time	%CH4	%CO2	%O2	% Bal. Gas	11:09	793
	11:06	53.2	37.9	0.7	8.3	11:12	785
Leak Check	Vac.	Time	Vac.	Time		11:15	782
	-11	11:07	-11	11:09		11:18	804
Sample	Sample Date	Sample Time	Initial Vac. (inches w.c.)	Sample End Time	End Vac. (inches w.c.)	11:22	775
	8/21/2015	11:09	-17	11:28	-4	11:28	793

Sample #	Canister #	Barometric Pressure (inches w.c.)	Temperature (°F)	Weather	Sample Temperature (°F)	Plant Flow During Sampling	
						Time	Plant Flow (scfm)
3	6137	29.94	71	Clear	60		
Gas Quality Check	Time	%CH4	%CO2	%O2	% Bal. Gas	11:33	771
	11:30	53.3	37	0.8	8.8	11:37	784
Leak Check	Vac.	Time	Vac.	Time		11:40	803
	-10.5	11:31	-10.5	11:33		11:43	764
Sample	Sample Date	Sample Time	Initial Vac. (inches w.c.)	Sample End Time	End Vac. (inches w.c.)	11:46	769
	8/21/2015	11:33	-16.75	11:52	-4	11:52	799

Sample #	Canister #	Barometric Pressure (inches w.c.)	Temperature (°F)	Weather	Sample Temperature (°F)	Plant Flow During Sampling	
						Time	Plant Flow (scfm)
4	6159	29.93	71	Clear	60		
Gas Quality Check	Time	%CH4	%CO2	%O2	% Bal. Gas	11:56	780
	11:54	53.1	37.8	0.8	8.3	12:00	791
Leak Check	Vac.	Time	Vac.	Time		12:03	772
	-10.5	11:54	-10.5	11:56		12:07	794
Sample	Sample Date	Sample Time	Initial Vac. (inches w.c.)	Sample End Time	End Vac. (inches w.c.)	12:11	772
	8/21/2015	11:56	-16.5	12:15	-4	12:15	774



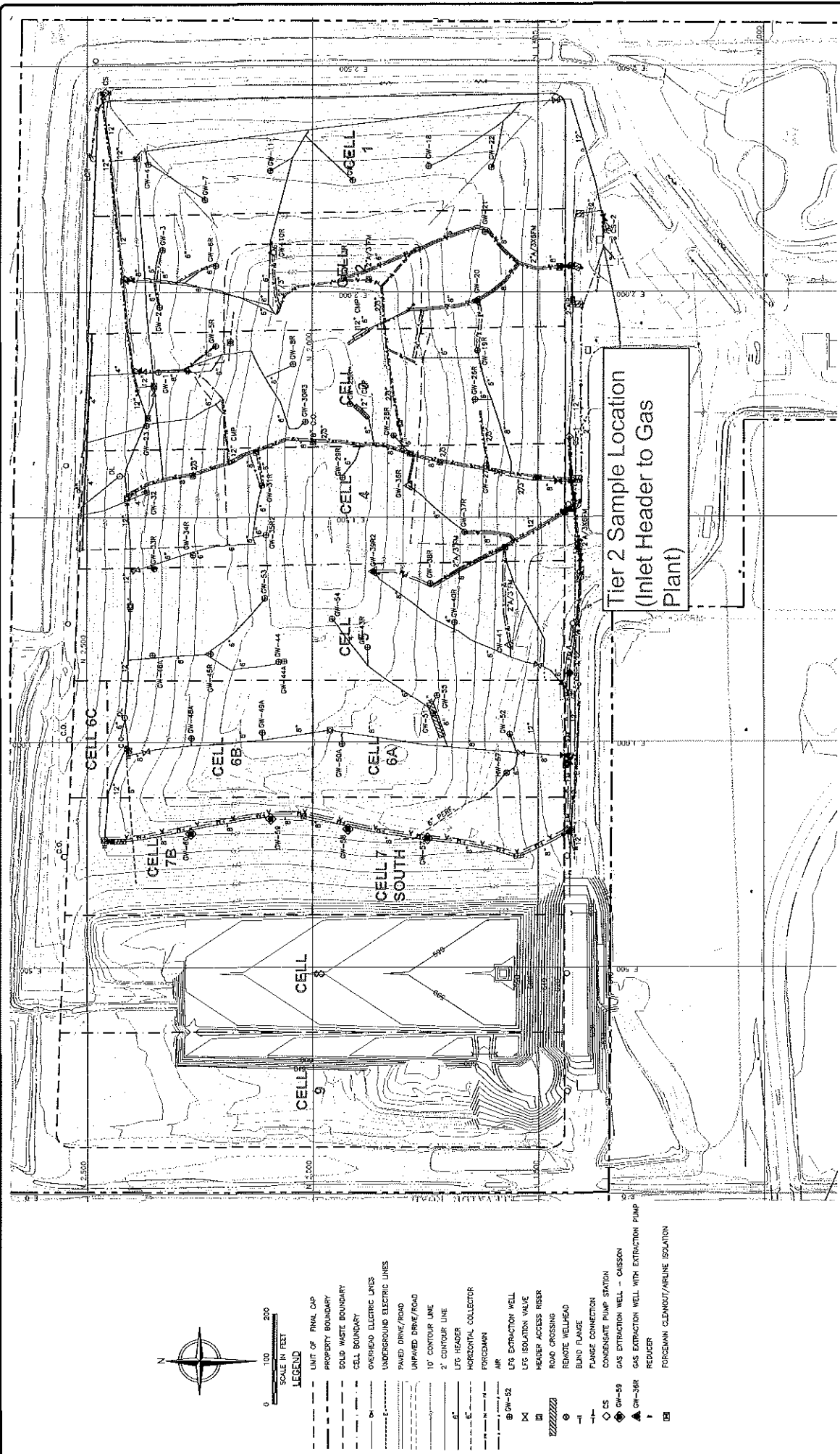
**Table 2: Whitefeather Landfill  
Summary of Method 25C and Method 3C Data**

ID	Sample Location Description	CH4 (%)	CO2 (%)	O2 (%)	N2 (%)	NMOC ppm (As Carbon)	NMOC ppm (As Hexane)	Sample Canister#
WFL Tier 2 #1	Main Header to Plant	52.7%	38.2%	0.9%	9.2%	1425	238	6102
WFL Tier 2 #2		52.2%	37.9%	0.8%	9.0%	1754	292	6124
WFL Tier 2 #3		52.3%	37.9%	0.8%	8.9%	1434	239	6137
Average						1537.7	256	

Notes: NMOC Results corrected for the presence of air.

## ***FIGURES***

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RECORD DRAWINGS  
 SHEET NO. **2**  
 PROJECT NO. 180689

REPUBLIC SERVICES OF MICHIGAN IV, LLC  
 PINNACONING TOWNSHIP, BAY COUNTY, MI  
 2015 LFG COLLECTION SYSTEM  
 SITE PLAN

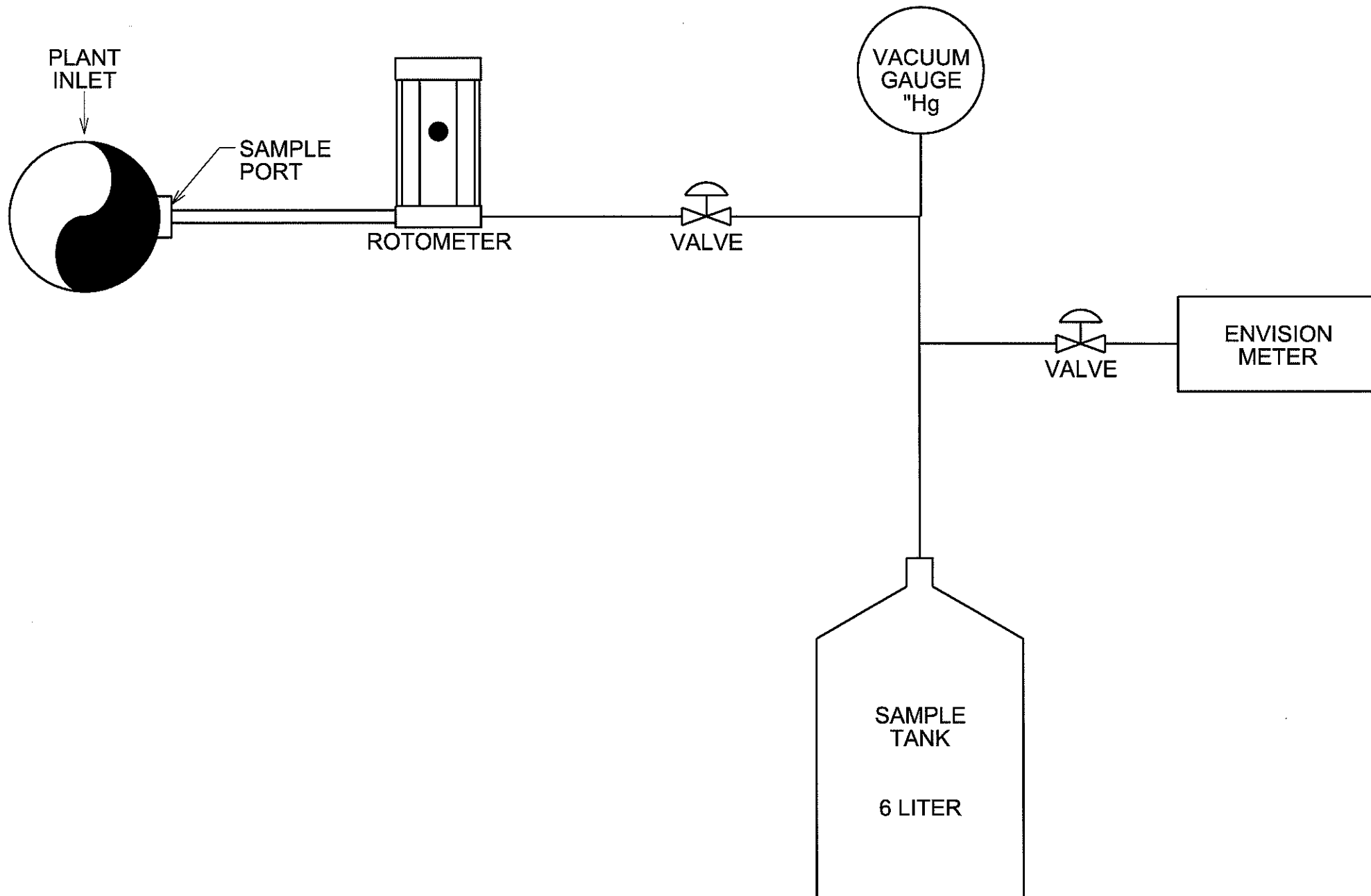
**cornerstone**  
 environmental  
 CORNERSTONE ENVIRONMENTAL GROUP, LLC  
 10000 WOODLAND DRIVE, SUITE 100  
 WOODLAND, MI 48091  
 PHONE: (248) 859-1000  
 FAX: (248) 859-1001  
 WWW: WWW.CORNERSTONE-ENV.COM

REV.	DATE	DESCRIPTION	BY	CHK BY	APP BY
1	03/24/15	ISSUE FOR PERMIT	JAW	SWW	SWW
2	05/07/15	REVISED BY	JAW	SWW	SWW

FIGURE 1: Tier 2 Sampling Location

NOTES:  
 1. TOPOGRAPHIC MAP OF SITE PROVIDED BY COOPER AERIAL SURVEYS, CO. DATE OF PHOTOGRAPHY: 03/24/15.  
 2. CONTOURS WITHIN CELL 8 REPRESENT DESIGN SUBGRADE ELEVATIONS.

- SCALE IN FEET: 0 100 200
- LEGEND**
- LIMIT OF FINAL CUP
  - PROPERTY BOUNDARY
  - SOLID WASTE BOUNDARY
  - CELL BOUNDARY
  - OVERHEAD ELECTRIC LINES
  - UNDERGROUND ELECTRIC LINES
  - PAVED DRIVE/ROAD
  - UNPAVED DRIVE/ROAD
  - 10' CONTOUR LINE
  - 2' CONTOUR LINE
  - LFG HEADER
  - HORIZONTAL COLLECTOR
  - FOREGEMAN
  - AIR
  - LFG EXTRACTION WELL
  - LFG ISOLATION VALVE
  - HEADER ACCESS RISER
  - ROAD CROSSING
  - RELIEF WELL/HEAD
  - BLIND FLANGE
  - FLANGE CONNECTION
  - CONDENSATE PUMP STATION
  - GAS EXTRACTION WELL - CAISSON
  - GAS EXTRACTION WELL WITH EXTRACTION PUMP
  - REDUCER
  - FOREGEMAN CLEANOUT/AIRLINE ISOLATION



PREPARED BY



060908

FIGURE 2

TOTAL NON-METHANE  
 ORGANIC COMPOUND SAMPLING TRAIN  
 REPUBLIC SERVICES OF MICHIGAN IV, LLC  
 WHITEFEATHER LANDFILL  
 PINCONNING TOWNSHIP, BAY COUNTY, MICHIGAN JULY 2015