



**Oaks Landfill
Landfill Gas Monitoring Report
4th Quarter 2015
October 2015 – December 2015**



Presented to:
Montgomery County
Department of Environmental Protection
Division of Solid Waste Services
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Oaks Landfill

Landfill Gas Monitoring Report

Fourth Quarter 2015
(October 2015 – December 2015)

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For the:

Oaks Landfill
6001 Olney-Laytonsville Road
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Presented To:

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January 10th, 2016

Table of Contents

Section	Page
1 Background.....	1
2 Subsurface Methane Monitoring.....	1
3 Explosive Gas Monitoring within On-Site Structures.....	2

List of Tables

Table 1 – Summary of Quarterly Subsurface Methane Monitoring

1 Background

The Montgomery County Department of Environmental Protection (DEP), Division of Solid Waste Services (DSWS) is responsible for the post-closure care and maintenance of the Oaks Landfill. The Landfill property is nearly 545 acres, with a waste disposal footprint of approximately 170 acres. The Landfill operated from 1982-1995 (in receiving mixed municipal solid waste) and 1995-1997 (in receiving ash residue) from the County's Waste-to-Energy Facility (Resource Recovery Facility) and other non-processible (non-burnable) materials. The Landfill was closed in 2001 in accordance with Environmental Protection Agency (EPA) Subtitle D requirements of the Resource Conservation and Recovery Act (RCRA). The Oaks Landfill is located at 6001 Olney-Laytonsville Road, Laytonsville, Maryland 20882.

This Landfill Gas (LFG) Monitoring Report has been prepared in accordance with the Oaks Landfill Closure and Post-Closure Care Plan that was submitted to the Maryland Department of the Environment (MDE) on January 31, 2001 by DEP. In addition, existing field procedures were updated for this monitoring event from the Updated Environmental Monitoring Plan that was submitted to MDE on January 17, 2012 by DEP.

The existing Closure and Post-Closure Care Plan (and future Environmental Monitoring Plan) requires quarterly LFG monitoring of the monitoring wells/probes located along the perimeter property boundary of the Oaks Landfill and within on-site structures. LFG monitoring is performed to assess the potential for subsurface migration of LFG, specifically, for the presence of methane gas beyond the landfill property.

The regulatory standard concerning the collection and monitoring of explosive gases (i.e. methane) at solid waste landfills in Maryland is established in the Code of Maryland Regulations (COMAR) Title 26, Subtitle 4, Chapter 7, Part 03B(9) – COMAR 26.04.07.03B(9) – “A *facility* may not be designed or operated in such a manner that the concentration of explosive gases generated by the facility exceeds 25 percent of the lower explosive limits for the gases in facility structures, excluding gas control or recovery system components, and the lower explosive limit for the gases at the property boundary.” According to this standard, methane concentrations resulting from the presence of LFG in on-site structures at Oaks Landfill cannot exceed 25 percent of the lower explosive limit (LEL) (1.25 percent by volume), and methane concentrations cannot exceed 100 percent of the LEL (5.00 percent by volume) at the Oaks Landfill property boundary.

2 Subsurface Methane Monitoring

The Oaks Landfill currently maintains twenty five (25) permanent landfill gas monitoring wells that are used for compliance with explosive gas requirements in COMAR. The monitoring wells contain single depth probes that are located along the perimeter property boundary of the Landfill. The monitoring wells provide a media through which LFG can be measured from the adjacent waste fill area. The monitoring wells are identified on **Figure 1 – Landfill Gas Monitoring Well Locations**.

On December 15, 2015, CB&I Staff performed the Fourth Quarter 2015 (October – December 2015) monitoring event of the LFG monitoring wells along the Oaks Landfill property boundary. CB&I Staff used a GEM 5000 from Landtec to conduct the monitoring activities. The GEM 5000 measures methane (% vol.), carbon dioxide (% vol.), oxygen (% vol.) and gas balance (% vol.). CB&I Staff recorded the peak measurement of methane concentration (taken after 60 seconds of well purging) as well as relative pressure. For LFG monitoring compliance purposes, level measurements for methane, carbon dioxide, oxygen, and balanced gas were recorded (taken after 180 seconds of well purging).

For a summary of the quarterly LFG monitoring data using the level measurements, refer to **Table 1 – Summary of Quarterly Subsurface Methane Monitoring**.

No methane exceedances were found in the LFG monitoring wells during this quarterly monitoring event.

3 Explosive Gas Monitoring Within On-Site Structures

At the Oaks Landfill, seven (7) on-site structures are monitored for the presence of explosive gas as part of the quarterly LFG monitoring event:

1. Maintenance Building (hallway, front office, large side office, men's room, women's room, storage room, records storage room, and garage).
2. Security Guard Shack.
3. Monitoring Well Maintenance Shed.
4. Landfill Gas Flare Station.
5. Landfill Gas-to-Energy Switchgear Enclosure.
6. Landfill Gas-to-Energy Equipment Storage Building.
7. Leachate Pretreatment Plant (Control Room, Lab, Restroom, Mechanical Room, and Equipment Area).

On December 15, 2015, CB&I Staff performed the Fourth Quarter 2015 (October – December 2015) monitoring event of the on-site structures at the Oaks Landfill. Using the GEM 5000 and a Combustible Gas Monitor with sample pump, CB&I conducted methane monitoring inside the on-site structures located at the Oaks Landfill. The GEM 5000 measures methane (% vol.), carbon dioxide (% vol.), oxygen (% vol.), and gas balance (% vol.). The Combustible Gas Monitor measures CH₄ (ppm) and O₂ (% volume). CB&I Staff walked through the interiors of the structures and monitored the perimeter wall interface, floor to wall interface in hallways and rooms, floor penetrations, and other likely potential gas pathways as well as the exterior perimeter of the structures.

No combustible gas (e.g. methane) was detected in any of the seven (7) on-site structures at the Oaks Landfill during the quarterly monitoring event.

TABLE 1

SUMMARY OF QUARTERLY SUBSURFACE METHANE MONITORING

TABLE 1
SUMMARY OF QUARTERLY SUBSURFACE METHANE MONITORING
(December 15, 2015)

Monitoring Well Name	CH₄ %vol	CO₂ %vol	O₂ %vol	Balance (%vol)	Relative Pressure (in. H₂O)
MW2	0.0	4.2	16.8	79	0.21
MW1	0.0	1.8	18.5	79.7	0.1
MW3	0.0	0	20.7	79.3	0.09
MW3A	0.0	3.2	18.5	78.3	0.53
MW4	0.0	1.5	20.1	78.4	-0.06
MW5	0.0	2.5	19.7	77.8	0.16
MW8A	0.0	6.8	14.6	78.6	-0.03
MW8	0.0	1.6	19.5	78.9	0
MW7	0.0	0.1	21	78.9	0.08
MW6	0.0	1	19.9	79.1	0.12
MW8B	0.0	6.7	15	78.3	0
MW9	0.0	4.9	15	80.1	0.14
MW10	0.0	0.1	20.9	79	0.1
MW11	0.0	7.8	14.2	78	0
MW12	0.0	9.4	11.8	78.8	1.86
MW13	0.0	3.9	15.7	80.4	0.2
MW14	0.0	0.9	20.2	78.9	0.1
MW15	0.0	15.6	7.1	77.3	4.95
MW16	0.0	0.6	20.1	79.3	0.12
MW17	0.0	0.1	21.1	78.8	0.11
MW18	0.0	7.5	14	78.5	0.16
MW19	0.0	1.2	17.7	81.1	1.34
MW20	0.0	7.2	12.6	80.2	18.55
MW21	0.0	8.2	0.6	91.2	4.35
MW22	0.0	3.6	18.2	78.2	0.13

Note 1. % vol. = Percent by Volume

Note 2. in. H₂O. = Inches of Water



EXPLOSIVE GAS MONITORING PROBE REPORT

NAME OF SANITARY LANDFILL: Oaks/ Montgomery County	LOCATION: 6001 Olney Laytonsville Rd Laytonsville, MD 20882
TEST DONE BY: Jason Martin	DATE: 12/15/2015
GAS SENSING DEVICE: Landtec GEM	MODEL NO: 5000
DATE LAST CALIBRATED: 12/15/2015	

CALIBRATION GAS: 50% CH₄, 35% CO₂, 4% O₂

PRESSURE SENSING DEVICE: Landtec GEM	MODEL NO: 5000
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AMBIENT AIR TEMPERATURE: 67 °	RELATIVE HUMIDITY: 59	AMBIENT BAROMETRIC PRESSURE: 29.74
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OBSERVED WEATHER CONDITIONS: Clear	WIND: 11 mph	PRECIPITATION (LAST 24 HRS): 0.05in
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PROBE NO.	Time	LEL (%)	CH ₄ Initial (%)	CH ₄ Sustain (%)	CH ₄	CO ₂	O ₂	Bal	Relative Pressure ("WC)	COMMENTS
MW2	2:10 PM	0.0	0.0	0.0	0.0	4.2	16.8	79	0.21	
MW1	2:17 PM	0.0	0.0	0.0	0.0	1.8	18.5	79.7	0.1	
MW3	2:21 PM	0.0	0.0	0.0	0.0	0	20.7	79.3	0.09	
MW3A	2:25 PM	0.0	0.0	0.0	0.0	3.2	18.5	78.3	0.53	
MW4	2:35 PM	0.0	0.0	0.0	0.0	1.5	20.1	78.4	-0.06	
MW5	2:38 PM	0.0	0.0	0.0	0.0	2.5	19.7	77.8	0.16	
MW8A	2:41 PM	0.0	0.0	0.0	0.0	6.8	14.6	78.6	-0.03	
MW6	2:52 PM	0.0	0.0	0.0	0.0	1	19.9	79.1	0.12	
MW7	2:55 PM	0.0	0.0	0.0	0.0	0.1	21	78.9	0.08	
MW8	2:58 PM	0.0	0.0	0.0	0.0	1.6	19.5	78.9	0	
MW8B	3:03 PM	0.0	0.0	0.0	0.0	6.7	15	78.3	0	
MW9	3:06 PM	0.0	0.0	0.0	0.0	4.9	15	80.1	0.14	
MW10	3:09 PM	0.0	0.0	0.0	0.0	0.1	20.9	79	0.1	
MW11	3:13 PM	0.0	0.0	0.0	0.0	7.8	14.2	78	0	
MW12	3:16 PM	0.0	0.0	0.0	0.0	9.4	11.8	78.8	1.86	
MW13	3:17 PM	0.0	0.0	0.0	0.0	3.9	15.7	80.4	0.2	
MW14	3:29 PM	0.0	0.0	0.0	0.0	0.9	20.2	78.9	0.1	
MW15	3:38 PM	0.0	0.0	0.0	0.0	15.6	7.1	77.3	4.95	
MW16	3:42 PM	0.0	0.0	0.0	0.0	0.6	20.1	79.3	0.12	
MW17	3:46 PM	0.0	0.0	0.0	0.0	0.1	21.1	78.8	0.11	
MW18	3:48 PM	0.0	0.0	0.0	0.0	7.5	14	78.5	0.16	
MW19	3:51 PM	0.0	0.0	0.0	0.0	1.2	17.7	81.1	1.34	
MW20	3:55 PM	0.0	0.0	0.0	0.0	7.2	12.6	80.2	18.55	
MW21	3:59 PM	0.0	0.0	0.0	0.0	8.2	0.6	91.2	4.35	
MW22	4:02 PM	0.0	0.0	0.0	0.0	3.6	18.2	78.2	0.13	

COMMENTS: