



Utility Flare Visible Emissions Test Report

**Oakland Heights Development, Inc.**  
Auburn Hills, Michigan

January 24, 2023

*Prepared for:*  
**Oakland Heights Development Inc.**  
2350 Brown Road  
Auburn Hills, Michigan 48326

*Prepared by:*  
**Environmental Information Logistics, LLC**  
130 East Main Street  
Caledonia, Michigan 49316



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**EXECUTIVE SUMMARY**

Oakland Heights Development, Inc. retained Environmental Information Logistics, LLC. (EIL) to conduct a Method 22 visible emissions test of the utility (open) flare located at Oakland Heights Development in Auburn Hills, Michigan.

The purpose of the test was to demonstrate that the utility flare meets the performance requirements of 40 Code of Federal Regulations (CFR), §60.18(f), and thus is also in compliance with 40 CFR 60.18(c)(1), in addition to R 336.1213(3), R 336.2001, R 336.2003, and R 336.2004 of the Oakland Heights Development, Inc. Renewable Operating Permit (ROP).

EIL conducted the fieldwork on December 13, 2022, in accordance with the Test Plan, dated October 10, 2022. Mr. Benjamin Kotrba conducted the test. Mr. Chris Glover with Monitoring Control and Compliance, Inc. provided on-site coordination of the test with landfill operations. The table below provides the parameter tested, applicable requirement, and the results of the testing.

Parameter	Applicable Requirement	Average Test Result
Flare Exhaust Smoke Emissions (Visual Emissions in a 2-hour Period)	<5 minutes over 2 hours <sup>1</sup>	0 minutes, 28 seconds

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<sup>1</sup> 40 CFR 60.18(c)(1)

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## 1.0 INTRODUCTION

Oakland Heights Development Inc. (OHD) retained Environmental Information Logistics, LLC. (EIL) to conduct a visible emission test of the utility (open) flare located at Oakland Heights Development in Auburn Hills, Michigan. The utility flare controls landfill gas (LFG) emissions from the municipal solid waste landfill.

The purpose of the test was to demonstrate that the utility flare meets the performance requirements of 40 Code of Federal Regulations (CFR), §60.18(f), and thus is also in compliance with 40 CFR 60.18(c)(1), in addition to R 336.1213(3), R 336.2001, R 336.2003, and R 336.2004 of the Oakland Heights Development, Inc. Renewable Operating Permit (ROP).

EIL conducted the test with methodologies outlined in 40 CFR 60.18.

EIL conducted the fieldwork on December 13, 2022, in accordance with the Test Plan, dated October 10, 2022. Mr. Benjamin Kotrba of EIL conducted the test. Mr. Chris Glover with Monitoring Control and Compliance, Inc. provided on-site coordination of the test with landfill operations. A test plan was originally submitted to EGLE on October 11, 2022. Due to a delivery error the test plan was resubmitted on November 7, 2022. The plan received approval on December 9, 2022.

The name, address, and telephone number of the primary contact for further information about the tests and this test report is:

<b>Name and Title</b>	<b>Company</b>	<b>Telephone</b>
Mr. Benjamin Kotrba Environmental Scientist	Environmental Information Logistics, LLC. 707 S Chilson Street, Bay City, Michigan, 48706	(989) 415-3741

The name, address, and telephone number of the primary contact for further information about the flare and associated operations is:

<b>Name and Title</b>	<b>Company</b>	<b>Telephone</b>
Mr. Robb Moore, P.E. Environmental Manager	Oakland Heights Development, Inc. 2350 Brown Road Auburn Hills, Michigan 48439	(810) 655-6906

## 2.0 SUMMARY OF RESULTS

The test results were:

- 1) visible emissions: 0 minutes, 28 seconds (accumulated, total),

The performance criteria are less than 5 minutes visible emissions in a 2-hour period.

The test results demonstrate that the utility flare meets the performance requirements of 40 CFR §60.18, and thus also satisfies the requirements of 40 CFR 60.18(c)(1), in addition to R 336.1213(3), R 336.2001, R 336.2003, and R 336.2004 of the Oakland Heights Development, Inc. Renewable Operating Permit (ROP).

## 3.0 SOURCE DESCRIPTION

OHD is a municipal solid waste (MSW) landfill. Anaerobic bacteria decompose the emplaced waste. The primary by-products of decomposition are methane (~45-55%, typical) and carbon dioxide (~40-45%, typical), with the remainder balance gases nitrogen, oxygen, and trace amounts of non-methane organic compounds.

OHD employs a gas collection and control system to meet the requirements of Subpart OOO and AAAA. Gas collection wells are installed in a grid pattern about the landfill. The wells are connected to a common header system. A blower produces a vacuum on the well field. Collected gas is routed to a third-party gas developer. The utility flare is used to control landfill gas emissions in the event the gas developer experiences downtime.

OHD conducted an initial performance test on September 28, 2015. The flare is designed to meet the requirements of 63.1959(b)(2)(iii) at a flow rate up to 5,100 scfm. The landfill gas flow is variable and depends on gas production in the landfill. The composition of the landfill gas varies, but the average Method 3C values obtained on September 28, 2015, may be considered 'typical:' methane, 54.20%; carbon dioxide, 42.13%; oxygen, 0.31%; and nitrogen, 1.99%.

The utility flare is equipped with a thermocouple to monitor for the presence of a flame. The utility flare is equipped with an automatic shutdown that activates if the presence of flame cannot be verified by the sensor.

#### 4.0 TEST PROCEDURES

EIL conducted measurements in accordance with USEPA Reference Test Methods, as presented in 40 CFR 60, Appendix A. The method used in the test program are listed in the table below.

<u>Sample Method</u>	<u>Parameter</u>	<u>Analysis</u>
USEPA Method 22	Visible Emissions	Field Observation

#### 4.1 Visual Determination of Fugitive Emissions from Material Sources and Smoke Emissions from Flares (Method 22)

EIL conducted a single, 120-minute, non-continuous observation of the utility flare exhaust for smoke emissions. EIL observed continuously for 20 minutes, then took a break for at least 5 – but no more than 10 minutes, and then resumed observation in this pattern until a full 120-minute period of observation time had accrued. A copy of the Method 22 observation data is presented in Appendix A.

#### 5.0 RESULTS AND DISCUSSION

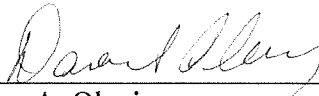
On December 13, 2022, EIL observed an accumulated total of 0 minutes, 28 seconds of visible emissions from the utility flare exhaust. The limit for visible emissions is less than 5 minutes per 2-hour time period [60.18(c)(1)].

EIL did not note any variations and/or anomalies in normal sample collection procedures.

EIL did not note any control equipment upset conditions over the test period.

Raw field data used in the determination of the utility flare visible emissions observation data are presented in Appendix A.

This report prepared by:   
Benjamin A. Kotrba  
Environmental Scientist

This report reviewed by:   
Dana A. Oleniacz  
Senior Project Manager

January 24, 2023

**APPENDIX A  
FIELD AND CALCULATED DATA SHEETS**

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FUGITIVE OR SMOKE EMISSION INSPECTION  
OUTDOOR LOCATION

Company *Republic Services of Michigan*  
Location *Oakland Heights development*  
Company Rep. *Robb Moore*

Observer *Ben Kotrba*  
Affiliation *E/L*  
Date *12/13/22*

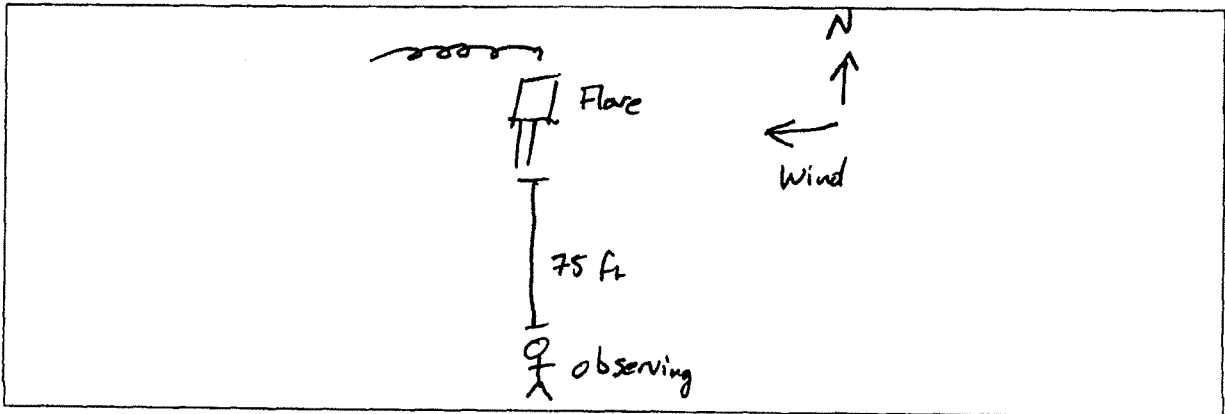
Sky Conditions *Cloudy / overcast*  
Precipitation *None*

Wind Direction *E*  
Wind Speed *7 mph*

Industry  
*Landfill*

Process Unit  
*Flare*  
Flow @ Start  $\approx$  *3700 scfm*  
Flow @ End  $\approx$  *3610 scfm*

Sketch process unit: indicate observer position relative to source; indicate potential emission points and/or actual emission points.



OBSERVATIONS

	Clock Time	Observation period duration, minutes:seconds	Accumulated emission time, minutes:seconds
Begin Observation	<i>10:30</i>	<i>20:00</i>	<i>00:10</i>
To complete this form, record the following:	<i>10:55</i>	<i>20:00</i>	<i>00:15</i>
• the initial clock time	<i>11:24</i>	<i>20:00</i>	<i>00:18</i>
• the total time of the observation (from SW1)	<i>11:50</i>	<i>20:00</i>	<i>00:20</i>
• the total time of emissions (from SW2), and	<i>12:15</i>	<i>20:00</i>	<i>00:23</i>
• the final clock time.	<i>12:40</i>	<i>20:00</i>	<i>00:28</i>
For more details on recording this data and taking breaks, see #7 and #10 above.			
End Observation	<i>13:00</i>	<i>120:00</i>	<i>00:28</i>

Oakland Heights Development, Inc.  
Flow Recorder Data from 12/13/22 VE Test

Date	Time	FLARE FLOW	FLARE TEMP
		SCFM	F
2022/12/13	10:26:00	3771.00	1049.00
2022/12/13	10:28:00	3749.00	1027.00
2022/12/13	10:30:00	3760.00	1066.00
2022/12/13	10:32:00	3783.00	1064.00
2022/12/13	10:34:00	3790.00	1049.00
2022/12/13	10:36:00	3763.00	1034.00
2022/12/13	10:38:00	3770.00	1048.00
2022/12/13	10:40:00	3767.00	1017.00
2022/12/13	10:42:00	3762.00	983.00
2022/12/13	10:44:00	3756.00	1014.00
2022/12/13	10:46:00	3777.00	1019.00
2022/12/13	10:48:00	3746.00	1033.00
2022/12/13	10:50:00	3762.00	951.00
2022/12/13	10:52:00	3728.00	1018.00
2022/12/13	10:54:00	3744.00	1043.00
2022/12/13	10:56:00	3759.00	1032.00
2022/12/13	10:58:00	3743.00	1039.00
2022/12/13	11:00:00	3734.00	974.00
2022/12/13	11:02:00	3747.00	1038.00
2022/12/13	11:04:00	3752.00	1001.00
2022/12/13	11:06:00	3753.00	1044.00
2022/12/13	11:08:00	3747.00	1022.00
2022/12/13	11:10:00	3746.00	964.00
2022/12/13	11:12:00	3760.00	967.00
2022/12/13	11:14:00	3745.00	1020.00
2022/12/13	11:16:00	3733.00	1041.00
2022/12/13	11:18:00	3736.00	1032.00
2022/12/13	11:20:00	3531.00	989.00
2022/12/13	11:22:00	3508.00	932.00
2022/12/13	11:24:00	3583.00	917.00
2022/12/13	11:26:00	3610.00	840.00
2022/12/13	11:28:00	3567.00	904.00
2022/12/13	11:30:00	3580.00	823.00
2022/12/13	11:32:00	3601.00	937.00
2022/12/13	11:34:00	3580.00	939.00
2022/12/13	11:36:00	3585.00	926.00
2022/12/13	11:38:00	3587.00	957.00
2022/12/13	11:40:00	3579.00	910.00
2022/12/13	11:42:00	3599.00	949.00
2022/12/13	11:44:00	3600.00	947.00
2022/12/13	11:46:00	3593.00	894.00
2022/12/13	11:48:00	3579.00	830.00
2022/12/13	11:50:00	3598.00	710.00
2022/12/13	11:52:00	3576.00	785.00
2022/12/13	11:54:00	3583.00	911.00

Oakland Heights Development, Inc.  
Flow Recorder Data from 12/13/22 VE Test

2022/12/13	11:56:00	3590.00	940.00
2022/12/13	11:58:00	3580.00	849.00
2022/12/13	12:00:00	3607.00	868.00
2022/12/13	12:02:00	3575.00	888.00
2022/12/13	12:04:00	3602.00	893.00
2022/12/13	12:06:00	3569.00	919.00
2022/12/13	12:08:00	3592.00	922.00
2022/12/13	12:10:00	3564.00	918.00
2022/12/13	12:12:00	3613.00	863.00
2022/12/13	12:14:00	3570.00	840.00
2022/12/13	12:16:00	3592.00	810.00
2022/12/13	12:18:00	3572.00	838.00
2022/12/13	12:20:00	3583.00	792.00
2022/12/13	12:22:00	3600.00	868.00
2022/12/13	12:24:00	3588.00	947.00
2022/12/13	12:26:00	3607.00	886.00
2022/12/13	12:28:00	3583.00	927.00
2022/12/13	12:30:00	3599.00	823.00
2022/12/13	12:32:00	3599.00	902.00
2022/12/13	12:34:00	3598.00	883.00
2022/12/13	12:36:00	3612.00	837.00
2022/12/13	12:38:00	3589.00	828.00
2022/12/13	12:40:00	3617.00	865.00
2022/12/13	12:42:00	3588.00	796.00
2022/12/13	12:44:00	3580.00	756.00
2022/12/13	12:46:00	3604.00	868.00
2022/12/13	12:48:00	3589.00	861.00
2022/12/13	12:50:00	3606.00	876.00
2022/12/13	12:52:00	3608.00	919.00
2022/12/13	12:54:00	3581.00	823.00
2022/12/13	12:56:00	3593.00	800.00
2022/12/13	12:58:00	3608.00	796.00
2022/12/13	13:00:00	3601.00	754.00
2022/12/13	13:02:00	3596.00	798.00
2022/12/13	13:04:00	3592.00	857.00
2022/12/13	13:06:00	3610.00	877.00

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