



**UNITED STATES ENVIRONMENTAL PROTECTION AGENCY  
REGION 5  
77 WEST JACKSON BOULEVARD  
CHICAGO, ILLINOIS 60604**

**DATE:** See date of Section Chief signature.

**SUBJECT:** CLEAN AIR ACT INSPECTION REPORT  
Earthmovers Landfill, LLC, Elkhart, Indiana

**FROM:** Emma Leeds, Environmental Engineer  
AECAB (IL/IN)

**THRU:** Nathan Frank, Section Chief  
AECAB (IL/IN)

**TO:** File

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**BASIC INFORMATION**

**Facility Name:** Earthmovers Landfill, LLC (Earthmovers)

**Facility Location:** 26488 Country Road 26, Elkhart, Indiana 46515

**Date of Inspection:** July 19, 2021

**EPA Inspector(s):**

1. Emma Leeds, Environmental Engineer
2. Alexandra Letuchy, Environmental Engineer
3. Karina Kuc, Environmental Scientist
4. Daniel Heins, Environmental Scientist

**Other Attendees:**

1. Chak Chakraborty - Earthmovers Site Engineer, Waste Management
2. Randy Russell – Indiana Gas Operations Manager, Waste Management
3. Clayton Franklin – Area Gas Operations Supervisor, Waste Management
4. Paul Karkiewicz – Indiana Department of Environmental Management, Environmental Manager

**Contact Email Address:** cchakrab@wm.com

**Purpose of Inspection:** To perform comparative Method 21 surface emissions monitoring (SEM)

**Facility Type:** Municipal solid waste landfill

**Regulations Central to Inspection:** 40 C.F.R. Part 60 Subpart WWW - New Source Performance Standards (NSPS) for Municipal Solid Waste Landfills; 40 C.F.R. Part 62 Subpart OOO – Federal Plan Requirements for Municipal Solid Waste Landfills; 40 C.F.R. Part 63 Subpart AAAA – National Emissions Standards for Hazardous Air Pollutants (NESHAP) for Municipal Solid Waste Landfills

**Arrival Time:** 12:15 PM ET

**Departure Time:** 4:30 PM ET

**Inspection Type:**

- Unannounced Inspection
- Announced Inspection

**OPENING CONFERENCE**

- Presented Credentials
- Stated authority and purpose of inspection
- Provided Small Business Resource Information Sheet
- Small Business Resource Information Sheet not provided. Reason: Not a small business
- Provided CBI warning to facility

The following information was obtained verbally from Earthmovers personnel unless otherwise noted.

**Process Description:**

Earthmovers Landfill, LLC (“the landfill”) opened in 1976 with a permitted solid waste footprint of 97.8 acres and a 2:1 grade. Approximately 200 trucks drop off waste per day. Daily cover consists of 6 inches of soil provided by the City of Elkhart, and intermediate cover consists of a one-foot-thick layer of clay and seeded vegetation. The landfill is divided into 9 cells, with Cells 7 and 8b in the central area of the landfill active at the time of the inspection. Of the remaining areas, which surround the active center area, approximately half is either under final cover or pending closure certification, and the other half is under intermediate cover.

The gas collection and control system consists of 107 wells, approximately 30 of which are in active portions of the landfill and will need to be redrilled. Gas is primarily routed to the on-site gas-to-energy facility at the northwest corner of the property with six Caterpillar 3516 engines. Occasionally gas is also sent to the open flare at the central northern portion of the property if the engines are out of operation.

Earthmovers has a leachate collection system and an on-site wastewater treatment plant (WWTP) to treat leachate before sending it to the City of Elkhart WWTP. They currently discharge around 40,000 – 45,000 gallons of wastewater per day.

**Staff Interview:**

EPA inspectors asked Earthmovers personnel about their SEM procedures and if they have been monitoring at penetrations, specifically wells, during SEM events. Earthmovers personnel responded the landfill has not been performing SEM at wells aside from whenever a well happens to be located along their planned serpentine path. Mr. Chakraborty stated that next quarter the landfill plans to begin monitoring at wells in accordance with the new and updated landfill regulations, which include the Federal Plan Requirements in 40 C.F.R. Part 62 Subpart OOO, and the NESHAP Subpart AAAA updates. Earthmovers also plans to start using a new instrument for SEM monitoring, the SEM5000 portable methane detector. Mr. Chakraborty explained that aside from active areas and truck paths, no areas on the landfill are exempt from SEM.

**TOUR INFORMATION**

**EPA Tour of the Facility:** Yes

**Data Collected and Observations:**

SEM was performed on the landfill by EPA inspectors from 1:00 PM to 4:30 PM using three Thermo Scientific TVA2020 Toxic Vapor Analyzers (TVA). Inspectors split into two groups and walked on a parallel path around the full circumference of the landfill, with one EPA inspector moving between the two groups as needed to verify TVA readings as needed. Both groups were accompanied by at least one Waste Management employee. Some of the Waste Management staff would separately record any methane detections exceeding 500 ppm and verify the elevated readings, often taking photos of the readings on the TVA screen.

EPA inspectors began the SEM with the intermediate cover area on the southeast half of the landfill and then moved through the final cover areas on the northwest half. Portions of the intermediate cover areas were covered in grasses several feet high, as shown in Image\_9882. Portions of the landfill pending partial closure certification contained exposed waste and had not yet been seeded, shown in Image\_9889 and Image\_9890. A large erosion belly was observed on the west slope of the landfill containing exposed waste, shown in Image\_9887, and Earthmovers personnel claimed that it would be repaired using a bulldozer within 2 to 3 weeks. Charred ground and dead insects were observed between wells GW-59 and GW-96 on the north slope in the final cover area, shown in Image\_9891. Methane readings above 500 ppm were found in this charred area.

Inspectors found and verified 20 locations on the surface of the landfill that exceeded 500 ppm methane. Approximately half of these exceedances were in areas with final cover or pending closure certification, and less than half of these exceedances were at wells.

PVC pipes and other markers were used throughout the landfill to mark the underground gas collection and control (GCCS) systems. EPA inspectors found that several marker pipes for the underground GCCS system were penetrating the landfill cover and directly leaking methane to the atmosphere.

**Photos and/or Videos:** were taken during the inspection.

**Field Measurements:** were taken during this inspection.

- Field measurements were taken with three TVA's and two handheld GPS devices during the SEM, and are recorded in Attachment B.

### RECORDS REVIEW

EPA inspectors were provided with a map of the landfill portraying the active, intermediate, and closed areas, and referenced the map while performing SEM.

### CLOSING CONFERENCE

- Provided U.S. EPA point of contact to the facility

### **Requested documents:**

The following documents were requested following the July 19, 2021 inspection to be provided via email.

- SEM quarterly reports (2016 – 2018), following requirements in 40 C.F.R. § 60.755(c)
- Semi-annual reports (2016 – Jan 2019), as required by 40 C.F.R. § 63.1980
- Most recent technical drawing of Earthmover's surface scan route, as required by 40 C.F.R. § 63.753(d)
- Down-time logs for engines and flare (2016 – 2021), as required by 40 C.F.R. § 63.753(f)(3)


**Concerns:** EPA inspectors noted the exceedances of 500 ppm methane found during the SEM as well as the marker pipes leaking methane as concerns.

### SIGNATURES

 Digitally signed by Emma Leeds  
Date: 2021.09.10 10:15:02 -05'00'

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Emma Leeds  
Report Author

 Digitally signed by NATHAN FRANK  
Date: 2021.09.15 14:53:58 -05'00'

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Nathan Frank  
Section Chief

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**APPENDICES AND ATTACHMENTS**

1. Appendix A: Digital Image Log
2. Appendix B: Field Measurement Data

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**APPENDIX A: DIGITAL IMAGE LOG**

<b>1. Inspector Name:</b> Emma Leeds (Images 1 – 11), Sasha Letuchy (Images 12 – 25)	<b>2. Archival Record Location:</b> <a href="https://usepa.sharepoint.com/:f:/r/sites/R5_Work/r5erc/ecad/AECA/B%20Library/Enf_Earthmovers_IN_21/Enf_Earthmovers_In_21_I_nsp2/Digital%20Image%20Log?csf=1&amp;web=1&amp;e=YbrKTv">https://usepa.sharepoint.com/:f:/r/sites/R5_Work/r5erc/ecad/AECA/B%20Library/Enf_Earthmovers_IN_21/Enf_Earthmovers_In_21_I_nsp2/Digital%20Image%20Log?csf=1&amp;web=1&amp;e=YbrKTv</a>
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<b>Image Number</b>	<b>File Name</b>	<b>Date and Time</b>	<b>Latitude and Longitude</b>	<b>Description of Image</b>
1	Image_9882	7/19/21, 1:56 PM ET		Distressed vegetation at exceedance EL-1
2	Image_9883	7/19/21, 2:21 PM ET		Exceedance EL-2 at GW-103
3	Image_9884	7/19/21, 2:28 PM ET		Exceedance EL-3 at GW-104
4	Image_9885	7/19/21, 2:37 PM ET		Distressed vegetation at exceedance EL-5
5	Image_9886	7/19/21, 2:47 PM ET		Exceedance EL-6 at GW-94
6	Image_9887	7/19/21, 3:03 PM ET		Erosion belly created from rainstorm
7	Image_9888	7/19/21, 3:12 PM ET		Exceedance EL-7, gas leaking out of top and base of PVC marker pipe
8	Image_9889	7/19/21, 3:28 PM ET		Exceedance EL-9 at GW-68RR
9	Image_9890	7/19/21, 4:14 PM ET		Exceedance EL-10 at GW-56
10	Image_9891	7/19/21, 4:15 PM ET		Charred ground between GW-59 and GW-96
11	Image_9892	7/19/21, 4:18 PM ET		Charred ground at exceedance EL-11
12	earthmover_169_k1	7/19/21, 1:27 PM ET		Follow-up location K1: leaking decommissioned well
13	earthmover_170_k2	7/19/21, 1:34 PM ET		Exceedance K2 at GW-54
14	earthmover_171_k3	7/19/21, 1:43 PM ET		Exceedance K3 at header valve near sump 8
15	earthmover_172_173_k4	7/19/21, 1:47 PM ET		Exceedance K4 and multiple other elevated readings at leachate sump 8A
16	earthmover_174_k5	7/19/21, 1:50 PM ET		Exceedance K5 at riser sump 8

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17	earthmover_175_k6	7/19/21, 1:54 PM ET		Exceedance K6 at GW-53
18	earthmover_176_k7	7/19/21, 2:32 PM ET		Exceedance K7: hole near GW48
19	earthmover_177	7/19/21, 3:04 PM ET		Follow-up point K8: above boot RW-1
20	earthmover_178_k9	7/19/21, 3:19 PM ET		Exceedance K9: PWA
21	earthmover_179_k10	7/19/21, 3:29 PM ET		Follow-up point K10: PWB boot
22	earthmover_180_k11	7/19/21, 3:30 PM ET		Exceedance K11 at marker pipe west of PWB
23	earthmover_181_k12	7/19/21, 3:36 PM ET		Follow-up point K12
24	earthmover_182_k13	7/19/21, 3:39 PM ET		Exceedance K13
25	earthmover_183_	7/19/21, 3:43 PM ET		Follow-up point K14

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## **APPENDIX B: FIELD MEASUREMENT DATA**

### **Calibration Data and Instrument Information**

Emma Leeds (EL) used TVA A56584 for the duration of the survey.

Daniel Heins (DH) used TVA SL1555 for the duration of the survey.

Karina Kuc (KK) used TVA A56575 for the duration of the survey.

#### Methane calibration gas expiration data

Calibration Gas	Lot Number	Expiration Date
Zero grade	1486172	May 2026
500 ppm	304-402110297-1	May 11, 2025
1,960 ppm	304-402110299-1	May 11, 2025
10,000 ppm	304-402110298-1	May 11, 2025

#### TVA calibration beginning at 11:45 AM, using methane calibration gas

TVA	Reading for 500 ppm	Reading for 1,960 ppm	Reading for 10,000 ppm
A56575	510	2010	1.01%
A56584	504	1834	9901
SL1555	481	1890	9750

#### TVA response times using 500 ppm calibration gas beginning at 11:45 AM

TVA	Response time (s)
A56575	4.26
A56584	4.67
SL1555	4.12

#### Bump check with 500 ppm methane calibration gas at 5:20 PM

TVA	Reading
A56575	478
A56584	460
SL1555	462

### **Background Concentrations**

The background concentration upwind of the site was taken near the southern border of the landfill at 41.61599, -85.97129 at 4:35 PM. The upwind reading was -2.8 ppm methane. The background concentration downwind of the site was taken on the northern border of the landfill at 41.62307, -85.97048 at 4:45 PM. The downwind reading was 0 ppm methane.

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### Surface Emissions Monitoring Data

Exceedance measurements from US EPA SEM survey

Exceed- ance ID	Latitude, Longitude	Location Description	Reading	Verification Reading
EL-1	41.621333, -85.967304	Distressed vegetation 50 ft NW of GW-95	1400	1100
EL-2	41.617191, -85.970792	GW-103	3200	3000
EL-3	41.616567, -85.97072	GW-104	1100	2200
EL-4	41.616581, -85.970761	6" head riser pipe, 15 ft N of GW-104	1300	1%
EL-5	41.616664, -85.970976	Distressed vegetation 50 ft NW of GW-104	1300	1000
EL-6	41.616887, -85.971488	GW-94	1.80%	1.20%
EL-7	41.618689, -85.972964	6" head riser pipe, 20 ft NW of 73-RR	2.80%	2%
EL-8	41.618954, -85.972742	GW-68RR	700	1000
EL-9	41.621694, -85.972094	20 ft N of 13-RR	1200	2000
EL-10	41.620995, -85.969484	GW-56	900	1100
EL-11	41.620957, -85.969416	Charred ground between GW-59 and GW-96. Elevated levels also found at GW-96.	1000	800
K-2	41.618451, -85.969393	GW-54	1100	800
K-3	41.618306, -85.96999	Header valve for sump 8	9000	2300
K-4	41.61798, -85.969788	Leachate sump 8A and multiple sources surrounding sump 8A	2300	1100
K-5	41.617945, -85.969707	Clean out riser sump 8	1300	750
K-6	41.618191, -85.970063	GW-53	3500	2900
K-7	41.616539, -85.971915	Hole near GW-48	2%	2%
K-9	41.620365, -85.973695	PWA	2000	1%
K-11	41.620502, -85.973928	Pipe west of PWB	2500	5000
K-13	41.620763, -85.973772	Valve header	2000	1400

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TVA measurements in the Reading 1 column with an “EL” Exceedance ID were taken by Emma Leeds. TVA measurements in the Reading 2 column with a “K” Exceedance ID were taken by Karina Kuc. All measurements in the “Reading 2” column were taken by Daniel Heins.

Follow-up locations from US EPA SEM survey

ID	Latitude, Longitude	Location Description
EL-12	41.615996,-85.971291	GW-96
K-1	41.618574,-85.968743	Top of decommissioned well
K-8	41.61969,-85.974136	Boot of RW1
K-10	41.620477,-85.973696	Boot of PWB
K-12	41.620691,-85.973806	Boot of GW-180
K-14	41.620769,-85.973934	Top of marker PVC pipe

Inspectors noted the above 6 locations to likely be leaking significant amounts of methane. Via email after the inspection, Earthmovers personnel confirmed that they would re-monitor at these follow-up points and correct any exceedances found as needed.

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### Map of GPS Path, Exceedances, and Follow-up Points



The red path was taken by Emma Leeds. Karina Kuc's path ran in a similar loop but further downslope and closer to the perimeter of the landfill. Unlabeled green arrows indicate locations with TVA readings that exceeded 500 ppm methane, and six additional follow-up points.