DEPARTMENT OF ENVIRONMENTAL QUALITY
AIR QUALITY DIVISION
ACTIVITY REPORT: On-site Inspection

N598663884

FACILITY: CARLETON FARMS LANDFILL		**SRN / ID:** N5986
LOCATION: 28800 CLARK RD, NEW BOSTON		**DISTRICT:** Detroit
CITY: NEW BOSTON		**COUNTY:** WAYNE
CONTACT: J. Bobby Reese , Environmental Manager		**ACTIVITY DATE:** 07/19/2022
STAFF: Mike Kovalchick	**COMPLIANCE STATUS:** Compliance	**SOURCE CLASS:** MAJOR
SUBJECT: SEM Survey		
RESOLVED COMPLAINTS:		

Major / ROP Source. Full Compliance Evaluation (FCE) and Partial Compliance Inspection (PCE) Which Consisted of an Abbreviated Methane SEM Survey

Company Contacts:
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Purpose:
On July 19, 2022, the Department of Environment, Great Lakes, and Energy (EGLE), Air Quality Division (AQD) conducted an announced inspection of the Carleton Farms Landfill, a landfill that is owned and operated by Republic Services, Inc. (Company) located at 28800 Clark Road, New Boston Michigan. The purpose of this inspection was to evaluate surface methane concentrations at this facility within the requirements of the federal Clean Air Act; Part 55, Air Pollution Control, of the Natural Resources and Environmental Protection Act, 1994 PA 451, as amended (Act 451); the conditions of Renewable Operating Permit (ROP) number MI-ROP-N5986-2015; National Emission Standards for Hazardous Air Pollutants 40 CFR Part 63 Subpart AAAA (NESHAP); and the Federal Plan requirements for Municipal Solid Waste Landfills that Commenced Construction On or Before July 17, 2014, and have not been modified or reconstructed since July 17, 2014, 40 CFR Part 62 Subpart OOO (Subpart OOO).

Mike Kovalchick and Jeff Benya performed an abbreviated methane surface emission monitoring (SEM) survey while Jon Lamb with EGLE was also in attendance conducting a compliance inspection. Please refer to separate MACES report for the results of that inspection.

General Summary of the Results:

The following table shows the results of the SEM survey conducted during the visit:

ID*	Description	Location*		Methane (ppm)
		Lat (N)	Long (W)	
AQD 1	At penetration GW 300	42.0973	-83.42881	10,000
AQD 2	At penetration GW 473	42.0983	-83.43261	85,000
AQD 3	At penetration GW 474	42.09832	-83.43329	130,000
AQD 4	Crack 20 feet SW GW 471	42.09772	-83.43373	690
AQD 5	Downslope 20' SW of GW 472	42.097767	-83.433712	550
AQD 6	At penetration GW 470	42.09719	-83.43404	8,900
AQD 7	At penetration GW 469	42.09723	-83.43332	359,000

AQD 8	At penetration GW 466	42.09663	-83.43359	22,900
AQD 9	At penetration GW 462	42.09566	-83.4335	18,500
AQD 10	Erosion rill 150' N of GW 308	42.09536	-83.43121	610
AQD 11	Erosion rill 50' N of GW 308	42.09521	-83.43112	1,890
AQD 12	At penetration GW 243R	42.09416	-83.42757	14,100
AQD 13	Crack near road ditch 50' E of GW 246	42.09492	-83.42803	900
AQD 14	At penetration GW 227	42.09528	-83.42776	600
NA	Leachate outbreak	42.097205	-83428086	

All methane concentrations above 500 ppm were marked with a numbered red flag. Attachments 1 and 2 provide more detailed information on the SEM survey that was performed. Monitoring was conducted between 8:00 AM and 11:00 AM on 7/19/2022.

General SEM Survey Comments:
This was an initial AQD SEM survey visit. Prior to the visit, data provided by the Company was reviewed. Several areas of concern were noted in the data. They include the following:

- Large number of wells exceeding 145 ° F
- Applied vacuum to the wells was much lower than normal.
- Low methane concentrations in the elevated temperature portion of the landfill (ETLF).

A counterclockwise SEM survey path was followed in the higher elevation areas of the landfill just outside of the active area. The walking path covered 2.17 miles. Most significant of the survey's findings was an area of concern located in the upper slopes of the western side of landfill. Elevated methane levels were widespread in this area. This area also included several surface penetrations hits with some unusually high methane concentrations. (Note: The energy plant was down during the survey due to a DTE Energy forced outage. The landfill does not have enough back-up flaring capacity to make up the shortfall. This likely increased the locations/concentrations of the methane compared to normal conditions.) A few pockets of hydrogen sulfide (H2S) were also detected by sense of smell across the landfill. A couple areas were sampled by a H2S CAIRPOL device with detected values ranging between 100 and 600 ppb. Some municipal solid waste (MSW) odors were noted but overall, the amount of odors coming from the landfill was low. Only minor MSW odors were detected offsite on the NE side.

The number of surface penetrations with methane hits was consistent with other landfills monitored by AQD. It appeared that attempts have been made by the Company to seal penetrations with mixed results. Well heads appeared to be in average condition although a number of them were observed to be tilted/pushed over. Erosion rills were minimal except in area on the upper SW slopes of the main hill that was crossed during the survey. Numerous surface cracks in the ground were observed landfill wide, likely created due to the recent dry/hot weather. One small leachate outbreak was encountered. It appeared to be contained in a small depression. The ETLF portion of the landfill was crossed during the survey and little surface methane was detected coming from this area. Some ash like odor was observed directly next to the hot well heads. The Company indicated that scaling is occurring in the liquid pipes coming from the wells. This issue may be a bigger problem than normal due to the ETLF. The Company has been adding a descaling agent to the liquid to mitigate the problem. However, the Company has had to reduce the amount of pumped liquids from the gas wells as a result. Since the methane concentrations in all the

wells at the landfill is less than 60%, it is thought that gas collection is not being overly impacted by liquid in the wells. Approximately 90 wells currently have pumps in them.

It appears that the Company is not applying more applied vacuum to the wells since the amount of landfill gas being generated already exceeds that capacity of the energy plant and the backup flares to process. Until this issue is resolved, the potential for fugitive emissions will remain elevated.

It is recommended that the landfill:

- Address/fix all 14 SEM hits per federal requirements.
- Upgrade the Gas Collection and Control System (GCCS) on the upper western slopes of the landfill as soon as possible.
- Conduct enhanced monitoring of the wells in the ETLF area. EGLE to provide specific requirements at a later date.
- Submit a Permit to Install (PTI) application to AQD as soon as possible so a back-up flare can be installed to address a shortfall between the amount of gas being generated by the landfill and the flaring capacity.

SECTION 1:

Pursuant to 40 CFR 62.16716(d) and the NESHAP, owners and operators of landfills are required to operate the gas collection and control system (GCCS) so that surface methane concentrations are less than 500 ppm above background.

To determine and demonstrate compliance with the surface methane concentration standard, 40 CFR 62.16716(d) and the NESHAP requires owners and operators to monitor surface methane concentrations around the perimeter of the collection area and along a pattern that traverses the landfill at 30- meter intervals and where visual observations indicate elevated concentrations of landfill gas, such as distressed vegetation and cracks or seeps in the cover and all cover penetrations.

AQD used a SEM5000 methane detector device equipped with tunable diode laser absorption spectroscopy and has GPS location accuracy of 2 to 4 meters. Monitoring was performed on a representative section of the landfill in accordance with EPA Method 21 and Subpart OOO/NESHAP. The instrument was calibrated using calibration gas of zero and 500 ppm of methane. All monitoring and calibration were done between 8:00 AM and 11:00 AM. Monitoring was observed by landfill representatives during the survey.

Weather conditions with upwind and downwind methane concentrations at the start and end of the SEM provided in table below:

Weather Conditions	Start Time	End Time
Temperature	73° F.	86° F.
Relative Humidity	68%	54%
Wind Speed mph	9 mph	10 mph
Wind Direction	SW	W
Background methane upwind	3 ppm	
Background methane downwind	4 ppm	

SECTION 2:

Pursuant to 40 CFR 62.16720(c) and the NESHAP, any reading of 500 ppm or more above background at any location shall be recorded as a monitored exceedance and the actions specified in paragraphs through (v) below shall be taken. If the specified actions are taken, the exceedance is not a violation of the operational requirements of 40 CFR 62.16716(d) and the NESHAP.

(i) The location of each monitored exceedance must be marked, and the location and concentration recorded. For location, you must determine the latitude and longitude coordinates using an instrument with an accuracy of at least 4 meters. The coordinates must be in decimal degrees with at least five decimal places.

(ii) Cover maintenance or adjustments to the vacuum of the adjacent wells to increase the gas collection in the vicinity of each exceedance must be made and the location must be re-monitored within 10 calendar days of detecting the exceedance.

(iii) If the re-monitoring of the location shows a second exceedance, additional corrective action must be taken, and the location must be monitored again within 10 days of the second exceedance. If the re-monitoring shows a third exceedance for the same location, the action specified in 40 CFR 62.16720(c)(4)(v)/NESHAP must be taken, and no further monitoring of that location is required until the action specified in 40 CFR 72.16720(c)(4)(v)/NESHAP has been taken.

(iv) Any location that initially showed an exceedance but has a methane concentration less than 500 parts-per-million methane above background at the 10-day re-monitoring specified in NESHAP/40 CFR 62.16720(c)(4)(ii) or (iii) of this section must be re-monitored 1 month from the initial exceedance. If the 1-month re-monitoring shows a concentration less than 500 parts-per-million above background, no further monitoring of that location is required until the next quarterly monitoring period. If the 1-month re-monitoring shows an exceedance, the actions specified in NESHAP/ 40 CFR Part 62.16720(c)(4)(iii) or (v) must be taken.

(v) For any location where monitored methane concentration equals or exceeds 500 parts-per-million above background three times within a quarterly period, a new well or other collection device must be installed within 120 calendar days of the initial exceedance. An alternative remedy to the exceedance, such as upgrading the blower, header pipes or control device, and a corresponding timeline for installation may be submitted to the AQD for approval.

As provided in a previous table, **14** locations were found to have exceeded the 500 ppm above background threshold during the inspection. The attached aerial image of the Carleton Farms Landfill shows the path followed during the survey and the locations of methane concentrations above 500 ppm.

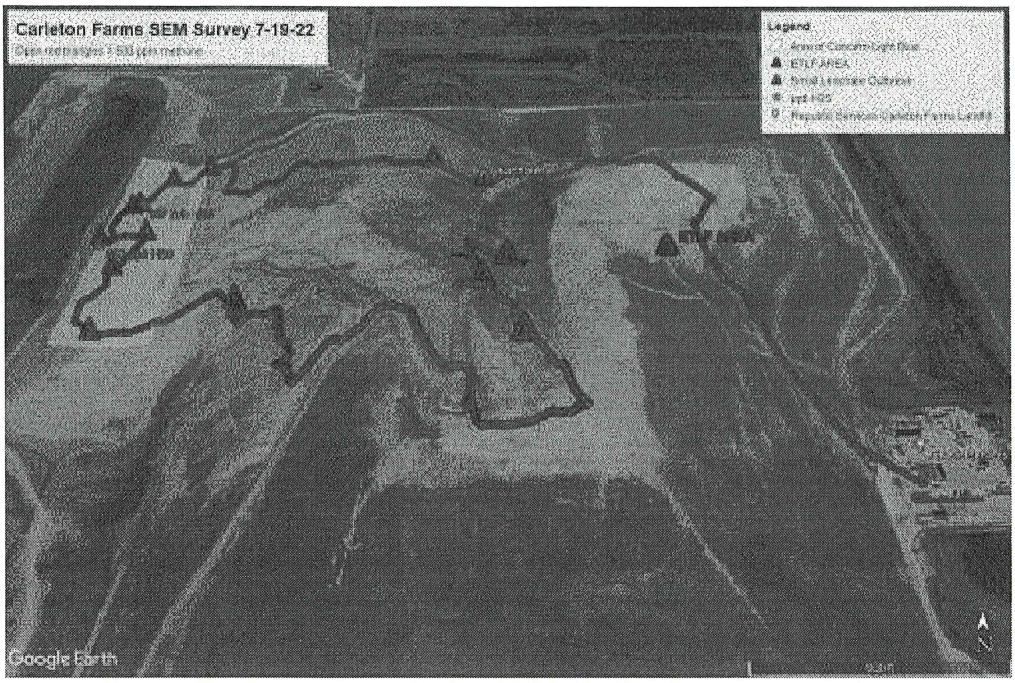

Image 1(N5986 SEM Survey Map) : N5986 SEM Survey Map 7/19/22

NAME _____ DATE 8-3-22 SUPERVISOR JK