



GRETCHEN WHITMER
GOVERNOR

STATE OF MICHIGAN
DEPARTMENT OF
ENVIRONMENT, GREAT LAKES, AND ENERGY
JACKSON DISTRICT OFFICE



PHILLIP D. ROOS
DIRECTOR

August 22, 2023

VIA EMAIL

Richard Clark
Pine Tree Acres, Inc
36600 29 Mile Road
Lenox, Michigan 48048

Dear Richard Clark:

SUBJECT: SRN: N5984, Pine Tree Acres Landfill., Macomb County

On August 8, 2023, the Department of Environment, Great Lakes, and Energy (EGLE), Air Quality Division (AQD) conducted an unannounced inspection of the Pine Tree Acres Landfill owned and operated by WM (Company) located at 36600 29 Mile Road, Lenox, Michigan. The purpose of this inspection was to determine if this facility was in compliance with 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-N5984-2019; the National Emission Standards for Hazardous Air Pollutants (NESHAP): Municipal Solid Waste Landfills, 40 CFR Part 63, Subpart AAAA; and the Federal New Source Performance Standard (NSPS) for Municipal Solid Waste Landfills That Commenced Construction, Reconstruction, or Modification After July 17, 2014, 40 CFR Part 60, Subpart XXX.

During the inspection, AQD performed an abbreviated surface emission monitoring (SEM) inspection according to the standard and found fifty-five (55) areas with surface methane concentrations greater than 500 ppm. Pursuant to 40 CFR 63.1958(d) 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. AQD staff used two separate SEM 5000 methane detector devices. Instrument specifications and calibration information are available in Attachment (1) while detailed spreadsheets/reports of the data collected have already been provided electronically to the Company via email. Attachment (2) provides an aerial image of the landfill showing the locations of methane concentrations above 500 ppm and depicts areas of concern.

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

AQD ID	LAT	LON	ppm	Description
JB1	42.7624113	-82.7480093	718	Bare patch
JB2	42.7623395	-82.7480255	1857	Bare patch
JB3	42.7621427	-82.7519575	645	At small leachate seep
JB4	42.7618592	-82.7527275	828	Bare patch
JB5	42.7589872	-82.7523045	3740	Surface penetration
JB6	42.7555535	-82.7520652	620	Surface penetration

JB7	42.7534145	-82.7510647	521	Erosion feature
JB8	42.7538748	-82.7459408	4683	Surface penetration (59?)
JB9	42.7543905	-82.7461157	2396	Surface penetration (601)
JB10	42.7544492	-82.745768	10,658	Surface penetration (555)
JB11	42.7549487	-82.7459355	2690	Surface penetration (602)
JB12	42.7552128	-82.7465083	5291	Surface penetration (604)
JB13	42.7562032	-82.7469718	2352	Bare patch
JB14	42.7572485	-82.7470855	2068	Bare patch
JB15	42.7578687	-82.7473637	2856	Bare patch
JB16	42.7582845	-82.7471182	1279	Bare patch (W of roll storage)
JB17	42.75941	-82.7455207	523	Surface penetration (23)
JB18	42.7620828	-82.7454742	878	Bare patch
JB19	42.7621095	-82.745574	532	Bare patch
JB20	42.7620352	-82.746225	3432	Bare patch
JB21	42.7621665	-82.7461792	653	Bare patch
N/A	42.7575002	-82.7469497		Large leachate seep
M1	42.762429	-82.747842	590	In surface depression
M2	42.762411	-82.747822	758	In surface depression
M3	42.761774	-82.752389	1260	At penetration
M4	42.761723	-82.752246	1508	At penetration
M5	42.761713	-82.75216	807	At penetration
M6	42.761693	-82.752259	1600	At penetration
M7	42.755659	-82.751456	29,000	At penetration
M8	42.754889	-82.750862	5690	At penetration EW-817
M9	42.75476	-82.750862	694	Erosion rill
M10	42.754466	-82.750787	3495	At penetration
M11	42.753008	-82.750351	2655	At penetration
M12	42.752692	-82.747893	974	At penetration
M13	42.752967	-82.746599	1125	At penetration
M14	42.75353	-82.74645	573	Dead grass
M15	42.753546	-82.746465	4615	At penetration
M16	42.754847	-82.746348	1195	Dead grass
M17	42.754794	-82.746629	3315	At penetration
M18	42.756558	-82.747744	1725	At penetration
M19	42.75664	-82.747746	983	Near horizontal pipe
M20	42.75676	-82.747897	999	Dead grass
M21	42.757394	-82.747608	2525	Dead grass
M22	42.757469	-82.74777	660	Dead grass
M23	42.757545	-82.747645	1275	At penetration

M24	42.757843	-82.74756	1485	Dead grass
M25	42.759843	-82.802748	1165	Dead grass
M26	42.759654	-82.746555	914	At penetration
M27	42.759543	-82.745509	1430	Dead grass
M28	42.759291	-82.742040	740	At penetration 1233
M29	42.762395	-82.7444409	2230	Dead grass
M30	42.762357	-82.744648	1410	Bare spot
M31	42.762266	-82.745256	4405	Bare spot
M32	42.764626	-82.741577	1570	Near penetration
M33	42.764633	-82.741202	812	Near penetration
M34	42.764282	-82.740289	1425	At penetration 123

*All methane concentrations above 500 ppm were marked with a red flag. Attachments 1 and 2 provide more detailed information on the SEM survey that was performed. Monitoring was conducted between 10:00 AM and 2 PM on August 9, 2023. Available data for one of the SEM devices used was limited due to a hardware failure.

General SEM Survey Comments:

This was an initial SEM inspection done in conjunction with an EPA Region V inspection. (The results of their inspection will be reported out separately.) This inspection was unannounced, so most of the documentation that is normally reviewed prior to a SEM inspection was not available.

Pine Tree Acres is a very large complex landfill so it is likely that a number of SEM inspections would be needed to fully explore/document all the issues that may be present.

Prior to the inspection, methane plumes detected by aircraft in 2022 as reported on the Carbon Mapper website were reviewed. 6 plumes were detected which covered nearly the entire north half of the landfill. The size of the plumes was not quantified.

Wellhead data that was available from the July of 2022 was reviewed. Impairments to the GCCS were noted on the NW, N, NE sides of the main portion of the landfill. Numerous wells had signs that they were “vapor locked” with high methane, low flow and similar well/header pressures. Also, many areas of high balance gas, poor methane quality and very low applied vacuum were noted in these areas. Wells that are filled with liquid, broken wells, pinched wells, plugged or fouled wells are suspected. Also, overall expected methane generation rates from the landfill itself may be at issue based on the overall low average gas flow rates from individual wells. Wellhead data for 2023 was not reviewed. Attached results map shows the GCCS impaired areas.

Cover integrity appeared to be good at the landfill although recent heavy rain events had created many erosion rills. Some areas of thick vegetative cover were encountered making it difficult to take SEM readings. Cover soil was mostly dry despite recent heavy rains.

Gas wellheads appeared to be in good condition with more than 500 present at the landfill. Total amount of landfill gas currently being generated is around 6700 scfm with about 200 to 250 ppm concentration of hydrogen sulfide (H₂S) present.

Odors were minimal over most of the route that was followed.

A counterclockwise route was traversed around the main waste hill with both SEM5000 operators walking in tandem but offset from each other. Also, the north and south perimeter areas of the new active cells were investigated.

55 SEM hits were recorded. Most of the hits were at surface penetrations, spots of dead grass, and erosion rills.

Four areas of concern were documented. As mentioned previously, impairment of the GCCS was noted on the NW, N, NE sides of the main portion of the landfill. A second area of concern was a newer active waste cell on the North side. This cell only has “belly” horizontal collectors at the base of the cell for collection. Excess ambient air methane was encountered at the edge of the cell that was suggestive that additional vertical gas wells are needed. A third area of concern was an area of excessive dust that was encountered on the southside of the active areas due to heavy truck traffic. A wearable AtmoTube device measured PM₁₀ values at an unhealthy 300 micrograms per cubic meter. Finally, two leachate outbreaks were documented with locations noted in the SEM hit list.

It is recommended that the landfill:

- Address/fix all 55 SEM hits per federal requirements.
- Investigate how existing quarterly SEM surveys are being conducted. Note this NESHAP AAAA requirement: “where visual observations indicate elevated concentrations of landfill gas, such as distressed vegetation and cracks or seeps in the cover.” Also, cover integrity problem areas identified during required monthly cover integrity inspections should be included in the quarterly SEM survey.
- Upgrade the GCCS on the newer waste cell on the north side.
- Investigate the cause of the impaired GCCS on the NW, N, NE sides of the main landfill. Check if the wells are impaired by liquid. It is noted that recent changes to Michigan’s Part 115 Material’s Management regulations will require monitoring of liquid levels in gas wells and addressing as needed starting in 2024.
- Abate the excessive dust coming from the haul roads in the active areas and ensure that the facility’s fugitive dust plan is being followed and/or updated to address this issue.
- Address the two leachate outbreaks as required.

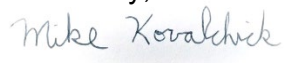
Pursuant to the federal National Emission Standards for Hazardous Air Pollutants: Municipal Solid Waste Landfills 40 CFR Part 63 Subpart AAAA, §63.1981(h) a semi-annual report is required to be filed with AQD that includes results of the required quarterly SEM pursuant to the operational standards in §63.1958(d)(1).

Richard Clark
Pine Tree Acres, Inc
August 22, 2023
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As a response to this letter, please provide a copy of the Pine Tree Acres Semi-Annual NESHAP report to the Jackson and Warren District Offices as required. That report should include the methane exceedances detected by the AQD during this SEM inspection and at a minimum, the results of the required re-monitoring completed pursuant to 40 CFR 63.1960(c) and the actions taken to clear the identified exceedances.

Thank you for your attention to addressing the results of the SEM inspection above and for the cooperation that was extended to us during my inspection of your landfill. If you have any questions regarding this letter or the actions necessary to address the referenced exceedances, please contact me at the number listed below.

Sincerely,



Mike Kovalchick
Senior Environmental Engineer
Air Quality Division
517-416-5025

cc:

Emma Leeds, EPA, Region V
Scott Miller, EGLE
Joyce Zhu, EGLE
Brad Myott, EGLE
Jeff Benya, EGLE
Gina McCann, EGLE
Robert Joseph, EGLE
Carolyn Parker, EGLE

Attachment (1)

Pursuant to 40 CFR 63.1958(d), 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.

To determine and demonstrate compliance with the surface methane concentration standard, 40 CFR 63.1958(d), 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.

AQD used two SEM 5000 methane detector devices 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 NESHAP Subpart AAAAA. The instruments were calibrated using calibration gas of zero and 500 ppm of methane. All monitoring and calibration were done between 8:30 AM and 2 PM.

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

Weather Conditions	Start Time	End Time
Temperature	65 ° F.	81 ° F.
Relative Humidity	81 %	47 %
Wind Speed mph	9 mph	15 mph
Wind Direction	NW	W
Pressure/Trend	29.88" R	29.90" F
Sky Conditions	M. Sunny	M. Sunny
Background methane upwind	0 ppm	
Background methane downwind	3 ppm	

Attachment (2)

Pursuant to 40 CFR 63.1960, 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 (i) 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 63.1958.

- (i) The location of each monitored exceedance shall be marked, and the location recorded.
- (ii) Cover maintenance or adjustments to the vacuum of the adjacent wells to increase the gas collection in the vicinity of each exceedance shall be made and the location shall be re-monitored within 10 calendar days of the exceedance being detected.
- (iii) If the re-monitoring of the location shows a second exceedance, additional corrective action shall be taken, and the location shall 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 63.1960, shall be taken, and no further monitoring of that location is required until the action specified in paragraph (c)(4)(v) has been taken.
- (iv) Any location that initially showed an exceedance but has a methane concentration less than 500 ppm methane above background at the 10-day re-monitoring specified in 40 CFR 63.1960 (c)(4) (ii) or (iii) shall 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 paragraph (c)(4) (iii) or (v) shall 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 shall 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 Table 1, fifty-five (55) locations were found to have exceeded the 500 ppm above background threshold during the inspection. This aerial image of the Pine Tree Acres Landfill below shows the locations of methane concentrations above 500 ppm and areas of concern.

